

Counterterrorism Initiatives at Brookhaven

Helping to Keep Our Nation Safe

Brookhaven National Laboratory is operated by Brookhaven Science Associates, a not-for-profit research management company, under contract with the U.S. Department of Energy.

As a multi-program, multi-disciplinary national laboratory, Brookhaven National Laboratory has developed advanced capabilities and expertise that put it in a unique position to contribute to counterterrorism efforts in the U.S. and abroad.



Brookhaven's portable chemical sensor.

This work may help scientists design vaccines and antidotes against biological weapons and aid in identifying these agents. Similar structural studies of chemicals may lead to the design of countermeasures for chemical weapons.

Following the devastating September 11 attacks, Brookhaven established a counterterrorism working group to identify innovative approaches that may help to preserve the safety and enhance the long-term security of the United States and its people. The group aims to consolidate Brookhaven's unique capabilities and develop cutting-edge, science-based technologies to help the nation predict, detect, preempt, and respond to terrorism.

The working group represents most of the scientific disciplines within the Laboratory. Many of the group's ideas emphasize improved means to prevent and protect against attacks and to provide emergency response if prevention and protection should fail. Brookhaven approaches and technologies currently being explored include the following:

Detect, locate, & identify

- Sensors for the early detection of nuclear, chemical, and biological agents and explosives that have the ability to register trace quantities of these materials. For instance, radiation detectors could be used to check baggage at airports and other transportation centers.
- A one-of-a-kind chemical sensor to locate and identify spills or ground contamination from a safe distance. The system uses laser scattering patterns to identify a substance's distinct chemical "fingerprint." Another device uses microwaves to image unknown materials.

Antidotes & vaccines

- Methods to detoxify nerve gas agents using an enzyme that can degrade such compounds, and could lead to skin-protecting lotions.
- Structural studies of viruses to determine how these organisms attack the human body.

Search & rescue

- A jackhammer-like device that could be used to break up concrete and other debris in enclosed spaces. The team that developed the prototype has won several awards and is now working to commercialize the concept.
- A magnetic imaging tool designed to locate and map iron structures hidden in debris. In addition to use in search-and-rescue missions, the tool could be developed further to map other materials within a debris field.

Track & outsmart

- Techniques to model and track aerosols and chemicals as they move through air, and to identify and assess sources and trajectories of these atmospheric contaminants.
- Materials studies that may lead to "smart" buildings, resistant to terrorist acts involving explosives, chemicals or biological agents.

Assessment & training

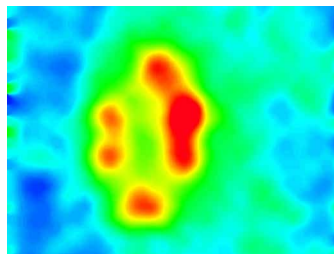
- Improved methods to assess security risks at office buildings, energy supply/distribution systems, airports, and other infrastructure elements, incorporating weighted analysis of threats, vulnerabilities, and consequences.
- Training and role-playing exercises, such as simulations of a biological weapons attack on a city, to help first-responders prepare for possible terrorist attacks.

The Laboratory's working group is collaborating with many agencies, including the U.S. Department of Energy, the U.S. Department of Defense, the U.S. Federal Aviation Administration, the U.S. Nuclear Regulatory Commission, the U.S. Merchant Marine Academy, the N.Y. State Battery Park City Authority and the N.Y. City Office of Emergency Management.

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Brookhaven's thermal neutron imaging camera can "see" radiation sources from up to 200 feet away.