

USAWC STRATEGY RESEARCH PROJECT

**The Chemical Corps and Homeland Security**

by

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# REPORT DOCUMENTATION PAGE

Form Approved OMB No.  
0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

<b>1. REPORT DATE (DD-MM-YYYY)</b> 06-04-2003		<b>2. REPORT TYPE</b>		<b>3. DATES COVERED (FROM - TO)</b> xx-xx-2002 to xx-xx-2003	
<b>4. TITLE AND SUBTITLE</b> The Chemical Corps and Homeland Security Unclassified			<b>5a. CONTRACT NUMBER</b>		
			<b>5b. GRANT NUMBER</b>		
			<b>5c. PROGRAM ELEMENT NUMBER</b>		
<b>6. AUTHOR(S)</b> Walk, Robert C. ; Author			<b>5d. PROJECT NUMBER</b>		
			<b>5e. TASK NUMBER</b>		
			<b>5f. WORK UNIT NUMBER</b>		
<b>7. PERFORMING ORGANIZATION NAME AND ADDRESS</b> U.S. Army War College Carlisle Barracks Carlisle, PA17013-5050			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>		
<b>9. SPONSORING/MONITORING AGENCY NAME AND ADDRESS</b> ,			<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>		
			<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>		
<b>12. DISTRIBUTION/AVAILABILITY STATEMENT</b> APUBLIC RELEASE					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b> See attached file.					
<b>15. SUBJECT TERMS</b>					
<b>16. SECURITY CLASSIFICATION OF:</b>		<b>17. LIMITATION OF ABSTRACT</b> Same as Report (SAR)	<b>18. NUMBER OF PAGES</b> 41	<b>19. NAME OF RESPONSIBLE PERSON</b> Rife, Dave RifeD@awc.carlisle.army.mil	
a. REPORT Unclassified	b. ABSTRACT Unclassified			c. THIS PAGE Unclassified	<b>19b. TELEPHONE NUMBER</b> International Area Code Area Code Telephone Number DSN
				<small>Standard Form 298 (Rev. 8-98) Prescribed by ANSI Std Z39.18</small>	



## ABSTRACT

AUTHOR: LTC Robert D. Walk

TITLE: The Chemical Corps and Homeland Security

FORMAT: Strategy Research Project

DATE: 07 April 2003

PAGES: 41

CLASSIFICATION: Unclassified

Homeland security is the number one priority in the draft National Military Strategy released in September 2002. The US Army Chemical Corps has, in its recent history, focused on supporting the Army's overseas force projection mission. All equipment, doctrine and training is developed and fielded for this mission. With the advent of terrorism in the United States, there have been on-going discussions on refocusing the mission to include the homeland security mission. Technology and regulations have changed the civil response landscape since the Chemical Corps was last involved in the 1960's. Responders in the US now must fulfill a bewildering array of required training and equipment certifications before they can legally respond in the US. This paper examines the historical Chemical Corps mission and the homeland defense mission (to include Posse Comitatus). It also examines the Chemical Corps through elements of the Army Force Management requirements generating process (Doctrine, Organizations, Training and Materiel) to determine whether the homeland security mission can be feasibly supported by the Army Chemical Corps. A discussion of what the Chemical Corps would do in Homeland Security operations is also included. Finally, recommendations on changes to Chemical Corps' doctrine, training and missions are included.



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## PREFACE

I would like to thank the following people who assisted me in my SRP. First, to my advisor LTC (P) Debra Little, thanks for your patience. I am sure I was a trial for you. Next, those students who reviewed my work: COL Scott Crawford and LTC (P) Bruce Resnak, thank you for your input and appropriate hacking at my writing style (such as it is). Finally, to my wife Angie, who reviewed and bled red ink on several drafts before the final work was done, thank you. Your CAS3 instructor expertise was truly put to the test! Thanks for staying the course!





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## THE CHEMICAL BRANCH AND HOMELAND SECURITY

The US Army Chemical Corps has, in its recent history, focused on supporting the Army's force projection mission. All equipment, doctrine and training is developed and fielded for this mission. With the advent of terrorism in the United States, there have been on-going discussions on refocusing the mission to include the homeland security mission. Technology and regulations have changed the civil response landscape since the Chemical Corps was last involved in the 1960's. Responders in the US now must fulfill a bewildering array of required training and equipment certifications before they can legally respond in the US. This paper will examine the historical chemical corps mission and the homeland defense mission (to include Posse Comitatus). It will also examine the Chemical Corps through elements of the Army Force Management requirements generating process (Doctrine, Organizations, Training and Materiel) to determine whether the homeland security mission can be feasibly supported by the Army Chemical Corps. If determined feasible, recommendations will be included on changes to the Corps' focus.

### CHEMICAL CORPS MISSION AND VISION

#### MISSION

"To protect the force and allow the Army to fight and win against an NBC threat. Develop doctrine, equipment and training for NBC defense which serve as a deterrent to ANY adversary possessing weapons of mass destruction. Provide the Army with the combat multipliers of smoke, obscurant, and flame capabilities.<sup>1</sup>"

#### VISION

"America's Armed Forces trained and ready for the 21st Century, protecting our nation and its forces against nuclear, biological, and chemical threats. America's Army, employing smoke and obscurants to protect the force, shape the battlespace, and disrupt enemy operations.<sup>2</sup>"

The current Chemical Corps mission statement focuses on the Chemical Corps providing combat multipliers and value-added capabilities to the Army. At its inception, the Corps' mission was purely chemical warfare. It has changed over the years to now include biological and nuclear warfare as well. In considering the expansion of the Chemical Corps mission, it is useful to examine the history of the branch to see if there is any previous involvement in homeland security.

## HISTORY OF THE CHEMICAL CORPS

The Chemical Service Section of the National Army was created in November 1917 for the existing emergency (World War I). Their mission was to oversee the Army's gas warfare program and the production of gas warfare supplies.<sup>3</sup> As the Army got further involved in the World War, Army leaders added additional missions to the renamed Chemical Warfare Service (CWS) including soldier training, toxic gas and gas defense appliance production and gas warfare research.<sup>4</sup>

After the Armistice, the CWS' charter expired, but congress made the CWS a part of the Regular Army in 1920.<sup>5</sup> The CWS mission was to supervise both offensive and defensive chemical warfare training, development, procurement and supply of toxic gases, smokes, incendiary devices and gas defense material (with some exceptions).<sup>6</sup> Concern about the protection of the civilian population resulted in some studies in the 1930s and by 1936 the CWS developed a pamphlet called "Passive Defense Against Air Attack."<sup>7</sup> By 1940, the CWS had developed a noncombatant gas mask. During World War II, it produced and distributed over 8 million masks for civilians including infant protectors.<sup>8</sup> The branch also developed a training program for the Office of Civil Defense (OCD) and trained local OCD employees and volunteers throughout the nation in chemical warfare defense.<sup>9</sup> During World War II, the threat expanded to include biological warfare and the CWS was given the mission to research this area.

The CWS name was changed to "Chemical Corps" in 1946.<sup>10</sup> During the 1950s, the Chemical Corps was heavily involved with the OCD, providing technical advice and assistance as needed.<sup>11</sup> During the Vietnam War, the Corps' mission further expanded to include use and development of riot control agents and herbicides. The mission was huge, encompassing all aspects of chemical and biological operations, both offensive and defensive, both at home and abroad. The Corps was at the zenith of its relevance and importance. Those days, however, did not last long.

In 1972, the army leadership decided to eliminate the Chemical Corps as a separate branch after President Richard Nixon unilaterally renounced United States' use of offensive biological warfare. The functions of the branch would remain under the Ordnance Corps. The Chemical School closed in 1973 and the functions were transferred to the Ordnance School at Aberdeen Proving Ground, Maryland. With congressional approval, the Chemical Corps would be disestablished. When Soviet made chemical warfare equipment was found after the 1973 Arab-Israeli War, congress chose not to eliminate the branch. Subsequently, the school reopened at Fort McClellan in 1979.<sup>12</sup>

After its resurrection, the focus of the branch, as with the US military in general, was on countering the Soviet threat. The school taught offensive use of chemical agents and nuclear weapons, along with decontamination, smoke and reconnaissance. Training and equipment was rightfully focused on the European threat scenario. The exception was the Technical Escort Unit (TEU) in Edgewood, Maryland. The TEU maintained close working relationships with civilian agencies and responded as needed in the US to remove and mitigate chemical weapons hazards.<sup>13</sup> After the Wall fell in 1989 and Germany reunified, the need for the European focus disappeared. The Army and the Chemical Corps needed a new threat to focus their efforts on.

A new focus appeared as a new threat emerged in the Middle East. The 1991 Gulf War was viewed by many as a justification for the branch's singular focus. The Iraqi Army used chemical agents in their war against Iran and was expected to use them and biological agents against coalition forces. Well trained chemical units from both active and reserve components deployed into theater in support of the combat forces.<sup>14</sup> With the emphasis on doctrine, soldiers trained and were reasonably ready for the chemical threat.<sup>15</sup> In the post-war period, the Chemical Corps' focus continued to be on supporting the Army's force projection mission.<sup>16</sup>

Over the years, the Chemical Corps worked with civilian agencies when the threat of chemical and biological warfare against the continental United States was deemed significant. When this threat was minimized due to the sheer size of the nuclear threat, the Corps focused on supporting the warfighter. After the Gulf War, the Corps focus was purely on supporting the overseas fight. In the mid 1990s, events in the world showed that the threat facing America was limited to forces deployed overseas. It would ultimately lead to a reexamination of the Chemical Corps mission.

## **HOMELAND DEFENSE MISSION**

The Japanese government response to terror attacks in Matsumoto and Tokyo, Japan<sup>17</sup> and the American government's response to the Oklahoma City bombing prompted the United States government to investigate the federal response to terrorism. Desiring a coordinated integrated response with the ultimate goal of homeland security for the American people, President Clinton signed Presidential Decision Directive (PDD) 39 on 21 June 1995. Through the PDD, he assigned responsibility for crisis and consequence management to the FBI and Federal Emergency Management Agency (FEMA) respectively.<sup>18</sup> Recognizing the need to prepare our nation's civilian responders to deal with weapons of mass destruction (WMD), the 1997 National Defense Authorization Act required the Department of Defense to present a plan



to implement a Domestic Preparedness Program. Ultimately, the Chemical and Biological Defense Command (now Soldiers Biological Chemical Command [SBCCOM]) executed the Domestic Preparedness program for the Army.<sup>19</sup>

To provide the nation's responders with additional assistance against the WMD threat, the Army created National Guard Civil Support Teams. The teams, authorized by Congress, have the mission to "assess a suspected WMD event in support of the local incident commander; advise civilian responders regarding appropriate actions; and work to both facilitate and expedite the arrival of additional military forces if needed."<sup>20</sup>

The Federal Response Plan (FRP) was among the most visible results of President Clinton's efforts to prepare the United States for terrorism. The FRP, published in April 1999, is the consolidated plan for all federal response operations in support of local and state authorities. The plan is supposed to reduce confusion among federal agencies and enable a coordinated federal response in support of responders. The FRP, drafted by FEMA, was signed by representatives of 27 federal agencies including the Departments of Defense and Justice.<sup>21</sup>

With the framework for response in place, the government began to focus on prevention and defense. The 2001 Quadrennial Defense Review (QDR) lists "safety of U.S. citizens at home and abroad" as a critical national interest, and cited "defend the United States" as the highest priority.<sup>22</sup> It further stated that Department of Defense (DoD) components have the responsibility to support civil authorities in managing the consequences of WMD related events within the confines of the United States.<sup>23</sup> Finally, the QDR called upon DoD to ensure forces were properly organized, trained and equipped to provide an effective defense of the US. This affected the role of the Chemical Corps to start focusing on operations inside the United States.

Having the means to respond to and defend the homeland against WMD, the nation needed to develop employment strategies. "The National Military Strategy" (NMS)<sup>24</sup> and the "National Strategy to Combat Weapons of Mass Destruction" (NSWMD),<sup>25</sup> released in 2002, directly affect the Chemical Corps. These strategies focus on the trend in asymmetric and indirect threats to the United States. The perpetrators behind these threats have strategic significance and use asymmetric and indirect methods to counter US military capabilities.<sup>26</sup> Understanding the impact of these trends, leadership developed three pillars of the NSWMD, emphasizing the importance of fully integrating military capabilities into the national effort. The first and most important pillar is consequence management, followed by WMD counter-proliferation and nonproliferation.<sup>27</sup>

The NMS noted that one great concern was the threat of WMD in terrorist hands and that US forces may be required to provide support to federal, state and local authorities.<sup>28</sup> In the Strategic Concept for Joint Force Employment, the NMS declares that the military must be a complementary part of an integrated national effort. The concept of integrated operations maximizes armed forces capabilities and employs them as either the lead agency or, more often, as a supporting agency in conjunction with other governmental and nongovernmental organizations.<sup>29</sup> As a part of the DoD, the Chemical Corps is expected to be a part of that effort. The Corps' can reasonably expect to provide training for protection and intervention as part of the national effort. Actually responding to an incident, however, may be subject to limitations on federal response efforts imposed by the Posse Comitatus Act.

### **HOMELAND SECURITY MISSION AND POSSE COMITATUS**

The Posse Comitatus Act of 1878, a criminal statute, prohibits the use of the military to enforce civilian laws. Exceptions can be made when specifically authorized by Congress or the Constitution. Posse Comitatus applies directly to the Army, Army Reserve, Air Force, and Air Force Reserve, but only on a case by case basis to the Navy and Marine Corps (and their Reserves). It does not apply to the Coast Guard. The National Guard is included only when in federal status. Posse Comitatus prohibits the direct, active use of military personnel in the activities of civilian law enforcement which subjects civilians to the exercise of military power that is regulatory, proscriptive or compulsory in nature.<sup>30</sup>

Posse Comitatus does allow the following: The President may use the military to "take care that the laws be faithfully executed." Certain actions are expressly permitted by Congress including response to those domestic disturbances noted by the Insurrection Act; protection of the President, international guests and other senior officials; response to emergency situations involving chemical, biological and nuclear weapons of mass destruction, where civilian law enforcement is incapable of taking action; execution of quarantine and health laws; and protection and advancement of compelling federal interests.<sup>31</sup>

Other actions are legally authorized including support missions that do not involve DoD personnel in direct law enforcement. Finally, use of military personnel is authorized if there is a military purpose justifying involvement of military personnel.<sup>32</sup> Use of chemical units would fit in the support mission role and would thus be authorized under Posse Comitatus. In order to use federal assets, though, they must first be requested through the FRP process.

## **THE FEDERAL RESPONSE PLAN**

After a major disaster, the federal government will provide support as needed to local and state authorities. The Stafford Act of 1974 authorizes the President to use federal resources in support of state and local governments in the event of a major disaster.<sup>33</sup> The President declares a state of emergency at the request of the governor, or independently if the primary responsibility lies in the federal government and FEMA leads the federal response as outlined in the FRP. At the scene, the assistance is provided under the direction of the Federal Coordinating Officer (FCO), who determines and requests assistance to support the response. The DoD is one of the organizations that provide support.

The DoD primary contact for domestic civil emergencies is the Director of Military Support, who designates a Combatant Commander as the DoD operating agent for the DoD response. Any request for military support flows to the Defense Coordinating Officer, who is the DoD representative to the FEMA Disaster Field Office. The Defense Coordinating Officer validates and coordinates DoD mission assignments. Any DoD unit with needed capabilities can be tasked, including chemical units. The exception to this process is immediate response.

Local military commanders may provide local authorities assistance when immediate response is required to save human lives, prevent human suffering, or prevent major loss of property.<sup>34</sup> This authority, however, is limited to the immediate exigency, which normally does not exceed 72 hours. This is authorized by DoD Directive 3025.1, which also requires the commander to report their response to the Director of Military Support. Due to the transient nature and immediate effect of many WMD hazards, chemical units are best suited in the immediate response mode.

Chemical units need to be able to support consequence management operations as part of homeland security. They can provide the necessary support in either an immediate response mode or through the normal workings of the FRP. This begs the question as to whether the Chemical Corps has the capability to provide the necessary support given the legal requirements in the United States. To answer that question, this paper will use the force management process, looking at Chemical Corps doctrine, organizations, training and material. Where applicable, what the Chemical Corps uses will be compared to what the civilian response organizations use. The first element to examine is doctrine, which generally sets the requirements for all other elements.

## DOCTRINE

Army chemical doctrine that is applicable to homeland security operations includes both decontamination and reconnaissance. Each will be examined and the Chemical Corps method compared to the civilian method.

## DECONTAMINATION

Army decontamination doctrine for soldiers assumes that speed is essential and water is scarce. For soldiers, there are three levels of decontamination: immediate decontamination, operational and thorough. As soldiers progress through the levels, more preparation is necessary. In immediate decontamination, the soldier performs the decontamination using their basic soldier skills. The soldier uses his own equipment to eliminate any contamination on his skin and equipment to prevent further injury and limit the spread of contamination. Operational decontamination uses organic unit assets and has two parts: Mission Oriented Protective Posture (MOPP) gear exchange and vehicle washdown. A "clean" area and replacement protective clothing is all that's required for MOPP gear exchange. The net result is a cleaner soldier able to get back into the fight with reduced, if not eliminated, contamination. To decontaminate equipment in vehicle washdown, a unit level decontamination apparatus provides water to wash down the vehicles and reduce the gross contamination. This requires a clean water source and a designated area. Again, the goal is contamination reduction. For complete decontamination, commanders must use the thorough decontamination station. Here, the supported unit provides a step by step area for their soldiers to decontaminate their equipment and remove and discard their contaminated protective clothing. At the end of the line, soldiers are theoretically decontaminated and ready to refit and return to the fight. Their equipment is methodically cleaned and decontaminated for use in the lowest protective level, MOPP level zero. This is laborious and time-consuming.<sup>35</sup> The equipment is decontaminated with the support of a chemical decontamination company.<sup>36</sup> Casualties must undergo a different and more laborious decontamination.

Military casualty decontamination is performed on casualties prior to admittance into the hospital. While decontamination must begin at the lowest (soldier) level, all soldiers going to hospitals must go through casualty decontamination. Current doctrine is labor-intensive. It methodically triages the casualties and completely cleans them before processing them into the hospital. Figure 2 graphically illustrates the decontamination process. Casualties are triaged, provided limited treatment to keep them alive until they can get definitive treatment in the hospital, logged in and are then divided into ambulatory and non-ambulatory casualties.

Ambulatory casualties process themselves through the line with minimal assistance. Non-ambulatory litter-bound casualties are carried through on their litter and decontaminated in place, transferred to a fresh litter and carried to the hospital. Personal equipment is decontaminated in a separate line when resources are available.

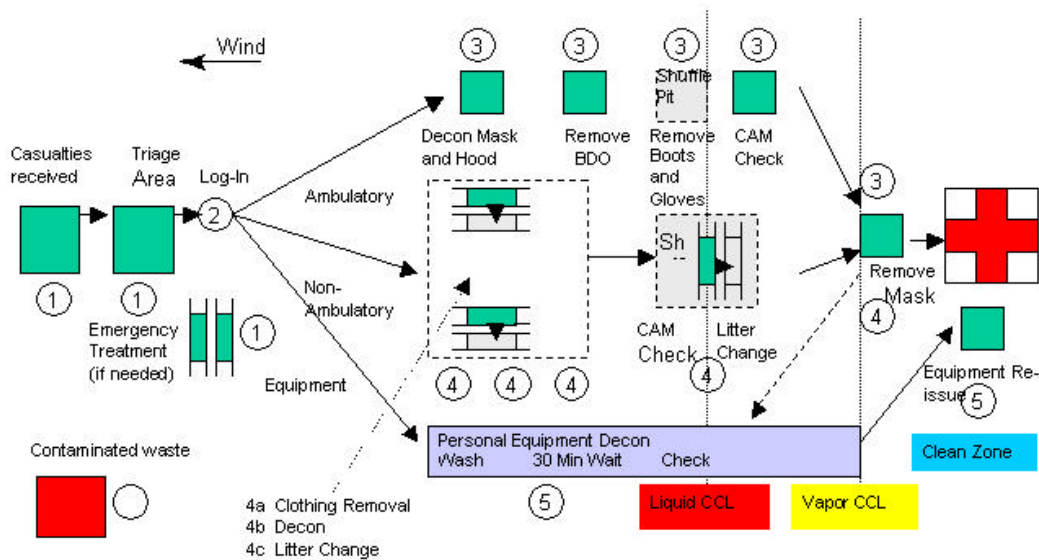


FIGURE 1 MILITARY CASUALTY DECONTAMINATION<sup>37</sup>

In a domestic scenario, decontamination is kept as simple as possible. In hazardous material (HAZMAT) situations, the contaminated area is designated the “hot zone.” Responders do not go into the hot zone without having their decontamination line established. After they depart the hot zone, they are assumed contaminated and go through decontamination. Decontamination is simple. First, they are given a gross washdown to remove the majority of the contamination. Next they are scrubbed down by fellow responders with mops and brooms using bleach or the appropriate decontaminant. Thirdly, they are given a final rinse and move to the disrobing section where they get out of their protective clothing. All outer protective clothing is disposed of and the breathing apparatus is returned to use after refill. Casualties are carefully carried through the same line as the other casualties. Some fire departments have specialized equipment, while others use fire trucks or local swimming pools. The chart below shows a doctrinally correct domestic decontamination line. Note that the basic layout is similar to the military casualty decontamination line.

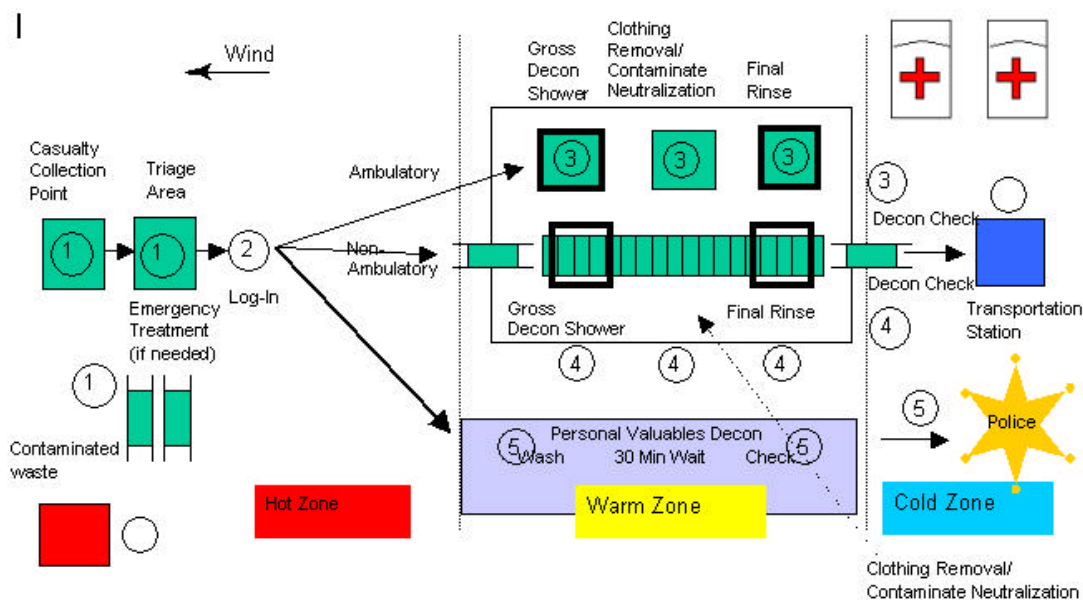


FIGURE 2 DOMESTIC DECON LAYOUT<sup>38</sup>

In a homeland security scenario, civilian personnel decontamination may be expected. The military personnel decontamination methods discussed above assume a level of training that civilian victims would not have, so military doctrine from FM 3-5, NBC Decontamination, is not appropriate. Military casualty decontamination is similar to civilian decontamination, but still assumes the ambulatory victims can decontaminate themselves. Neither would work well in a civilian scenario. Understanding this, the Chemical Corps wrote doctrine for use in Consequence Management operations.<sup>39</sup>

Currently, a military chemical decontamination unit's doctrinal mission is thorough equipment decontamination. However, with decontamination equipment and trained chemical soldiers organic to the unit, chemical companies are suitable for consequence management personnel decontamination as required in a domestic emergency. They must, however, have appropriate doctrine to use.

## RECONNAISSANCE

Army chemical reconnaissance companies are structured to find militarily significant agent contamination quickly and find ways to go around it to enhance the mobility of the Army. The units are designed to be highly mobile. They are manned and equipped to detect nerve, blood

and blister agents using organic equipment and to route other Army units around the contaminated areas.<sup>40</sup>

Civilian reconnaissance is designed to find the contamination source to enable mitigation of the hazard and treatment of the victims. The mission of the HAZMAT trained responders is to go into the hot zone, find the source and attempt to mitigate it. They also determine the actual contaminant to enable the incident commander to properly protect other responders and the doctors to treat any exposed people.

In a homeland security scenario, contamination avoidance is not the answer. The source of the contamination must be found and stopped to minimize civilian casualties. Therefore, military responders in a consequence management scenario must do the same as HAZMAT technicians. This is a major change in the Army's doctrinal chemical reconnaissance mission, but must be done to enable them to work in homeland security.

## **ORGANIZATIONS**

The Army's Chemical Corps is made up of tactical and non-tactical units in the three components (and those not manned in the fourth component), individual soldiers assigned to chemical positions throughout the Army, and the research and development organization. This section will discuss chemical units and the research and development organization of the Chemical Corps and their applicability to the homeland defense mission.

## **UNITS**

Under Total Army Analysis (TAA) 2009, the Active Army has 15 percent of the chemical units, the National Guard has 27 percent of the force and the Army Reserve has 28 percent of the force. The remaining 30 percent is not manned and is allocated to the fourth component.<sup>41</sup>

The Active Army has the minimum number of units necessary to accomplish their mission under TAA 09. This includes divisional companies for each of the airborne and air assault divisions, three for heavy divisions, four for light armored cavalry regiments (ACRs) and one for a heavy ACR. Additionally, they will have one reconnaissance company, three reconnaissance/ decontamination companies, five dual-purpose companies, two mechanized smoke companies, two biological detection companies, two special forces (SF) chemical teams, three chemical hazard analysis (JA/JB) teams, and four Chemical Biological Rapid Response Teams. For command and control, they will have one brigade headquarters, three chemical battalions and the Technical Escort Battalion. This constitutes 15 percent of the Chemical Corps force structure.<sup>42</sup>

Under TAA 09, the National Guard will have seven heavy division chemical companies, 23 light ACR companies, and one heavy ACR company. Additionally, above divisional units include two decontamination companies, two reconnaissance companies, six dual purpose companies, four biological detection companies, two SF chemical teams and fifteen separate chemical platoons (for enhanced brigades). For command and control, they will have three brigades and eleven battalions. This constitutes 27 percent of the force structure.<sup>43</sup> The National Guard also has all of the 32 civil support teams authorized in the force structure.<sup>44</sup>

The Army Reserve under TAA 09 will be entirely in the echelons above division class. They will have five reconnaissance companies, 25 dual purpose companies, eleven biological detection companies, three army of excellence mechanized smoke companies, one FDD mechanized smoke company, three SF chemical teams, and fifteen JA/JB teams. For command and control, the USAR will have five brigades and eleven battalions. This is 28 percent of the force structure.<sup>45</sup> Finally, the unmanned and unfilled fourth component under TAA 09 will have about 30 percent of the force. This will include two brigades, 8 battalions 2 JA/JB teams and 71 assorted companies.<sup>46</sup>

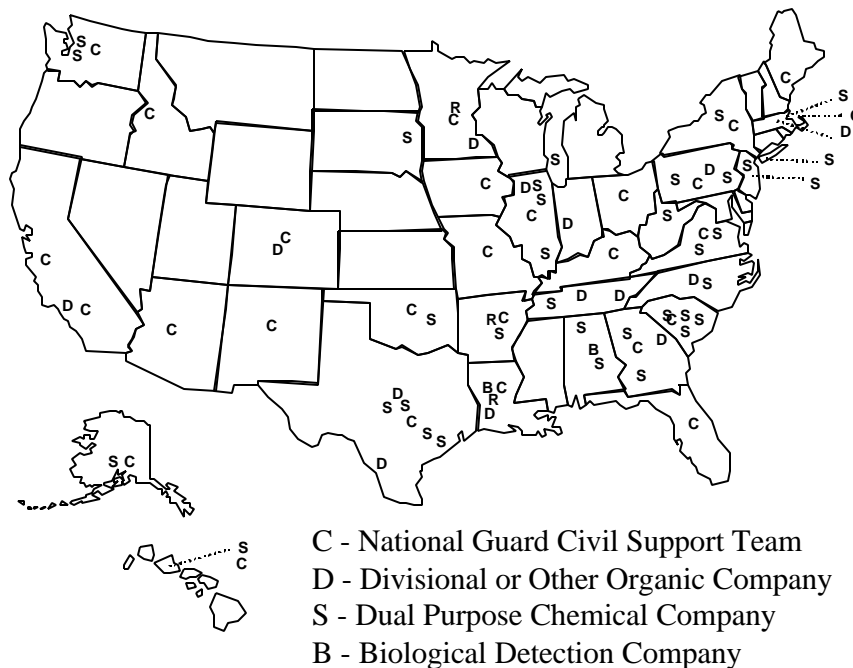


FIGURE 3 CHEMICAL UNIT LOCATIONS<sup>47</sup>



## APPLICABILITY OF THE HOMELAND DEFENSE MISSION

What units have relevance for the homeland defense mission? There will be little call for smoke support in the homeland, so the pure smoke units will not have much applicability in the homeland defense mission other than for providing trained chemical soldiers as necessary. This eliminates two active and four USAR companies in TAA 09. Units deployed overseas are not readily available for the homeland defense mission, thereby eliminating the battalion and five companies in Korea and two companies in Germany.<sup>48</sup> The remaining 18 active companies, 45 National Guard companies and 41 USAR companies are available for the homeland defense mission. All battalions less one battalion in Korea and all brigades would be available for command and control in the homeland defense mission. This constitutes a formidable force available for use in a domestic scenario and is located throughout the United States. Currently, only sixteen states do not have chemical units located within their boundaries. There are chemical units available within close proximity of all major population centers. All states are projected to have some chemical capability when full authorization of the National Guard Civil Support Teams is implemented.

## RESEARCH AND DEVELOPMENT FOR HOMELAND DEFENSE

The research and development for NBC Defense is handled through the Army's Soldier and Biological, Chemical Command at Aberdeen Proving Ground and specifically the Project Manager for NBC Defense. The head office is located at the Edgewood Annex to Aberdeen Proving Ground, Edgewood, MD. The Edgewood Chemical Biological Center has been the nation's center of chemical and biological expertise since the end of World War I. They conduct research, concept exploration, demonstration, validation and engineering manufacturing development for production of chemical defense systems.<sup>49</sup> In addition to the research development and acquisition areas, Edgewood has the Homeland Defense Program. Their programs include the Weapons of Mass Destruction Installation Preparedness for the military, technical assistance and the military improved response program.<sup>50</sup> In fact, engineers and leadership at Edgewood are actively involved in supporting the civilian homeland security mission through use of their facilities to test equipment. After equipment is tested at Edgewood, the civilian run National Institute for Occupational Safety and Health (NIOSH) evaluates the data and certifies the equipment. The Commander, SBCCOM also has a Deputy Commanding General for homeland operations, providing command and control to the Technical Escort Battalion, the Army Reserve Unit for Consequence Management and the Chemical-Biological

Rapid Response Team.<sup>51</sup> Are they applicable to the homeland defense mission? Yes. The research and development portion of the Chemical Corps is already fully involved with homeland defense and military installation consequence management.

## TRAINING

Soldier training is key to mission accomplishment. The 54B soldier is intelligent and capable. How well they accomplish their job depends on the training they receive. If the 54B need to do consequence management, then they must be trained for it. In this section, the military and civilian training programs will be examined and compared.

### MILITARY

The 54B soldier receives a large amount of training on a myriad of topics including soldier skills, leadership skills (noncommissioned officer (NCO) training) and technical skills. The Table below shows the Total Army Training System (TATS) training given to soldiers transitioning into the Chemical Operations Specialist military occupational specialty (MOS) 54B, the basic NCO course and the advanced NCO course.

Subject	54B10 Reclassification <sup>52</sup>	Subject	54B30 BNCOC <sup>53</sup>	Subject	54B40 ANCOC <sup>54</sup>
General Subjects	21	Tactical Leadership	26.4	General Subjects	11.5
Tactical Skills	26	Leadership	101.1	NBC Platoon Sergeant Skills	68
Radiological Operations	24.3	NBC Unit Skills	155.9	Brigade/Division NBC Skills	79.5
Chemical Biological Operations	25.7	NBC Staff Skills	87.2		
Decontamination Operations	35			Administration Instruction	83
Smoke Operations	32	Exam	28.6	Mandatory Instruction	83
Training Exercise	42				
Total Hours	206		399.2		242
Technical Hours	159		271.7		147.5

TABLE 1 TATS 54B TRAINING SUMMARY

This is a formidable amount of training and soldiers leave each level of training highly skilled in the technical aspects of their MOS. In addition, soldiers receive training in a live agent atmosphere, which most civilians cannot receive. It is useful to compare this to the training that civilians involved in hazardous material (HAZMAT) operations receive.

	Worker	Responder	HAZMAT	IC	HAZWOPER
Awareness Operations	+	+ 8	+ 24	+ 24	+
Technician Incident Command			+	+	
Technical Training					40
Field Experience					24

TABLE 2 CIVILIAN TRAINING REQUIREMENTS<sup>55</sup>

## CIVILIAN

First responders involved in hazardous materials incidents receive training based on their duties. Everyone who is potentially exposed to a hazard receives awareness training. Awareness training includes recognition of the hazard, the risks caused by the hazard and what the person should do if they are exposed or notice the hazard. Awareness level trained people see the hazard, leave and call for help.

The second level of training is the operations level. Operations level responders are those that perform defensive actions to protect property, people or the environment without attempting to stop the release. A fire fighter is considered an operations level responder and reacts defensively to save people.

The people that solve the problem are the HAZMAT technicians. They have the training to stop the release and mitigate the hazard. HAZMAT specialists are those people that support the technicians through their specific knowledge of the hazard.

Finally, the incident commander (IC) controls the scene and oversees operations. For those workers who work uncontrolled hazardous waste operations, they must receive comprehensive training (generally called HAZWOPER training) on the hazard and work for three days under the supervision of an experienced worker for on-the-job training.<sup>56</sup>

## COMPARISON OF MILITARY AND CIVILIAN TRAINING

Both training regimens provide the person with the skills needed to operate in the hazardous environment. Comparing the two training regimens puts the lower level chemical soldier at approximately the equivalent level of the HAZMAT technician or the HAZWOPER trained worker. Soldiers and technicians are there to do the work of cleaning up the hazard, but do not have supervisory responsibilities. However, the amount of training the chemical soldier receives is superior to the training received by civilian HAZMAT technicians and HAZWOPER workers. Unfortunately, the training a chemical soldier receives is focused on the military

accepted hazards and not generalized hazards. Despite this, chemical soldiers have demonstrated that they can work in a homeland defense scenario, but do better after provided training that improves their understanding of that environment. The basic doctrine is the same for both military and civilian operations. By fine tuning the chemical soldiers' training, they will have both the skills and knowledge on how to work in a generalized scenario and not the militarily specific scenario. This will enhance their ability to work both at home and overseas. If given more generalized training, chemical soldiers will provide a valuable service to the combatant commander by not being limited to the so-called militarily significant chemical agents.

## **EQUIPMENT**

The US Army develops equipment, including protective equipment, based on perceived requirements. Current protective apparatus was designed for the force deployment mission without considering current United States civilian requirements. This section shall cover respiratory protective equipment, protective clothing, chemical detectors, decontamination equipment and radiation equipment each in turn and contrast them with the civilian equipment.

### **RESPIRATORY PROTECTIVE EQUIPMENT**

The military pushed the development of the respirator in the United States. Edgewood Arsenal was at the forefront of mask development early in the century and most civilian masks of the time bore a striking resemblance to the era's military masks. Edgewood also developed canisters in the 1920's for use in ammonia, hydrocyanic acid and fire fighting atmospheres.<sup>57</sup> The modern military mask is a negative pressure respirator fitted to the soldier to provide the maximum protection available. To do this, the military provides a mask fit test apparatus to measure the protection afforded by the mask. The well-fitted modern military mask can provide complete respiratory protection to the soldier under field conditions.

On the civilian side, masks are provided when necessary, but the preferred protective mask system for workers expecting to be exposed to hazards is a positive pressure respirator. Due to legal and regulatory considerations, most of the time that respiratory protection is required, employees are provided with a powered air purifying respirator or an airline respirator. Negative pressure respirators are generally issued only for emergency escape. The guidelines provided by the Office of Safety and Health Administration (OSHA) are not complimentary of negative pressure respirators. Full face negative pressure respirators are assigned a protection factor of 10 where positive pressure full facepiece supplied air respirators are assigned a protection factor of 50.<sup>58</sup> As a result, civilian standards generally require the use of supplied air.

Comparing the two, it is of interest to note that US military respirators cannot be used by civilian responders primarily because they have not been tested by NIOSH, but it is known the military designs the mask using different parameters for inlet and outlet breathing resistance.<sup>59</sup> The difference is that the military assumes that all soldiers are reasonably fit and the civilian standards assume users are not. Thus, the military can have a higher exhalation and inhalation pressure requirement (which makes it harder to breathe through the mask), while the civilian respirators use lower inhalation and exhalation pressures. Effectively, the military mask is safer, but is not cleared for civilian use. This has caused the market to adapt the military masks for the civilian market for those organizations (primarily law enforcement) desiring the military mask.<sup>60</sup> Additionally, because civilian hazardous material response standards generally require the use of self-contained breathing apparatus for known exposure to extremely hazardous substances, the use of military masks within the United States is not recommended by responders in the direct hazard area, but may be allowable on the periphery (the contamination reduction zone).

#### PROTECTIVE CLOTHING

Protective clothing is another area where the military and civilian standards differ. When working in military operations, the military wears protective clothing in the Mission Oriented Protective Posture or MOPP. There are seven levels for protecting soldiers against the hazard, MOPP Zero through Four, mask-only and MOPP ready. All involve use of the negative pressure respirator combined with permeable protective clothing. They are designed to provide protection based on a risk assessment of the hazard potential. Civilians, on the other hand, assume minimal risk. There are four levels of protection: Level A (highest) through D (lowest). MOPP level 4, the highest military protective level, roughly corresponds to the civilian Level C protection. Levels A and B both include a positive pressure breathing apparatus which the military can't achieve with the use of the negative pressure respirator. Civilian protection also uses relatively impermeable materials, unlike the military protective ensemble, which is designed using permeable materials for greater comfort and longer wear.

#### CHEMICAL DETECTORS

Chemical detectors are an area of interest to both the military and civilian response community. The military detectors tell you the presence or absence of an agent (qualitative), but not the quantity of that agent (quantitative). Soldiers are trained to use the detectors and assume a higher level of protection as a result of a positive reading. Civilian responders prefer quantitative results, because from that they can determine the level of protection required or

whether they can even operate in that environment. On the civilian side, they use terms like immediately dangerous to life and health (IDLH) and permissible exposure limit (PEL), which the military does not use except in industrial applications. Much of the military thought process has to do with the lethality of the agents involved. While not the best alternative, the use of military equipment is currently acceptable to most civilian responders because the military detectors at least detect the presence or absence of an agent. As the market develops for chemical warfare agent detectors for the civilian market, the detection capability will improve and quantitative results will benefit both the military and the civilian responders.

#### DETECTION EQUIPMENT

Decontamination equipment is an area where the two communities overlap somewhat. Military decontamination apparatus spray heated water at moderate pressure to spray onto vehicles or operate showers. Civilian apparatus do the same. The primary difference between the two is that the military apparatus are generally sturdier than civilian ones due to the inherent abuse they will receive in military operations. For the domestic response mission, the Army purchased commercial equipment to outfit the decontamination capable chemical companies in the Army Reserve and the National Guard CSTs. This same equipment has also been purchased by several state and local response organizations.

#### RADIATION DETECTION EQUIPMENT

Radiation detection equipment is another area of digression and similarity. Military equipment is robust, well packed and accurate to a certain level. Civilian equipment used by experts is more accurate but less rugged and also more expensive. For immediate response, many fire departments used radiation detection equipment from the Office of Civil Defense (now FEMA) during the Cold War. Unfortunately, most detectors were turned in at the end of the Cold War due to declining budgets. So, for many operations, the military equipment will suffice, because it is more than the local responders will have.

Military protective and detection equipment is robust and usable. The military mask and protective suit provides needed protection for the soldier in an overseas field environment. Military detection equipment provides necessary detection for militarily significant agents. Finally, decontamination equipment provides the capability to decontaminate the soldier and his equipment when necessary. Military protective and detection equipment must all be further evaluated to determine whether it is legally usable in homeland security operations.

Can the Chemical Corps work in Homeland Security operations? Historically, the Chemical Corps has worked closely with civilian agencies to help them prepare for chemical

and biological warfare. Current national guidance on homeland security recognizes the need for DoD to work with civilian agencies. Posse Comitatus does not proscribe the Chemical Corps from working homeland security issues. Finally, given modest changes and after a legal review, chemical doctrine, training and equipment can be used for homeland security operations. Knowing all this, it is useful to examine how the Chemical Corps would currently fit into homeland security operations.

### **CHEMICAL SOLDIERS AND HOMELAND SECURITY**

Due to the requirements of the federal response plan (FRP), federal (Active Army and Army Reserve) chemical soldiers and units are limited in their response. They are authorized to immediately respond to an incident and they can serve at an incident site as a volunteer without impacting the FRP. Upon implementation of the FRP, they can perform their normal duties as a chemical specialist under federal government auspices. However, to be able to provide their expertise, they need an appropriate national certification. Incident commanders understand hazardous materials technician training and hazardous waste operations emergency response (HAZWOPER) training, but not military training, which is outside of their experience. In addition, there may be legal concerns with not being nationally certified and working within the United States which are beyond the scope of this paper. To overcome these limitations, soldiers assigned to the Technical Escort Battalion, the only federal soldiers to working with civilian responders routinely, all have a HAZMAT certification and a sampling certification.<sup>61</sup>

National Guard units can be ordered to active duty in a state status to respond to a state emergency. Unfortunately, like federal soldiers, because of the time to alert them and move them to the site, they will not be immediately useful unless they are prepositioned. Again, a certification to show their expertise is required. All members of the Civil Support Teams that go into the hot zone are HAZMAT Technician qualified with an environmental sampling certification. With the certification, these soldiers can do the work needed to support the responders.<sup>62</sup>

Response organizations must be close to an incident site to provide timely life-saving support. There is a "golden hour" for response to a hazardous or WMD incident. In order to save the most lives, responders must be on scene within about an hour. In most cases, this is difficult to achieve unless the soldiers are there when the incident occurs. For a large event like the Salt Lake City Olympics, technical escort soldiers, reconnaissance soldiers and decontamination soldiers can be prepositioned. If needed, they can be immediately deployed to the incident site and provide emergency HAZMAT and decontamination services under the control of the local Incident Commander. At most hazardous materials incident sites, the most

critical resource is trained, qualified, personnel to work in the hot zone. Nationally certified chemical soldiers can provide that manpower. In addition, enabling soldiers to be nationally certified, we provide them with a usable skill beyond military service. This provides an incentive for Army Reserve and National Guard recruiters to get soldiers for chemical units, which are normally hard to fill.

**RECOMMENDATIONS**

For the Chemical Branch to meet the DoD Military Strategy and be able to provide soldiers and units to support in a domestic response mission within the United States, several changes must be made to doctrine, organizations, training and equipment. The personnel accessed into the branch and the facilities used to train them are of high quality and require no changes.

Old MOPP Level

- Ready
- 0
- 1
- 2
- 3
- 4

New MOPP Level

- Ready
- D0
- D1
- D2
- D3
- C4

Civilian Protective Level

- D
- D
- D
- D
- D
- C

TABLE 3 RECOMMENDED NEW MOPP LEVEL DESIGNATIONS



Doctrinally, in NBC Protection, a minor change in the title of each MOPP level is needed to help chemical soldiers understand the relation of MOPP to civilian protection levels. As the change primarily impacts the chemical soldier, the change can be gradually made as new charts and publications are designed and printed.

In order to meet DoD guidance, the Chemical Branch should provide necessary national level certifications to soldiers completing their training. As a minimum, the following should be implemented:

Skill Level	54B1O	54B3O (BNCOC)	54B4O (ANCOC)	74A Officers	Reconnaissance Soldiers	BIDS Soldiers
Technical Training	HAZWOPER	HAZMAT Tech	HAZMAT Spec	HAZMAT Spec	HAZMAT Tech	HAZWOPER
Environmental Sampling		Yes	Yes	Yes	Yes	Yes
Incident Command			Yes	Yes		

TABLE 4 RECOMMENDED NATIONAL CERTIFICATIONS

This provides the entry level 54B the skills necessary to work on a site under the supervision of his/her platoon sergeant and leader. Squad leaders will have the military training to supervise their soldiers and the emergency response skills to remedy problems that arise. Platoon sergeants and leaders provide the Incident Command and specialist knowledge. Biological detection trained soldiers need a HAZWOPER certification as a minimum and the environmental sampling certification to allow for nationally recognized legal samples. Finally, reconnaissance soldiers all need the technician certification because they will go into the hot zone and civilian incident commanders need that certification to allow them in.

Chemical units themselves need not change, but their mission should. The mission of chemical decontamination and reconnaissance companies needs to change to include consequence management operations. Current chemical units do not have a doctrinal consequence management mission. To enable them to legitimately conduct the consequence management mission, chemical decontamination units must have their doctrinal mission statement changed to include consequence management. Chemical reconnaissance companies are the same. This is admittedly an expensive proposition. By adding the mission, funding must be expended to change their Mission Training Plans to include the additional tasks.

On each installation and in each federal region, chemical companies should be assigned the additional mission of consequence management. Federal installations must be prepared to conduct consequence management, so any resident chemical companies can be assigned this

mission. This helps to minimize the additional assistance that the installation needs from the local community. To support response in the federal regions, Army Reserve chemical companies can be assigned to provide consequence management assistance to federal facilities. This way, a pool of trained and ready units will be available to call on to be prepositioned for special events like the Olympics.

As noted above, much equipment used by chemical soldiers need not change. To add a domestic response capability to our chemical units, however, we must add certain items of equipment. The US Army Reserve Command did this and provided civilian style equipment paid for by DoD to reserve reconnaissance and decontamination companies. Doctrine associated with the use of equipment for homeland defense was approved by the U.S. Army Chemical School. Equipment sets like these, held at the post/installation level or even authorized by TDA for chemical companies, provides the additional capability necessary for units to work in the United States.

## **CONCLUSION**

This paper has shown that it is no longer acceptable for the Chemical Corps or the Army to focus solely on overseas threats. Today's Army must be able to respond both in the United States and overseas, so the Chemical Corps must be able to also. Support to homeland security should be added to the Chemical Corps mission list. Acknowledging the mission and adjusting training to encompass it will enhance the Chemical Corps usefulness to the Army and the nation. All must realize that today's chemical soldier is capable of providing the necessary support to either consequence management or to combat operations. We owe it to them and the nation to enable them to work in the United States.

As these changes are made, other ideas will surface and chemical soldiers will learn to work in both environments – military and civilian. These ideas are merely a starting point for the transformation of the chemical branch to adapt itself to respond and operate both in the United States and overseas.

WORD COUNT = 7,329



## ENDNOTES

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<sup>2</sup> Ibid.

<sup>3</sup> War Department General Order 139 (Washington D. C.: U. S. War Department, 1 November 1917).

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<sup>5</sup> War Department Bulletin 25, (Washington D. C.: U. S. War Department, 9 June 1920)

<sup>6</sup> War Department General Order 54, (Washington D. C.: U. S. War Department, 28 August 1920)

<sup>7</sup> The Chemical Warfare Service in World War II, A Report of Accomplishments , (New York: Reinhold Publishing Corporation, 1947), page 102.

<sup>8</sup> Ibid., 82.

<sup>9</sup> Ibid., 102-107.

<sup>10</sup> Ibid., 62.

<sup>11</sup> Chemical Corps School, Organization and Functions of the Chemical Corps(Fort McClellan, AL: Chemical Corps School, September 1956).

<sup>12</sup> Colonel Samuel Earl Mims, Survey: Perceptions About the Army Chemical Corps Strategy Research Project, (Carlisle Barracks: US Army War College, 15 April 1992).

<sup>13</sup> "U.S. Army Technical Escort Unit"; available at <http://teu.sbccom.army.mil/missions.htm> accessed on 23 March 03.

<sup>14</sup> Albert Mauroni, Chemical–Biological Defense U.S. Military Policies and Decisions in the Gulf War (Westport, CT: Praeger, 1998), 188.

<sup>15</sup> Ibid., 129.

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<sup>18</sup> William J. Clinton, U.S. Policy on Counterterrorism. Presidential Decision Directive 39 (Washington, D.C.: The White House, 21 June 1995), 8.

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<sup>20</sup> "Weapons of Mass Destruction National Guard Fact Sheet," available at [http://www.ngb.army.mil/downloads/fact\\_sheets/wmd.asp](http://www.ngb.army.mil/downloads/fact_sheets/wmd.asp); Internet; accessed 30 January 2003.

<sup>21</sup> Federal Emergency Management Agency (FEMA), Federal Response Plan, available at <http://www.fema.gov/rrr/frp/frpfull.pdf>. Accessed 15 October 2002, ix- xi.

<sup>22</sup> Donald H. Rumsfeld, Quadrennial Defense Review (Washington, D.C.: Department of Defense, 30 Sept 2001), 2.

<sup>23</sup> *Ibid.*, 18.

<sup>24</sup> Donald H. Rumsfeld, National Military Strategy, draft (Washington, D.C.: Department of Defense, 19 Sept 2002).

<sup>25</sup> George W. Bush, National Strategy to Combat Weapons of Mass Destruction (Washington, D.C.: The White House, December 2002).

<sup>26</sup> Rumsfeld, National Military Strategy, 4.

<sup>27</sup> *Ibid.*, 15.

<sup>28</sup> *Ibid.*

<sup>29</sup> *Ibid.*, 21.

<sup>30</sup> Paul Schott Stevens, "U.S. Armed Forces and Homeland Defense The Legal Framework" (Carlisle Barracks: Center for Strategic and International Studies, Oct 2001), 23-26.

<sup>31</sup> *Ibid.*, 25.

<sup>32</sup> *Ibid.*, 26-27.

<sup>33</sup> FEMA, The Robert T. Stafford Disaster Relief And Emergency Assistance Act, As Amended, 42 U.S.C. 5121, et seq., available at <http://www.fema.gov/library/stafact.shtml>; Internet; accessed 13 January 2003.

<sup>34</sup> FM 100-22, Installation Management, available at [http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-22/fm100\\_9.htm](http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-22/fm100_9.htm); Internet; accessed 9 January 2003, Chapter 6, page 3.

<sup>35</sup> FM 3-5, NBC Decontamination, (Washington, D.C.: Department of the Army, 28 July 2000), 1-4 to 1-6.

<sup>36</sup> FM 3-101, Chemical Staffs and Units, (Washington, D.C.: Department of the Army, 19 November 1993), Chapter 1.

<sup>37</sup> "Military Decontamination," Domestic Response Casualty Decontamination Training Support Package (Atlanta, GA: US Army Reserve Command, Version 1.4.1, 2000), slide 4.

<sup>38</sup> "Domestic Decontamination," Domestic Response Casualty Decontamination Training Support Package (Atlanta, GA: US Army Reserve Command, Version 1.4.1, 2000), slide 9.

<sup>39</sup> FM 3-11.21, MTTP for NBC Aspects of Consequence Management, Available at <http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/3-11.21/toc.htm>; Internet. Accessed 1 April 2003, Appendix C.

<sup>40</sup> FM 3-101, Chemical Staffs and Units, (Washington, D.C.: Department of the Army, 19 November 1993), Chapter 1.

<sup>41</sup> BG Patricia Nilo, "State of the Chemical Corps," World Wide Chemical Conference, 6-13 Sept 2002, downloaded 15 Dec 2002, slide 16.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

<sup>47</sup> "Chemical Unit Locations," available at <http://www.wood.army.mil/cmdoc/Restricted/Units%20and%20TOE%20Summary%20Books/Unit%20Location%20Slides%20JUL%2000%20.ppt>; Internet; accessed 30 March 2003.

<sup>48</sup> Ibid.

<sup>49</sup> "U.S. Army Soldier and Biological Chemical Command," available at <http://www.sbccom.army.mil/about/sbccom.htm>; Internet; accessed 20 January 2003.

<sup>50</sup> "Fact Sheet Overview of the Homeland Defense Program," available at [http://hld.sbccom.army.mil/ip/fs/hld\\_overview.htm](http://hld.sbccom.army.mil/ip/fs/hld_overview.htm); Internet; accessed 20 January 2003.

<sup>51</sup> "Deputy Commanding General for Homeland Operations," available at [http://www.sbccom.army.mil/about/STAFFDIR/PDFS/dcg\\_homeland.pdf](http://www.sbccom.army.mil/about/STAFFDIR/PDFS/dcg_homeland.pdf); Internet; accessed 20 January 2003.

<sup>52</sup> Program of Instruction (POI), 54B10 Reclassification TATS Course (Fort Leonard Wood, MO: US Army Chemical School, 15 June 1999).

<sup>53</sup> POI, Chemical Operations Specialists BNCOC (Fort Leonard Wood, MO: US Army Chemical School, 1 May 1999).

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<sup>55</sup> *Ibid.*

<sup>56</sup> Teamsters Safety and Health Facts, "Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120", Available from <http://www.teamster.org/sh/FactSheets/hazwoper.pdf>; Internet; Accessed 27 January 2003.

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<sup>58</sup> "Respirator Decision Logic, Part 1," NIOSH GUIDE TO INDUSTRIAL RESPIRATORY PROTECTION (Washington D.C: NIOSH, September 1987), Table 1, page 13, Appendix E.

<sup>59</sup> Mr. Wayne Davis, SBCCOM, Interview by author, 11 March 2003, Aberdeen Proving Ground.

<sup>60</sup> "Respiratory Products for Emergency Civilian Use Against Chemical, Biological and Radiological Agents," available at [http://www.3m.com/market/safety/ohes2/html/civilian\\_use.html](http://www.3m.com/market/safety/ohes2/html/civilian_use.html); Internet; accessed 30 March 2003.

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<sup>62</sup> "PA Active Guard/Reserve Announcement AGR 4-2003," available at [http://sites.state.pa.us/PA\\_Exec/Military\\_Affairs/hro/4-2003.doc](http://sites.state.pa.us/PA_Exec/Military_Affairs/hro/4-2003.doc); Internet; accessed 30 March 2003.

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