



# News Release

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## Explosives screening kit ready to enter new acquisition phase

**ABERDEEN PROVING GROUND, Md.** - A small easy-to-use and lightweight explosive screening kit continues to move forward towards full fielding as a means to provide soldiers in the field with the capability to screen for suspected homemade explosive materials (HME).

Using proven colorimetric chemistry, the handheld Colorimetric Reconnaissance Explosive Squad Screening (CRESS) kit uses chemical reagents stored inside a specially designed four compartment plastic container. The reagents will produce color changes when they come in contact with four specific HME precursor chemicals. These precursors consist of two fuels and two oxidizers that could indicate the presence of explosives. The kit needs no power source and produces test results in less than two minutes.

The CRESS kit transitioned from the U.S. Army Edgewood Chemical Biological Center (ECBC) to Joint Project Manager Guardian as a Program of Record on October 1, 2013. The military can now facilitate low cost commercial production.

“The CRESS kit is a perfect example of how ECBC can use its expertise in chemistry and engineering to rapidly develop a solution for the soldier,” stated Augustus Fountain, Ph.D., ECBC Senior Research Scientist for Chemistry. “Leveraging the Center’s expertise in 3D printing and rapid prototyping allowed us to quickly innovate to a unique design for the handheld kit.”

Initial soldier testing, or Military Utility Assessment (MUA), of the CRESS kit occurred in June 2011 at Fort Leonard Wood, Mo. The assessment showed that soldiers, with minimal training, can successfully screen for HME and non-HME samples with a high degree of accuracy and confidence.

After some minor modifications, the kit underwent a second MUA in February of 2012. ECBC’s Advanced Design and Manufacturing branch produced 500 kits for the test in order to focus on the tactile manipulation and to receive soldier feedback.

“There were some small changes we put into place for the kit following the second soldier test,” said Tim Lyons, grenade team chief from the Obscuration and Non-Lethal

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Engineering Branch. “And, we also developed a training kit that now comes with each box of kits. The training kit allows soldiers to be taught how to use the CRESS using HME simulant materials that produce the correct color codes used to identify the presence of HME precursors.”

The second MUA helped ECBC researchers identify a few manufacturing changes to make it easier to produce the kit and also identified that additional evaluation was needed before the CRESS can be fully transitioned to the field.

Another 500 of the CRESS kits were sent to theater for testing with the U.S. Army Research, Development and Engineering Command’s Field Assistance in Science and Technology Center.

“We conducted a soldier ensemble compatibility analysis, or simply, how to put it into a soldier’s pocket,” Lyons said. “We had planned tests to see how changes in the environment could affect the operation of the CRESS, such as the effects of contaminants, hot and cold temperatures, high humidity, or rain and snow.”

In addition, CRESS kit researchers are looking at developing additional reagent chemistries to identify narcotics, and other HME precursor chemicals that are used worldwide, along with classic high explosive compounds, such TNT.

The third and final MUA in April 2013 focused on training and a training simulator.

“We are developing an Android application that will allow the soldier to digitize data reporting,” Lyons said. “And, we are looking at designing a tear strip to make the internal bag of the kit easier to open.”

In August, ECBC received a safety confirmation for the CRESS kit, and this allows for unrestricted use by the U.S. forces in support of Operation Enduring Freedom, and in October the kit rolls over to JPM Guardian where it will enter the engineering and manufacturing development phase of the acquisition cycle. This is the final step prior to production and deployment, which is expected to occur in the summer of 2015.

The development of the kit has also earned ECBC an Army nomination for the 2012 Invention of Year.

**Photo credit: U.S. Army Edgewood Chemical Biological Center**  
For more information about ECBC, visit <http://www.ecbc.army.mil/>.

*ECBC is the Army’s principal research and development center for chemical and biological defense technology, engineering and field operations. ECBC has achieved major technological advances for the warfighter and for our national defense, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is a U.S. Army Research, Development and Engineering Command laboratory located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our website at <http://www.ecbc.army.mil/> or call (410) 436-1159*

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