

USAWC STRATEGY RESEARCH PROJECT

THE DEPARTMENT OF DEFENSE COMMITMENT TO THE  
DESTRUCTION AND REMEDIATION OF NON-STOCKPILE  
CHEMICAL MATERIEL: CAN PRESENT POLICY AND  
APPROACHES EFFECTIVELY MEET THE CHALLENGES TO  
ELIMINATE THE THREAT TO THE PUBLIC?

Lieutenant Colonel James P. Fletcher  
United States Army

Colonel Robert J. Dalessandro  
Project Adviser

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U.S. Army War College  
CARLISLE BARRACKS, PENNSYLVANIA 17013

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## ABSTRACT

AUTHOR: Lieutenant Colonel James P. Fletcher

TITLE: The Department of Defense Commitment to the Destruction and Remediation of Non-Stockpile Chemical Materiel: Can Present Policy and Approaches Effectively Meet the Challenges to Eliminate the Threat to the Public?

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The intent of this project is to examine the current approach for the destruction of Recovered Chemical Warfare Material. Current projections are that 42 states are impacted by the possible presence of RCWM. Projections to remove and destroy RCWM range from \$8.9 billion to more than \$20 billion. RCWM exists on both present and former defense sites. Many of the sites are no longer under DOD control and the presence of RCWM presents a threat to the public. Presently no organization has the responsibility to coordinate, budget and plan for a comprehensive approach for RCWM. This paper addresses the issues related to RCWM removal and destruction and recommends an DOD approach to develop a comprehensive solution.



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## THE DEPARTMENT OF DEFENSE COMMITMENT TO THE DESTRUCTION AND REMEDIATION OF NON-STOCKPILE CHEMICAL MATERIEL: CAN PRESENT POLICY AND APPROACHES EFFECTIVELY MEET THE CHALLENGES TO ELIMINATE THE THREAT TO THE PUBLIC?

The National Security Strategy of the United States of America (NSS) states that as part of a comprehensive strategy to combat Weapons of Mass Destruction (WMD) the U.S. must develop "... strengthened nonproliferation efforts to prevent rogue states and terrorists from acquiring the materials, technologies, and expertise necessary for weapons of mass destruction."<sup>1</sup> The NSS specifically addresses the need to enhance arms control and threat reduction capabilities as components of the strategy.<sup>2</sup> The National Strategy to Combat Weapons of Mass Destruction explicitly addresses the need to pursue nonproliferation through support of the Organization for the Prohibition of Chemical Weapons<sup>3</sup>, threat reduction cooperation, and the need to ensure compliance of international treaties.<sup>4</sup>

A key enabler to the control of WMD is the destruction of chemical warfare materiel. Throughout the history of the U.S. chemical warfare program the U.S. conducted significant research, development, production, training and fielding of Chemical Warfare Materials (CWM) at many locations within the U.S. These activities have resulted in numerous sites that require remediation, yet there is no comprehensive approach to resolving the Recovered Chemical Warfare Material (RCWM) issue. Many different organizations are working different aspects of the issue but no policy exists to pursue a structured approach. Lack of centralized planning and prioritization within DOD is an impediment to a comprehensive strategy to resolve the issue. This paper reviews and critiques the policies that specifically address the U. S. approach to the destruction of non-stockpile chemical warfare munitions and materiel in support of international treaties and Homeland Defense in the U.S.

### **BACKGROUND**

U.S. entry into WWI sparked interest in chemical weapons. During WWI the U.S. developed a significant capability to design, produce and stockpile chemical warfare materiel. The country continued to expand its capability and effectiveness of these weapons until 1968 when President Nixon issued an executive order to unilaterally stop the production of weapons in the U.S. By that time the U.S. had produced a staggering array of agents, munition types, and delivery systems in large stockpiles.<sup>5</sup> Since 1968 the U.S. has sought to eliminate both its own Chemical Warfare Materiel (CWM) and that of other states.

The presence of CWM in the U.S. became an intense topic during the 1970s and 80s. Congress's perception that DOD was not adequately addressing the destruction of this materiel

resulted in a number of legislative attempts to address the issue. Public Law 99-145 established the Chemical Demilitarization Program in 1985. PL 99-145 directed the Secretary of Defense to safely destroy the U.S. stockpile of chemical agents and munitions that existed on 8 OCT 1985 when the law was enacted.<sup>6</sup> In 1992 DA established the U.S. Army Chemical Material Destruction Agency (USACMA) with the mission of executing the chemical materiel destruction program. USACMA was charged to provide DOD centralized management for the disposal of the U.S. stockpile of chemical warfare agents and munitions, and Non-stockpile Chemical Materiel (NSCM). Two program managers were established to oversee destruction efforts. The Program Manager for Chemical Stockpile Disposal had the responsibility for destroying the unitary chemical stockpile as declared in 1985. The Program Manager for Non-stockpile Chemical Materiel was given responsibility for three major categories: chemical weapons emergency response support, disposal of NSCM (binary weapons, former production facilities, chemical samples, and miscellaneous equipment), and support of international treaties (the most important of which is the Chemical Weapons Convention).<sup>7</sup>

The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (know widely as the Chemical Weapons Convention or CWC) was ratified by the Senate on 24 April 1997.<sup>8</sup> The CWC includes a number of milestones for the elimination of each category of materiel and since it has the force of law, added significant pressure for DoD and DA to expeditiously accomplish destruction of CWM. An interagency working group from Department of State, Department of Defense and several organizations that are now part of the Department of Homeland Security developed policy and implementation plans to accomplish destruction requirements.<sup>9</sup>

In support of its' national interests, the U.S. is pursuing three broad ends. The first is the destruction of stockpiled weapons and materiel in the U.S. and abroad. This category includes unitary weapons that were placed in weapons inventories of the military. Additionally, containerized supplies of useable weapons grade material are included in this category. Stockpiled CWM is the most readily usable as terrorist weapons because they are already in a useable configuration and would require little technical skill to use in a strike.

The second is the elimination of former production facilities in the U.S. and abroad. The intent is to simply destroy the capability to produce weaponized CWM. This prohibits the spread of the problem and is important for counter-proliferation efforts.

The third end is the elimination of RCWM. This is the broadest set of problems, encompassing a variety of items including unexploded munitions fired in training, chemical samples used in research and development facilities, and live agent training aids used through

out the U.S. The terrorist attacks on 9 September 2001 combined with administration and congressional concern with the possible use of WMD by terrorists significantly increased the desire to protect the American public by eliminating the presence of chemical materiel here and abroad.<sup>10</sup> Additionally, the desire to enable first responders access to the technology and equipment to effectively respond to a chemical incident significantly changed. Significant effort went into securing and accelerating the destruction of CWM.<sup>11</sup> While significant effort and plans have addressed the stockpile portion of the elimination the long term future challenge revolves around the non-stockpile chemical materiel (NSCM) elimination. Congress directed the DOD to build a comprehensive list of the efforts required to quantify the issues surrounding RCWM in 1993. Specifically Congress directed the Product Manager for Non-Stockpile Chemical Materiel (PM NSCM) to identify Chemical Weapons Convention (CWC) required work; critical environmental clean-up requirements; and sites that might contain RCWM. PM NSCM efforts to do so resulted in the Survey and Analysis Report.<sup>12</sup> PM NSCM also developed cost estimates to complete all of this work. Due to the high cost of this effort, Congress funded only the CWC required work and deferred funding for the remediation of the RCWM.

#### **NON-STOCKPILE CHEMICAL MATERIEL (NSCM) SCOPE**

The scope of the RCWM problem is not fully quantified in the U.S.<sup>13</sup> The initial attempt to do so indicates that 42 States and greater than 1200 sites in 153 locations are affected by the presence of chemical weapons and chemical warfare materiel (CWM) in the U.S. The majority of these sites consist of temporary installations that are no longer under government control and the presence of CWM on those sites presents a potential risk to the public. Of these locations 53 are current DOD installations under government control. Ownership of these locations includes all four of the services and the DLA. The remaining 100 locations are Formerly Used Defense Sites (FUDS) that are not under government control. FUDS with suspected CWM are located in 33 states and territories. FUDS are properties that were previously owned or leased to or otherwise possessed by the United States under the Secretary of Defense. These sites may be owned by corporations, individuals, or the property of state and local governments. New business and even schools have been located on many of the sites.

The cost of remediation of these locations is estimated to be between \$11 billion to \$25 billion or more. The varied costs are a result of an unquantified scope of work and detailed assessments of the sites themselves.

## NSCM DEFINED

Non-stockpile chemical materiel (NSCM) contains a diverse array of CWM items produced as a result of the U.S. testing, production, training and destruction programs. Non-stockpile refers to the fact that this materiel was not “fielded” to the military as part of the unitary weapons stockpile. NSCM encompasses a much broader array of items than munitions themselves. This broad array of items combined with the fact that materiel is located on property that may or may not be under government control drives the complexity of planning for the removal and destruction of the materiel.

NSCM consists of five broad categories of materiel: <sup>14</sup>

- Binary chemical weapons. These weapons were designed to be safer to store, transport and use. They became toxic only after firing or launch.
- Former production facilities. The sites that produced agents, munitions, or critical components of each.
- Miscellaneous CWM. CWM items that are not part of a munition.
- Recovered CWM. Items of all types discovered throughout the country
- Buried chemical warfare materiel.

The destruction of binary weapons and Former Production Facilities are well underway. The FPFs are under government control and all but two have been completely destroyed. The Binary weapons are located at Pine Bluff Arsenal and an approved program exists to complete their destruction by FY 2007.

The issue of recovered and buried CWM is essentially the portion of the NSCM issue that has not been fully addressed. Suspect CWM is discovered during DOD restoration and remediation activities or other excavation activities at active installations, Base Realignment and Closure sites, and formerly used defense sites. Recovered CWM consists of items recovered from ranges, found on installations during construction or repair activities, or turned in by the public. Recovered items consist of the following types: Chemical Agent Identification Sets (CAIS), non-explosively configured chemical munitions, explosively configured chemical munitions, and bulk chemical storage containers. The CAIS contain small amounts of chemical agents or industrial chemicals that simulate chemical agents. Several different varieties of CAIS were developed to train military forces on the proper procedures for identifying chemical agents.

Recovered chemical munitions are divided into the following three categories:

- Non-explosively configured chemical munitions . These are munitions designed for use as spray systems or for the addition of explosive material at the time of deployment.

Such items were routinely shipped without bursters or fuses. An example of this category is a World War II era mustard bomb recovered from a burial site.

- Explosively configured chemical munitions. These are munitions with at least part of the explosive material sealed inside and an external fuse. An example of this category is a fused 155mm projectile recovered from a firing range.

#### KEY ORGANIZATIONS

The U.S. has committed significant effort using several elements of National Power to eliminate CWM. DOD is the executive agent for all destruction efforts in the U.S. as well as participating in arms control and providing military assistance for civil authorities for technology/equipment and emergency response.

Section 1521, title 50, United States Code, "Destruction of Existing Stockpile of Lethal Chemical Agents and Munitions," (Public Law 99-145) designates the Army as the lead agent for the complete destruction of the chemical weapons stockpile and related non-stockpile materiel. However, numerous U.S. federal, state, and international organizations are responsible for some part of the RCWM problem. Some, including the Department of Health and Human Services and the National Research Council, have oversight and advisory roles in the execution of the NSCMP mission. Other federal agencies involved include the Department of Energy, the Environmental Protection Agency, the Federal Emergency Management Agency, the Defense Threat Reduction Agency, and the DOD Explosives Safety Board. Key organizations include:

- The Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs) provides oversight for demilitarization programs for the Under Secretary of Defense (AT&L) and is charged with developing policies, providing advice, and making recommendations to the USD(A&TL) and the Secretary and Deputy Secretary of Defense. Additionally, he is responsible for the issuance of guidance in the areas of Defense atomic energy; chemical and biological defense; chemical and biological medical defense; smoke and obscurants; safety, surety, and security of the current chemical weapons stockpile; destruction of the U.S. chemical weapons; CB arms control activities; and plans and programs.
- The Assistant Secretary of the Army (AT&L) is the acquisition executive that oversees the programmatic portions of the demilitarization program. Overall responsible for the cost, performance and schedule aspects of the Chemical

Material Agency (CMA) and subordinate Program Manager for the Elimination of Chemical Weapons (PM ECW).

- The Assistant Secretary of the Army for Installations and Environment (ASA(I&E)) Environmental, Safety, and Occupational Health (ASA(I&E) ESOH) is responsible for environmental cleanup, and manages cleanup operations and funding for all formerly used defense sites. ASA(I&E) ESOH has program management responsibility for the U.S. Army's restoration program on active U.S. Army installations, but has no authority over other component installations. ASA(I&E) ESOH, in conjunction with Major Army Commands and Installation Commanders, conducts the activity planning, programming, and use of Defense Environmental Restoration Account funds. ASA(I&E) ESOH supports the Installation Commanders in managing the remediation of suspected CWM burial sites. ASA(I&E) ESOH defines the cleanup standards for chemical-agent-contaminated groundwater and soil on military installations, which must also meet EPA requirements. The ASA(I&E) ESOH provides alerts regarding proposed federal and state regulations affecting CMA mission areas. Additionally, he has overall responsibility for the Army's BRAC Program, and overall policy and guidance authority concerning all Army BRAC matters with the exception of Army environmental programs
- The Director, Chemical Materials Agency is the principal manager responsible for preparing and updating the overall planning and budgeting details necessary to execute the operation of destroying the chemical weapons. CMA presently has a dual reporting chain. For program acquisition related program issues, the Director reports to Assistant Secretary of the Army (Acquisition, Logistics, and Technology), who, in turn, reports to the Under Secretary of Defense (AT&L). For disposal facility operations and emergency preparedness related issues, the Director reports to the Commanding General, Army Materiel Command.
- Program Manager for the Elimination of Chemical Weapons (PM ECW) has the broad responsibility to secure and destroy CWM in the U.S. This program is responsible for the development of technology to execute this mission in addition to providing emergency response for RCWM. PM ECW is the most costly program administered by DA. Total program costs are estimated to approach \$25 billion and yearly outlays are exceeding \$2.2 billion a year. PM ECW has secured all stockpile weapons at eight locations in the U.S. and has eliminated 27.6% of the stockpile. <sup>15</sup>

The Program Manager for the Elimination of Chemical Weapons reports to the Director, Chemical Materials Agency.

- Product Manager for Non-Stockpile Chemical Materiel (PM NSCMP) is responsible for destroying all non-stockpile chemical materiel or chemical warfare materiel that is not part of the unitary stockpile. The NSCMP develops, fields, and operates the systems necessary to complete onsite destruction of RCWM in support of emergency responses or deliberate remediation activities. The Product Manager for Non-Stockpile Chemical Materiel reports to the Program Manager for the Elimination of Chemical Weapons.
- U.S. Army Corps of Engineers (USACE) is the responsible for active installation restoration. Installations execute recovery and clean-up operations in accordance with the guidance and procedures for the base with the Installation Commander as the lead. USACE is a review authority for preliminary assessment/site investigation and other NSCMP remediation documentation. The U.S. Army Engineering and Support Center, Huntsville, provides the following services:
  - Engineering support (design, construction, and equipment acquisition and installation) for the systems contracts, equipment acquisition contracts, and engineering service support contracts
  - Procurement and legal support for design and systems integration contracts as well as equipment acquisition contracts.

The most significant relationships for remediation of buried CWM sites rest among PMNSCM and the USACE. The responsible USACE District is supported by the U.S. Army Engineering and Support Center, Huntsville, for site inspection, planning, and recovery of CWM; by NSCMP for storage, transportation, and treatment of CWM; and by the USACE geographical hazardous, toxic, and radiological waste Design District for hazardous waste cleanup.

For AMC installations with suspected CWM burial sites, the Installation Commander has total site remediation responsibility, to include planning for remediation and obtaining the necessary funding and environmental permits to accomplish the effort. For AMC continental U.S. installations where CWM stockpile storage and non-stockpile sites exist, an agreement between the Commander, AMC, and CMA delineates responsibilities for safety, security, environment, public affairs, and CMA direct support to the Installation Commanders. Detailed site and/or project-specific agreements at each respective non-stockpile site must support the higher headquarters' agreement. US Army Environmental Center serves as the program manager for the remediation activities at all closure sites.<sup>16</sup>

## CHALLENGES

RCWM remediation activities at FUDS, BRAC and active military bases require a well-planned, proactive approach to ensure cost-effective operations that preserve public safety. Much of the work with RCWM is a reactive approach to “found” chemical weapons such as those at the Spring Valley Site in the District of Columbia.<sup>17</sup> Planning for these efforts involves multiple organizations, which require extensive negotiation to identify roles and responsibilities. Though plausible for small recoveries, this management approach is not appropriate for the remediation of larger scale RCWM sites.

At the present time, remediation responsibilities at known or suspected RCWM sites are spread across a number of organizations to include the Assistant Secretary of the Army, Installations and Environment (ASA(I&E)), the Assistant Secretary of the Army, Acquisition, Logistics and Training (ASA(ALT)), the U.S Army Corps of Engineers (USACE), the U.S. Army Technical Escort Unit (USATEU), Installation Commanders, and the PM NSCM. No single organization is responsible for coordinating the activities between these organizations to effectively address the RCWM mission. The multiple planning and budgeting chains make a comprehensive approach to addressing the RCWM issue problematic. The lack of a single point entity tasked with full mission responsibility removes responsibility, hurts credibility when dealing with state/public groups, and creates inefficiencies throughout the process .

Responsibility for CWM burial site remediation and the disposal of recovered CWM currently in storage was divided by changes in the management and reporting structure of the chemical demilitarization effort. The Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) has responsibility for burial site remediation. Responsibility for the disposal of recovered CWM is assigned to CMA, who has delegated the mission to PMNSCM. Consequently, the disposal of recovered CWM requires detailed planning and coordination. Emergency response activities are limited to assessing the situation and isolating or removing any immediate hazards to the public and the environment. Offsite transport requires a transportation plan developed by PMNSCM and approved by the Department of Health and Human Services. If emergency destruction of recovered CWM is required, an emergency destruction plan must be prepared by PMNSCM in coordination with the U.S. Army Research, Development and Engineering Command. Upon notification of the state regulators (and, as required, other appropriate regulators) and review by the Department of Health and Human Services, the Installation Commander (for active sites) or the U.S. Army Corps of Engineers District Commander (for formerly used defense sites) may authorize emergency destruction. Prior to emergency destruction, if time permits, the Army Safety Office and the Deputy Assistant

Secretary of the Army (Environment, Safety, and Occupational Health) must be notified. In accordance with public law, Congress must be notified of the destruction within 48 hours.<sup>18</sup>

For planned site investigation and assessment activities, Major Army Command–approved site-specific safety and health plans are required. Remediation projects require safety submissions approved by the Army Safety Office. Typically, emergency exercises with the U.S. Army and local agencies involved in or supporting these activities must be successfully conducted prior to starting any actual work. Sampling plans to determine the chemical agent contamination of surrounding soil, air, and water are required for both emergency response and planned activities. These requirements, along with federal and state environmental requirements, govern the response to the discovery of (buried) non-stockpile chemical materiel. The speed with which an emergency response or planned activity can be initiated and accomplished depends on the level of cooperation realized between all the organizations involved and the promptness with which they each accomplish their assigned responsibilities.

When suspected CWM is uncovered; assessment and characterization of the suspect munition is conducted by the U.S. Army Technical Escort Unit operating assessment system for PM NSCMP. When a recovered munition is characterized as CWM, NSCMP evaluates the findings and performs the proper method for treating and disposing of the munition in a safe, environmentally sound, and cost effective manner. Additionally, the NSCMP prepares and coordinates transportation plans, interim holding facility plans, and destruction plans. Once approvals are received, the destruction of the recovered CWM is normally conducted onsite, especially if recovered CWM is deemed too hazardous to transport.<sup>19</sup>

#### **ISSUES PREVENTING COMPREHENSIVE SOLUTIONS**

A comprehensive approach to resolving the problem is not executable under the present DoD approach to the issue. Detailed planning, prioritization and budgeting is hampered by a number of disconnects.

Defining the problem would require a significant scoping study that includes DOD installations (all components), FUDS, BRAC and other sites. No organization has authority over all types of locations and associated planning, programming and budgeting activities. This lack of common direction severely impedes scoping studies that would support a prioritization effort across DOD.

After a comprehensive site analysis is completed the single largest cost driver to estimate the true scope of any remediation project is the anticipated end use of the property. End use is not dictated by DOD but must be coordinated with and approved by local and state authorities.

The identification of end use would be facilitated by proposing and defining a common standard or reference point. For example, remediation efforts could be focused on returning sites to a state suitable for "light industrial usage" which is usually designed to accommodate wholesale business activities, bio-technical and biomedical activities, integrated office and high tech computer hardware and software design and assembly, and industrial operations whose external, physical effects are restricted to the area of the district and in no manner affect in a detrimental way any of the surrounding areas. This standard could be developed at the EPA region, state or even a national level and apply to remediation sites, where feasible, within that area.

Based on the scope or complexity of the issues at certain burial sites, adherence to a common standard may not be feasible. Some sites may require constant monitoring or a higher standard of usage based on public requests. These exceptions to the usage standard would need to be addressed on case-to-case basis. The selection and maintenance of land use controls (LUCs) is a significant issue at cleanup sites around the country. Regulators increasingly want permanent remedies that impose no restrictions on use, and if restrictions remain, questions may remain as to how to best coordinate LUCs implementation and maintenance.<sup>20</sup>

Permanent remedies (generally preferred by local authorities) verses some variety of land use restrictions (proposed by various agencies based on ease of execution and cost) may change the cost of remediation a site by several orders of magnitude. LUCs are an especially sensitive issue for property being transferred from the Army. LUCs can impact property values and flexibility for various uses, many communities want remedies that require no restrictions on land use. The Army and its regulators have yet to develop a uniform process for managing LUCs responsibilities at cleanup sites within their jurisdiction.

Coordination with local governments is critical to addressing any specific site. A key factor in the completion of the remediation efforts of FUDS, BRAC, and active installations is determining post-remediation land use. This will require consensus on an acceptable standard from all stakeholders involved with a current site. Gaining this acceptance will involve coordination with state governors, local governments, EPA regions, state environmental regulators, local citizen groups, and other special interest groups. With all the different stakeholders, negotiating separate end use standards for each remediation location would be a time consuming process. This is particularly true when no standard exists and the DOD has no central authority to negotiate.

A review of the Army's complex structure to execute the services cleanup activities illustrates the difficulty for DOD. Planning and execution of efforts continues to be managed by program areas. Each program area has its own unique budgeting requirements and management chains. To administer these program areas five program managers have been established. The US Army Environmental Center (USAEC) is the PM responsible for active installation restoration, which is funded through the Environmental Restoration, Army (ER,A) account. The BRAC Division of the ACSIM office is the PM responsible for executing military construction (MILCON) funds for BRAC-related cleanup. The US Army Corps of Engineers is the PM responsible for the execution of the formerly used defense sites (FUDS) program using funds from the Environmental Restoration, FUDS (ER, FUDS) account. The National Guard Bureau (NGB) is the PM responsible for cleanup at National Guard facilities using both ER,A and OMNG funding. The Installation Management Agency (IMA) is the PM responsible for executing compliance-related cleanup, which is funded through the Operations and Maintenance, Army (OMA) account, to include funds expended overseas. During requirements development, requirements pass from installations through the IMA via the environmental program requirements (EPR) reporting process, but validation of requirements occurs at the ACSIM level. In addition, the IMA is the PM responsible for ensuring that mission or Army working capital funds (ACWF) used for cleanup are executed in accordance with the objectives and targets established herein.<sup>21</sup>

A recent inspector general report sums up the problem. "The lack of sustained leadership at both the upper levels of oversight and at the program manager level confuse the decision-making authority and obscures accountability. The absence of an overarching comprehensive strategy has left the program without a clear, top-level roadmap to closely guide and integrate all activities and monitor program performance. Without key elements such as effective leadership, streamlined organization structure, and important management tools including strategic planning DOD and the Army have no assurances that they will be able to meet the program's principle goal."<sup>22</sup> While this comment is specifically addressed at the CMA and PM ECW due to the nature of the report, these comments can easily describe the larger picture within DOD.

The report continues "It is recommended that the ASA (I&E) and ASA (ALT) designate and establish a single office responsible for oversight of all activities involved in the prioritization and planning, estimating and completion of the remediation of suspected RCWM sites. This organization would serve as the coordinator and integrator of the many organizations and groups which are stakeholders in the completion of this program. This organization would

develop the strategic approach to addressing the problem, develop an overarching remediation schedule, work with the EPA and local communities to define an acceptable end use for the sites and execute agreed upon solutions<sup>23</sup>

Recent DOD reports investigate the department's failure to provide a comprehensive program to solve the RCWM problem. The finding that "The Product Manager for Non-Stockpile Chemical Materiel did not have information needed to prepare a reliable estimate of the cost and schedule to dispose of buried chemical warfare materiel. This condition occurred because the Under Secretary of Defense (AT&L) had not directed the DoD Components to identify, schedule, and fund the disposal of buried chemical warfare materiel from existing and former DoD installations. As a result, the Product Manager for Non-Stockpile Chemical Materiel was unable to fully satisfy the congressional direction to provide an actionable plan for disposal of all non-stockpile chemical warfare materiel. Also, without an actionable plan, the Under Secretary of Defense (AT&L) cannot inform the Congress and the public of the realistic costs and the planned schedule to dispose of buried chemical warfare materiel. Furthermore, the Product Manager cannot replace the \$8.9 billion contingent liability, which was prepared as a rough order magnitude estimate in Note 16 of the DOD financial statements, with a reliable and defensible estimate of the cost to dispose of the buried chemical warfare materiel."<sup>24</sup>

GAO Report No. NSIAD 97-18, "Chemical Weapons and Materiel: Key Factors Affecting Disposal Costs and Schedule," February 10, 1997, reported that the Non-Stockpile Chemical Materiel Product would need \$14.5 billion to dispose of all buried chemical warfare materiel, which was 95 percent of the total Non-Stockpile Program cost estimate of \$15.2 billion. According to a representative from the Non-Stockpile Product Office, discussions above the Department of the Army level resulted in excluding the disposal of buried chemical warfare materiel from the Demilitarization Program because costs were high. Accordingly, the February 2003, cost estimate for the Non-Stockpile Chemical Materiel Product included only \$1.586 billion to dispose of non-stockpile chemical warfare materiel declared under the Chemical Weapons Convention and to continue research, development, and testing of non-stockpile chemical warfare disposal technologies. To meet the congressional requirement to plan for the disposal of the buried munitions, the Non-Stockpile Chemical Materiel Product Manager estimated that the mission would cost an additional \$11.7 billion.<sup>25</sup>

The GAO noted that the Under Secretary of Defense (AT&L) had, so far failed to issue directions to the service component to develop and prioritize a schedule for remediation of all CWM burial sites.<sup>26</sup> While the Secretary of the Army has assigned responsibility for cleanup of FUDS sites covered on the DERA program to the USACE, they reported their efforts were is a

preliminary stage of determining the process. They were performing site surveys to determine the scope and magnitude of seven burial sites. This effort, still in its infancy compared to the 153 FUD sites, it does not include assessment for sites on active installations, BRAC or other service component locations.

#### **CONCLUSION:**

The U.S has taken significant steps to achieve the desired ends with reference to the elimination of CWM. While progress has been significant there exist several disconnects that will significantly hinder attainment of the desired ends.

The Non-Stockpile Chemical Materiel portion of the program, specifically RCWM and burial sites present many challenges that the current DOD approach does not address. PM NSCM develops technology and staffing to execute emergency response for discovered CWM. Crewed equipment exists to safely destroy all materiel likely to be found within the U.S. The final mission for the NSCM program is the destruction of RCWM.<sup>27</sup>

There is the risk that the public can inadvertently discover training material and unexploded ordnance that can and has resulted in injury. Since 9/11 concern has grown about the possibility that terrorists could obtain CWM from these sites. Due to the cost of remediation of this problem; \$8.9 billion in 1996 and by some estimates \$20 billion dollars today. DOD decided to accept risk by focusing on the stockpile portion of the elimination effort and address the RCWM issue in the future.<sup>28</sup> DOD while recently increasing scoping study efforts does not have a developed plan to address the RCWM problem. Additionally DOD has no central activity to organize or prioritize the effort. Public pressure has dramatically increased congressional interest in the DOD approach to the RCWM effort. GAO reported "...several changes in the organizational and structure of the program from 1997 through 1999, including some changes to implement legislative requirements, divided the management roles, responsibilities, and accountability among several different management levels with the DoD and the Army. As the program expanded beyond its original single purpose of destroying the stockpile to encompass a broader range of missions, to include compliance with the Chemical Weapons Convention, the organization and structure became increasingly complex".<sup>29</sup> The GAO reported that the complexity of this structure was leading to failures in the plan to eliminate CWM.

The challenges in the current strategy represent significant risks to the achievement of the desired ends. The decision to delay addressing the RCWM issue into the future in light of 9/11 is no longer suitable. Increasing awareness of the potential hazards of this materiel will continue to generate increasing congressional and public pressure to address the issue.

Elimination of CWM is a vital interest to the U.S. The significance is clearly articulated in both the National Security Strategy and the National Strategy to Combat Weapons of Mass Destruction. Both public and congressional pressures are building to quickly and effectively destroy CWM at home and abroad. Congressional interest in resolving the CWM issue is easily demonstrated by more than 30 years of legislating direction to the DOD for the destruction of this materiel. In fact, the Congress has provided direction to the DOD through legislation that forced the department to begin addressing the issue. The U.S. has achieved great strides in achieving its ends to eliminate these materials, but the issues have evolved since the original policy was put in place. The present state of the issues requires that the means must be adjusted to support the ways to achieve those ends. Without adjustment, the U.S. risks the failure to achieve its ends with the result that the public remains exposed to the risks of CWM. An uncoordinated approach simply will not resolve the problem and allows the costs of solving the issue to grow each year while doing little to eliminate the risk to the public.

**RECOMMENDATIONS:**

1. In order to comprehensively address the RCWM issue, DOD must develop the strategic vision and policy direction required to scope, prioritize, budget and execute a RCWM plan. DOD direction must require the various DOD components to schedule the quantification and remediation of the buried sites across all service components and agencies.
2. Once policy direction is achieved, DOD must appoint an executive agent that has the authority to coordinate, budget, negotiate with local governments and execute its strategy. This executive agent must be able to work across all the various component lines. PM ECW is the logical organization to serve as the DOD's executive agent. They already have responsibility for the stockpile and non-stockpile elimination. Additionally, PM ECW has the remediation responsibility for the stockpile storage facilities which serve as the largest known challenge. PM ECW, through the NSCMP has the institutional expertise and equipment to address the challenges presented by RCWM
3. The DOD executive agent must develop a destruction schedule that prioritizes the remediation of chemical warfare material burial sites. Such a schedule should be monitored by DOD as a means to ensure DoD Components plan and estimate costs for excavation, removal, destruction, and treatment procedures for each burial site.

Implementing these recommendations is critical to structuring an executable program to address the non-stockpile CWM issues. These recommendations are the key to logically addressing Congress's questions and the public concerns in a timely manner. Failure to implement a comprehensive solution leaves the risk of inadvertent exposure unmitigated. Program costs will continue to grow due to the increased urbanization of these sites and increasingly stringent cleanup goals demanded by local governments. Further failure to implement a DOD approach merely delays the inevitable demand from Congress that DOD resolve these issues.

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## ENDNOTES

<sup>1</sup> George W. Bush, *The National Security Strategy of the United States of America* (Washington, D.C.: The white house, September 2002), 14.

<sup>2</sup> Ibid., 16.

<sup>3</sup> George W. Bush, *National Strategy to Combat Weapons of Mass Destruction* (Washington, D.C.: The White House, December 2002), 8.

<sup>4</sup> Ibid, 4.

<sup>5</sup> Office of the Secretary of Defense, *Declaration of U.S. Inventories of Chemical Warfare Materials as of 15 December 1995* (Washington D.C.: The Pentagon, 1995), 4-15.

<sup>6</sup> Office of the Inspector General, *The Chemical Demilitarization Program: Increased Cost for Stockpile and Non-Stockpile Chemical Material Disposal Programs* (Washington, D.C.: DoD Office of the Inspector General, 4 September 2003), 4.

<sup>7</sup> Chemical Materials Agency Program Manager for the Elimination of Chemical Weapons *Chemical Materiel Implementation Plan* (Aberdeen, MD, August 2004), 6-11.

<sup>8</sup> Steven R. Bowman, *Issue Brief for Congress: Chemical Weapons Convention* (Washington, D.C.: Congressional Research Office, 7 January 2003), 1.

<sup>9</sup> Ibid, 5-11.

<sup>10</sup> U.S. Congress. House of Representatives. House Armed Services Committee, Subcommittee on Terrorism, Unconventional Threats and Capabilities. *Review of the Department of Defense program for destruction of the U.S. stockpile of lethal chemical warfare agents and munitions*. Comments of Chairman Jim Saxton, 1 April 2004, 1.

<sup>11</sup> Bowman, 3.

<sup>12</sup> U.S. Army Program Manager for Chemical Demilitarization. *Survey and Analysis Report, Second Edition*. (APG, MD, December 1996), i-v.

<sup>13</sup> Office of the Inspector General, ii.

<sup>14</sup> Product Manager for Non-Stockpile Chemical Materiel. *Guide to Non-stockpile Chemical Warfare Materiel* (APG MD, October 2003) , 2-4.

<sup>15</sup> U.S. Congress. House of Representatives. House Armed Services Committee, Subcommittee on Terrorism, Unconventional Threats and Capabilities. *Review of the Department of Defense program for destruction of the U.S. stockpile of lethal chemical warfare agents and munitions*. Testimony of Honorable Claude M. Bolton, Jr, Assistant Secretary of the Army Acquisition, Logistics, and Technology, 1 April 2004

<sup>16</sup> U.S Army Corps of Engineers, 9-15.

<sup>17</sup> Spring Valley is the site that the American University used to conduct chemical warfare experiments in support of U.S. efforts in support of WWI. The site was closed at the end of the war and the bunkers buried and essentially forgotten. The land predominately became residential housing property. Discovery of buried munitions and CWM sparked significant public criticism of DOD in controlling FUDs sites.

<sup>18</sup> Product Manager for Non-Stockpile Chemical Materiel. *Guide to Non-stockpile Chemical Warfare Materiel* (APG MD, October 2003), 15-20.

<sup>19</sup> U.S. Army Corps of Engineers. *Recovered Chemical Warfare Material Response (RCWM)* (Huntsville, AL January 2002) , 2-1 – 2-11.

<sup>20</sup> Army Environmental Command. *Army Environmental Cleanup Strategic Plan*. (APG, MD May 2003),.6.

<sup>21</sup> Ibid, 3-2.

<sup>22</sup> General Accounting Office. *CHEMICAL WEAPONS: Sustained Leadership Along with Key Strategic Management Tools Are Needed to Guide DOD's Destruction Program (GAO-03-1031)* (Washington, DC March 2003) , 18.

<sup>23</sup> Ibid, 22

<sup>24</sup> General Accounting Office, *The Chemical Demilitarization Program: Increased Costs for Stockpile and Non-Stockpile Chemical Materiel Disposal Programs (D-2003-128)* (Washington, DC September 2004) p. 19.

<sup>25</sup> Ibid, 13

<sup>26</sup> Ibid, 15.

<sup>27</sup> Chemical Materials Agency Program Manager for the Elimination of Chemical Weapons *Non-Stockpile Chemical Materiel Implementation Plan* (Aberdeen, MD, July 2004), 2-7.

<sup>28</sup> General Accounting Office, *Chemical Weapons: Destruction Schedule Delays and Cost Growth Continue to Challenge Management* (Washington D.C.: General Accounting Office, 1 April 2004), 12.

<sup>29</sup> Ibid, 3.

## BIBLIOGRAPHY

- Bowman, Steven R. *Chemical Weapons Convention: Issues for Congress*, Issue Brief for Congress, Washington, D.C.: U.S. Department of State, 7 January 2003
- Bush, George W. *The National Security Strategy of the United States of America*, Washington, D.C.: The White House, September 2002
- Bush, George W. *National Strategy to Combat Weapons of Mass Destruction*, Washington, D.C.: The White House, December 2002.
- U.S. Congress. House of Representatives. House Armed Services Committee, Subcommittee on Terrorism, Unconventional Threats and Capabilities. *Review of the Department of Defense program for destruction of the U.S. stockpile of lethal chemical warfare agents and munitions*. Comments of Chairman Jim Saxton, 1 April 2004.
- U.S. Congress. House of Representatives. House Armed Services Committee, Subcommittee on Terrorism, Unconventional Threats and Capabilities. *Review of the Department of Defense program for destruction of the U.S. stockpile of lethal chemical warfare agents and munitions*. Testimony of Honorable Dale Klein, Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, 1 April 2004.
- U.S. Congress. House of Representatives. House Armed Services Committee, Subcommittee on Terrorism, Unconventional Threats and Capabilities. *Review of the Department of Defense program for destruction of the U.S. stockpile of lethal chemical warfare agents and munitions*. Testimony of Craig Conklin Chief, Nuclear and Chemical Hazards Branch (FEMA) Department of Homeland Security, 1 April 2004.
- U.S. Congress. House of Representatives. House Armed Services Committee, Subcommittee on Terrorism, Unconventional Threats and Capabilities. *Review of the Department of Defense program for destruction of the U.S. stockpile of lethal chemical warfare agents and munitions*. Testimony of Honorable Claude M. Bolton, Jr, Assistant Secretary of the Army Acquisition, Logistics, and Technology, 1 April 2004.
- Department of Defense, Office of the Inspector General. *The Chemical Demilitarization Program: Increased Costs for Stockpile and Non-Stockpile Chemical Materiel Disposal Programs*. Washington D.C.: Office of the Inspector General, September 2003.
- U.S. General Accounting Office, *Chemical Weapons: Sustained Leadership Along with Key Strategic Management Tools Are Needed to Guide DOD's Destruction Program*. Washington, D.C.: U.S. General Accounting Office, March 2003.
- U.S. General Accounting Office, *The Chemical Demilitarization Program: Increased Costs for Stockpile and Non-stockpile Chemical Materiel Disposal Programs*. Washington, D.C.: U.S. General Accounting Office, September 2004.
- U.S. General Accounting Office, *Chemical Weapons: Destruction Schedule Delays and Cost Growth Continue to Challenge Management*. Washington, D.C.: U.S. General Accounting Office, July 2004.

- Department of Defense, Office of the Secretary of Defense. *Declaration of U.S. Inventories of Chemical Warfare Materials as of 15 December 1995*. Washington, D.C.: Office of the Secretary of Defense, September 1995.
- Department of the Army, Program Manager for the Elimination of Chemical Weapons. *Chemical Materiel Implementation Plan*. Aberdeen, MD.: August 2004.
- Department of the Army, Product Manager for Non-stockpile Chemical Materiel. *Survey and Analysis Report, Second Edition*. Aberdeen, MD.: Office of Program Manager for Chemical Demilitarization, December 1996.
- Department of the Army, Product Manager for Non-stockpile Chemical Materiel. *Guide to Non-Stockpile Chemical Warfare Materiel*. Aberdeen, MD.: Chemical Material Agency, October 2003.
- Department of the Army, U.S. Army Corps of Engineers. *Recovered Chemical Warfare Material Response (RCWM)*. Huntsville, Al: Headquarters 4<sup>th</sup> District USACOE, January 2002.
- Department of the Army, Army Environmental Command. *Army Enviromental Cleanup Strategic Plan*. Aberdeen, MD.: Headquarters AEC, May 2003.
- Department of State. *Treaty for Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction*. U.S. Department of State, Washington D.C., April 1999.
- Department of State, "Organization in Support of Chemical Weapons Convention", 6 September 2002; available from <http://www.state.gov/t/ac/rls/fs/0.htm>; Internet; accessed 27 September 2004.