

Soldiers Help Advance Chemical Technology

By Sergeant Heather Denby

Soldiers of the 4th Maneuver Enhancement Brigade (MEB) tested the latest palm-sized, automated, chemical-agent detector (PACAD) prototype (developed via a joint U.S. Department of Defense [DOD]–Japanese Ministry of Defense effort) at the Live-Virtual-Constructive, Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE) Environment at Fort Leonard Wood, Missouri, 6–15 July 2010. The 4th MEB (comprised of chemical, biological, radiological, and nuclear [CBRN] specialists, engineers, military police, and personnel from other military occupational specialties) is currently assigned to the CBRNE Consequence Management Reaction Force—a federal, domestic-crisis response force designed to support state and local authorities in the event of a large-scale domestic disaster.

After a CBRNE alarm has been issued and Soldiers have donned protective masks, the PACAD is used to investigate the immediate air quality to determine if chemical agents are present. The PACAD automatically interprets the results of reaction tickets¹ based on M256A1 Chemical-Agent Detector Kit chemistry and technology. If the prototype is approved, the PACAD would serve as a key factor in decisions involving “all clear” alerts.

According to Mr. Mike Cress, the Edgewood Chemical Biological Center technical representative for the Maneuver Support Center of Excellence at Fort Leonard Wood, the M256A2 Chemical-Agent Detector Kit—which is currently used to detect the presence of chemical agents in solid, liquid, and vapor forms—is the Army’s best-performing, low-level detector and primary unmasking tool. The device is simple and lightweight and requires no batteries or external power. However, there are also limitations. For example, the manual process involves 14 steps and typically takes 2 Soldiers about 20 minutes to complete. Operating the kit (which includes the M256A1 and an attachment heater within a camouflaged pouch) is a Skill Level II task generally assigned to team leaders or higher-level personnel. The use of the M256A2 also requires white light, and the results are often difficult to interpret. In addition, the list of agents that can be detected is limited by the size of the kit. Finally, Soldiers must train periodically to maintain proficiency with the kit. The M256A2 kit is being fielded this fiscal year, replacing M256A1 kits whose shelf lives have expired.

According to a CBRN specialist assigned to the 193d Brigade Support Battalion, Headquarters and Headquarters Detachment, the M256 series is “old school”—even with the new heating system; but the PACAD makes use of up-to-date technology. “Sure, it could use some tweaks; but as far as time allotment and the number of Soldiers required to operate, [the PACAD] would definitely come in handy,” he said.

The PACAD prototype will be adjusted based on direct feedback provided by the 4th MEB Soldiers and a group of government-contracted data analysts. The feedback represents a portion of the screening process for new and potential military products that is referred to as the *military utility assessment*. The PACAD military utility assessment is one of six military utility assessments scheduled to be conducted by the Fort Leonard Wood Maneuver Support Battle Lab this fiscal year.

“The [military utility assessment] is a practical approach to a concept or technology that may have been put out in academia or maybe assessing a commercial product to see if it can be integrated into military doctrine, training programs, or fielding-out for use in deployment situations,” said a CBRN data analyst from a contracted agency operating on behalf of the Maneuver Support Battle Lab.

As the installation’s only U.S. Army Forces Command asset with direct combat experience, the 4th MEB was selected for testing of the PACAD. “The work these Soldiers are doing today won’t benefit them directly, but will pay dividends for Soldiers in the future,” said Mr. Dennis Hutchinson, Maneuver Support Battle Lab science and technology officer. “Talk about selfless service!”

The government contract requires the preparation of a report for the Maneuver Support Battle Lab. The report will be used to inform the acquisition community, requirement writers, and U.S. Army laboratories and research and development centers about the potential offered by the developing technology that was tested during this experiment.

Endnote:

¹Reaction tickets are plastic cartridges that are inserted into the PACAD. They contain various reaction capsules that display certain colors which are indicative of chemical presence.

Sergeant Denby is a photojournalist assigned to the 4th MEB.