

Newport  
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Chemical Materials Agency

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## Alternative Technologies and Approaches Program welcomes new project manager *Colonel Barber joins team*

Col. Jesse L. Barber recently was assigned as project manager for Alternative Technologies and Approaches (PMATA), under the Chemical Materials Agency (CMA). In this position he is responsible for the implementation of neutralization technologies to eliminate the bulk chemical agent VX stockpile at the Newport Chemical Depot (NECD) in Indiana. As the project manager, Barber is chartered to use cost effective methods to research, adapt and apply state-of-the-art technology that will safely and quickly eliminate these stockpiles of chemical agents.

“Public outreach at Newport is absolutely essential to the successful execution of my mission to safely destroy the Army’s stockpile of VX at NECD,” Barber said. “The outreach program has been highly successful in facilitating discussions and providing a conduit for the sharing of timely and accurate information on the program’s status to the local communities and federal and state agencies.”

The project manager plans to continue a close information exchange with the Newport community.

“The active dialog that the outreach program fosters helps me to keep communication channels open with all stakeholders and ensure that factual messages are transmitted to help achieve our schedule, control program cost and dispel misinformation that may have been generated through misunderstandings,” he said.

Prior to his ATAP assignment, Barber managed the Army’s Firefinder Program, overseeing the research and development of state-of-the-art radar technology systems to locate enemy mortars and artillery. He also directed the Army’s Central Technical Support Facility. Barber has been instrumental in the development of software and data systems for the Army.

Barber recently attended the Indiana Citizen’s Advisory Commission (CAC) meeting to discuss his evaluation of options for the final disposition of hydrolysate, the organic-salt wastewater, which



File photo

*Col. Jesse Barber was assigned as project manager for Alternative Technologies and Approaches.*

is the byproduct of the neutralization process. Neutralization will be implemented at the Newport Chemical Agent Disposal Facility (NECDF) to destroy the Army’s stockpile of chemical agent VX stored at NECD. The NECDF team hosted a public meeting at South Vermillion High School on the same evening as the CAC meeting. Barber shared the findings of the Army’s evaluation and reasoning behind the preferred option for final disposition of the hydrolysate—transportation to a permitted commercial hazardous waste facility where it will undergo additional treatment before final disposal.

Following his presentation, he took questions from the audience. Barber restated his commitment to public outreach and involvement. “I am here tonight to gather input from the local community. Every question asked and issue raised here tonight will be addressed before I make a decision to move forward,” he said.

# Hazard of Hydrolysate Directly Related to Corrosiveness

*Findings conclude hydrolysate does not exhibit agent characteristics*

*The Army's preferred option for final disposition of the hydrolysate is transportation to a permitted commercial hazardous waste facility where it will undergo additional treatment before final disposal.*

*The Army has made a commitment to the public that hydrolysate will not leave the NECDF until it is confirmed that the hydrolysate is non-detect for VX, with a Method Detection Limit of less than or equal to 20 parts per billion.*

The Newport Chemical Agent Disposal Facility (NECDF) has been designed and constructed to destroy safely more than 1,200 tons of liquid chemical agent VX currently stockpiled at the Newport Chemical Depot (NECD) in Newport, Indiana. The NECDF will use a chemical neutralization process called caustic hydrolysis where VX (8-33 percent by weight) will be mixed and heated in a reactor with sodium hydroxide and water. The byproduct of the neutralization process is an organic-salt wastewater called hydrolysate. This hydrolysate will require additional treatment before final disposal. The Army's preferred option for final disposition of the hydrolysate is transportation to a permitted commercial hazardous waste facility where it will undergo additional treatment before final disposal.

The Army has made a commitment to the public that hydrolysate will not leave the NECDF until it is confirmed that the hydrolysate is non-detect for VX, with a Method Detection Limit of less than or equal to 20 parts per billion.

*The following paragraphs describe the expected hazards associated with hydrolysate.*

## **Flammability**

The flammability hazard associated with hydrolysate, produced at a 33 percent agent loading, relates to the presence of an organic upper layer with a flashpoint of 127 degrees Fahrenheit. The flashpoint is the temperature to which a liquid must be heated before the vapors from the liquid will ignite in the presence of an ignition source (e.g., flame, spark, etc.). The flashpoint for 33 percent loading hydrolysate is similar to that of acetic acid, a major component in vinegar. The upper layer corresponds to approximately 3 to 5 percent (by volume) of the total hydrolysate. However, under the current expected operation conditions in which less VX will be neutralized per hydrolysate batch (8-16 percent agent loading by weight), testing has shown that the flammability is eliminated.

## **Corrosiveness**

Excess sodium hydroxide is present at approximately 3 to 5 percent by weight in the neutralization waste (hydrolysate). (NOTE: 50 percent sodium hydroxide is commonly shipped throughout the United States daily.) Dermal (skin) contact hazards (chemical burns) are the greatest risk of hydrolysate because of the caustic nature of the sodium hydroxide.

## **Toxicity**

The neutralization of VX results in breakdown products that include the sodium salts of EA 2192, EMPA, MPA, and thiolamine. In their pure form, and by themselves,

these individual compounds possess their own toxicities. However, in order to get a true picture of the toxicity of a solution like hydrolysate that is made up of these various compounds, it is necessary that toxicity studies be performed on the hydrolysate itself in order to determine the overall effect of the combination of these compounds. That is why, as part of the overall development program, the Project Manager for Alternative Technologies and Approaches evaluated the toxicity of hydrolysate as a whole. These tests were performed with the original 33 percent agent loading neutralization process.

The dermal (skin) and oral toxicity of hydrolysate was evaluated in February 1999 according to Department of Transportation Test Procedures. This testing established that hydrolysate did not qualify as a poison and that it was highly corrosive and capable of damaging skin and producing gastrointestinal injury, as would be expected for any similar caustic solutions.

With the implementation of a reduced agent loading (8-16 percent) neutralization process, except with respect to caustic, the concentrations of all other reaction byproducts will be from 2 to 4 times less than in the hydrolysate (33 percent agent loaded) tested and discussed above. This reduction in the relative contribution of the reaction byproducts will diminish substantially the hazards posed by exposure to hydrolysate.

## **Conclusion**

The Army, as part of the development program, had oral and dermal (skin) toxicity studies performed on the hydrolysate. The key findings were that the hydrolysate no longer exhibited any agent characteristics. In fact, the toxicity and hazard of the hydrolysate were found to be directly related to the corrosive nature of the solution, as would be expected for any similar caustic solutions.

In addition, it must be emphasized that oral exposure is the least likely exposure pathway for hydrolysate—no one is going to drink hydrolysate. With respect to dermal (skin) contact hazards, the major hazard associated with hydrolysate is its' residual caustic concentration. This property makes hydrolysate extremely corrosive to the skin and could result in severe skin burns. There is a skunky odor associated with hydrolysate. This characteristic odor, though unpleasant, is not a hazard. Therefore, as consistently stated by the Army throughout the life of the project, the caustic/corrosive nature of the hydrolysate poses the most significant hazard. Consequently, splash protection (e.g., gloves, boots, protective clothing, etc.) and respiratory protection (i.e., self-contained breathing apparatus) from caustic vapors is needed when handling hydrolysate.

# Focusing on community outreach and involvement

## *Focus group discussions enhance community outreach efforts*

### **Our goal**

Public involvement is essential to the safe and timely completion of stockpile disposal at each of the Army's stockpile sites. The lessons learned from the Newport community will be shared with and compared to sentiments expressed by other stockpile communities to build a better outreach and involvement process nationwide. While technology varies among stockpile sites, the Army recognizes the need to establish and maintain outreach programs committed to engaging the public and properly addressing concerns. In order to implement and further enhance an outreach program that supports strong communication with communities near stockpile sites, it is important to assess the community's thoughts towards current outreach initiatives.

### **Why conduct a focus group?**

The development of a focus group is an opportunity to document the experiences and lessons learned since the establishment of the local outreach office. The data gathered from the Newport community is valuable when combined with data from other stockpile communities. This process will allow the

Army to fuse the needs of all of its stakeholders and create an all-encompassing outreach and involvement process. Comments gathered during focus group discussions will aid the Army in developing materials that effectively serve the needs of a broader group of stakeholders at stockpile sites across the nation.

### **How does a focus group differ from a survey?**

Focus groups and telephone interviews differ in a number of ways. Briefly, a focus group is a research technique that involves speaking in person with a small number of people (six to ten) in a group setting. The focus group format offers an informal setting to discuss openly views and perspectives. Asking for input from a cross-section in each of the stockpile communities helps the Army more effectively inform a broader audience, including the often unheard silent majority. The focus group session is led by a trained facilitator who keeps the discussion on topic. A telephone survey is a research technique for gathering general information from a large representative sample.

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## Orville Alexander Retires From Indiana Citizen's Advisory Commission

*Lt. Col. Joseph Marquart, Newport Chemical Depot (NECD) commander, presents Orville Alexander, Indiana Citizen's Advisory Commission (CAC) member with a NECD commemorative coin in appreciation for his service on the CAC and involvement in the Army's efforts to destroy safely the NECD's chemical agent stockpile. The commander praised Alexander for his dedication to the safety of the public, environment and the NECD personnel; and for fostering open and forthright communications between the public, Indiana government, and the Army. Col. Jesse Barber, project manager for Alternative Technologies and Approaches also recognized Alexander for his support and dedication to the success of the Newport project by presenting him with a certificate of appreciation. The December CAC meeting was Alexander's last. He is retiring from service to the commission.*



*Photo courtesy of Sharon Smith, Newport Outreach Office*

## Focus Group Provides Valuable Info

*Continued from page 3*

### Why now?

While the Army has achieved numerous milestones at all nine stockpile sites, including Newport, the start of agent operations here marks the beginning of a new path; the start up of a first-of-its-kind neutralization facility. This path will lead us to our primary goal of eliminating the risk posed by the continued storage of the nation's chemical agent stockpiles. For Newport, this means destruction of VX and eventual change of mission for the facility.

### Lessons learned

Since establishment of the Newport outreach office in 1996, the community has come to recognize this office as a valuable source of project information and a communication channel to the Army so that concerns and needs of various stakeholders can be heard. The intent of the focus group is to gather valuable information from the Newport community that can be used to refine the Army's outreach program and strengthen the Army's relations in the stockpile communities across the nation.

## Newport team achieves outstanding safety record

*Two years worked without a lost time injury*

The Newport Chemical Agent Disposal Facility (NECDF) team recently achieved an outstanding safety record milestone by working more than two years without a work day being lost to work-related injury or illness. "While we are working on the Newport project, we are ever aware that project completion is a national priority," stated John Stewart, Parsons site project manager. "This significant [safety] achievement is testimony to the high level of professionalism, dedication and work ethic of each member of the Newport team."

