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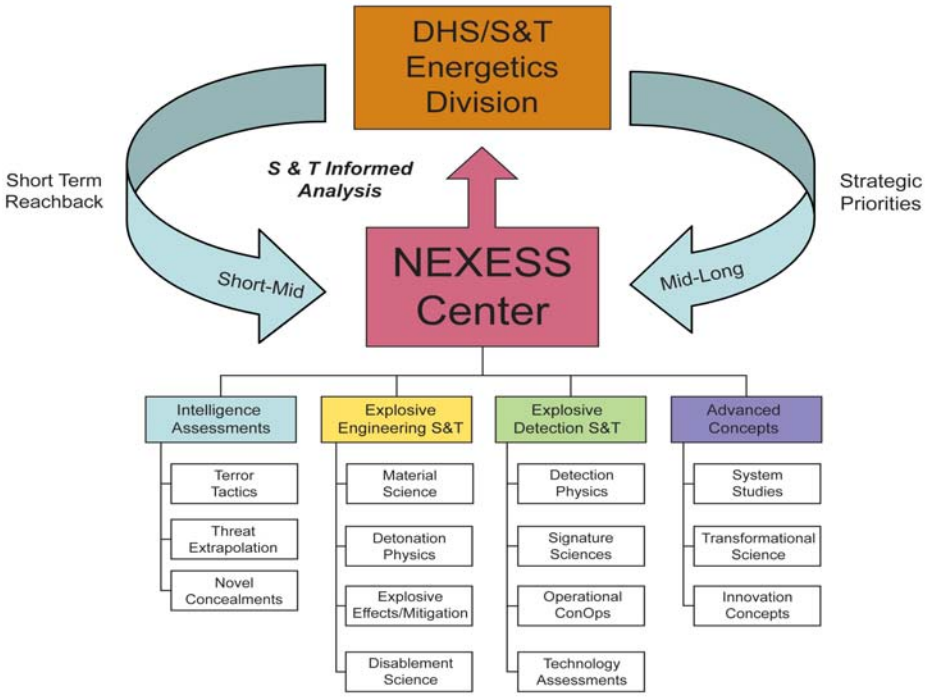
NeXess Center

The Challenge

The Nation needs an agile, aggressive approach to anticipating, deterring, and defeating threats from explosives attacks by terrorists. Determining and preventing the next high-priority threats that terrorists might consider is critical to the safety of the American people.

The National Explosive Engineering Sciences Security (NEXESS) Center

Sandia National Laboratories, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory have united their technical expertise in explosive engineering science and security systems to form the National Explosive Engineering Sciences Security (NEXESS) Center. The NEXESS Center provides informed analysis backed by an engineering science base for short/mid-term priority assessments as well as mid/long-term research and technology development. Our combined resources provide the ability to anticipate the evolving threat from terrorists by integrating intelligence information with detailed technical knowledge of energetic materials.



This graphic illustrates how the NEXESS Center spans the scope of the explosives challenge – from assessment of the evolving threat to research and experimental investigations to applications of technology in the field to advanced concepts with transformational science and innovation concepts.

The NEXESS Center has already made contributions with advice on hydrogen peroxide/fuel explosives, with information from:

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- The explosive engineering science properties of formulation detonability, alternate methods of initiation, detonation velocity, and impulse energy.
- Rapid assessment of emerging detection system technical performance and applications to aviation checkpoint security.

To prepare for emerging terror tactics with explosives, the NEXESS Center is reassessing alternative explosive material choices and the selection criteria that terrorists consider in planning attacks to critical infrastructure, soft targets, and transportation systems.

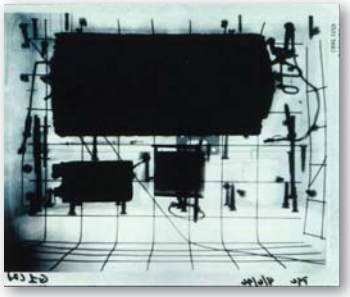
Team Capabilities:

The nation currently has explosives knowledge and expertise distributed across many organizations. The FBI Laboratory, bomb data center and Terrorist Explosive Device Analytical Center (TEDAC) provide forensic analysis of bombing events and assessment of bomb devices. The Technical Support Working Group (TSWG) seeks commercial products for explosives detection and countermeasures with near-term deployment potential. The Transportation Security Laboratory (TSL) works with industry to develop and deploy explosives threat detection technology, principally for the aviation sector.

The Department of Homeland Security (DHS) benefits from a collaborative and cooperative explosive science and technology resource. The NEXESS Center combines the distributed resources of the National Nuclear Security Administration (NNSA) national labs in the key disciplines of explosive countermeasures such as Detection Science and Technology, Explosive Engineering Science and Technology, and Intelligence & Analysis to provide distilled, integrated knowledge to DHS and the Nation.

The NEXESS Center team has existing technical staff/facilities and has historically performed foundational work in many of the disciplines for DHS and related customers to meet this mission. The NEXESS Center team also has very strong working partnerships with the National technical community working on explosive sciences and detection technologies, and can partner with these National/Federal Labs and academia when needed to form the best possible team of experts. The NEXESS Center will integrate key intelligence threads to provide an informed analysis that defines the Nation's current security/risk status, provides insights into future explosive threats, and identifies key S&T investment strategies needed to mitigate the terrorist explosive risk.

Outdoor Testing of up to 50 lb of Explosive



System Radiograph

Improvised System

Learn more at: http://www.sandia.gov/mission/homeland/index.html

For more information contact:

James Phelan
Sandia National Laboratories
505.845.9892
jmphela@sandia.gov

Rob Dye
Los Alamos National Laboratory
505.667.3404
rcdye@lanl.gov

John Reynolds
Lawrence Livermore National Laboratory
925.422.6028
reynolds3@llnl.gov

Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185

www.sandia.gov