



# News Release

For Information: ECBC Public Affairs Office: 410-436-1159  
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## **ECBC Develops the U.S. Army's First Bispectral Obscurants Grenade**

*Enhanced fill provides new levels of protection to counter emerging high-tech threats*

**ABERDEEN PROVING GROUND, Md.** – Imagine you are a soldier in a remote location facing an immediate threat of enemy attack. You have one route of escape, but shifting locations would mean being visible and vulnerable to the enemy. You have a smoke grenade, but it won't protect you if the enemy has advanced technology that allows him to see through the smoke. You have no choice but to take your chances and move out.

A team of researchers with the U.S. Army Edgewood Chemical Biological Center's Research & Technology (R&T) Directorate are looking to provide enhanced protection for soldiers in the field with the development of a bispectral grenade that blocks visibility from the visual through far infrared range 208320of the electromagnetic spectrum– the first to be ever designed for the U.S. Army. This advanced grenade would be capable of defeating thermal imagers, rifle scopes and devices equipped for night vision or infrared and other optical sensors, significantly increasing a soldier's survivability when faced with existing and emerging threats.

"Bispectral obscuration has immediate applications in countering thermal imagers, image intensifiers and thermal guided threats," said Robert Carestia, Project Engineer with the Smoke and Target Defeat Branch. "This is a new capability for the Warfighter that will provide an important level of protection against an enemy equipped with thermal and IR devices, and increases a soldier's mobility in theater."

Members of the R&T Directorate's Smoke and Target Defeat Branch are developing a new capability for a hand thrown grenade, which blocks visual (naked eye) through near infrared portions of the electromagnetic spectrum. In addition to enhancing the fill of the grenade, the team is also focused on improved safety features and ways to reduce cost and weight.

"We have researched various materials for the improved grenade body that help eliminate a "frag hazard" – fragments that break off during the functioning of the grenade which could cause harm to the soldier or a bystander – utilizing glues, rubber materials, cardboard and plastics," said Carestia. "These have significantly reduced the cost and weight, and eliminated end-cap bolts of the current grenade, which improves the filling process and increases obscurant payload."

Initial testing for the most efficient and best performing bispectral fills has already been completed in the

team's aerosol chamber, which captured data on duration, mass extinction coefficient, yield factor and transmittance. The team will next fill the new grenade configuration with various lead candidate bispectral materials and assess their effectiveness using the backdrop of a special instrumented grid on Aberdeen Proving Ground. Data will be collected on contrast reduction, spectral information over the entire spectral region, mass extinction coefficient, cloud geometry, duration and meteorological data. After examination of the results, the plan is to then down-select the final candidate for further refinement and evaluation.

Collaboration with the Directorates as well as the other government agencies were key in the success of the testing. The testing took place in August 2013, with support from the Army Research Lab, U.S. Army Night Vision and Electronic Sensors Directorate, U.S. Army Aberdeen Test Center, New Mexico State University and the Georgia Tech Research Institute. The ECBC Engineering and Program Integration (DPI) Directorates were both involved with the development and testing of the bispectral grenade. As the Engineering Directorate assisted with creating pyrotechnic mixes and DPI helped with the grenade design. During the testing, the group utilized Meteorological Stations to predict weather behaviors ahead of time, ensuring the team only tested on days there weather would not affect results. In addition, to enhance the quality of testing results, Carestia and the team arranged for Unmanned Aerial Vehicle support that could fly at 110 ft to capture more views of the smoke to ensure the contrast reduction and geometry of smoke.

"Because of teamwork, careful coordination and good luck from Mother Nature, we were able to complete testing a week ahead of schedule despite furloughs and other obstacles," Carestia said.

The current Bispectral Obscurant Grenade program is part of the Technology Concept Demonstration for Soldier and Small Unit Protection. A demonstration of a prototype system is planned for late 2014. 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) 436-7118.*

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