

## A different Big Bang theory: Los Alamos unveils explosives detection expertise

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### Collaboration project defeats explosives threats through enhanced detection technologies

LOS ALAMOS, N.M., Feb. 11, 2015—Having long kept details of its explosives capabilities under wraps, a team of Los Alamos National Laboratory scientists is now rolling out a collaborative project to defeat explosives threats through enhanced detection technologies.

“We’re aiming to create a collaboration of strategic public and private partners focused on the innovations in and education about explosives detection technologies,” said the program manager for Global Security Emerging Threats. “Through the Los Alamos

Collaboration for Explosives Detection (LACED) online portal and related collaborations, we can provide essential expertise in some extremely specialized fields,” she said.

The [LACED](#) site serves as a virtual gateway to world-class expertise and capabilities designed to counter all types of explosives threats, predominantly through enhanced detection capabilities. The site went public online in January and is beginning to attract attention among specialty audiences.

“We are addressing global security threats with a really clear, simple strategy,” said the manager. “First, we emphasize explosives science; that is the core of everything we do. We anticipate and affect the outcome to our advantage, ensuring that the threats never come to fruition. We detect, minimizing loss of life from immediate threats. And we mitigate and neutralize to counter damage from explosives.”

The explosives detection collaborative is made up of 57 scientific experts, spanning 18 technical divisions at Los Alamos. Ranging across 11 unique fields of expertise, these scientists have published more than 100 explosive-detection-related publications.

Helping partners avoid catastrophic events

And what, besides making the windows rattle in Los Alamos County, do these experts do? Among other things, they provide training, with specific know-how on nearly anything that can explode. For the US military, there’s a homemade explosives situational awareness class that includes replica villages with mock improvised explosive devices (IED’s) to provide realistic training before warfighters encounter the real thing.

Another course, the Homemade Explosives for Explosive Ordinance Disposal Technicians class, is focused in even more detail on homemade explosives and includes training in the safety, sensitivity and performance of these devices, as well as their synthesis and manufacturing methods. From the chemistry of the ingredients, through the nuances of triggering devices, the trainers seek to ensure military personnel get home safely from their deployments.

Detection: Finding bombs before they find you

Detection, of course, is key to safety in this field. Los Alamos scientists and engineers have a long history of developing detection technologies for every conceivable type of explosive under a variety of scenarios. Detection methods range from trace and signature characterization to bulk detection and new methods that address homemade or esoteric explosives.

Advanced image analysis, exquisite surveillance technologies, remote detection and spectroscopy to find trace quantities of explosive vapors and residues, a whole range of high-tech tools is on hand, some new and some fundamentally enhanced from their original forms. And the new collaboration seeks to put these tools in the hands of the people who will need them the most.

“Our emphasis with this project is on partnering with both industry and government to develop lifesaving technologies using the unique capabilities of the Laboratory,” said the program’s manager.

“We are closely tied with many US government agencies involved in explosives and detection, and we have partnerships with industry on explosives detection technologies, and it is this work we seek to expand,” she said.

Organizations wishing to coordinate with the LACED program can reach LACED experts at [laced@lanl.gov](mailto:laced@lanl.gov) for more information. Online see <http://laced.lanl.gov>

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