

Counter Terrorism

BASIS: The Biological Aerosol Sentry and Information System

Early detection and rapid response are the keys to reducing the human health consequences of a biological agent attack. Treatment protocols for many potentially fatal biowarfare agents, such as anthrax, are very effective if they are initiated soon after exposure. However, if treatment is delayed, survival probabilities drop precipitously.

Standard public health surveillance procedures such as those for tracking influenza outbreaks constitute the only system in place today to detect a covert biological release. Because these procedures depend on the observation of unusual cases, many days could elapse between the attack and recognition of the deliberate use of biological agents. By that time, it could be too late to save the lives of many of the individuals who were exposed.

Enhanced Security for Special Events

The Chemical and Biological National Security Program is developing the Biological Aerosol Sentry and Information System (BASIS) to provide the early warning needed to save these lives. BASIS will provide early detection of biological incidents for special events such as large assemblies, dignitary visits, high-visibility meetings and major sporting events. The system is ready for deployment.

BASIS was designed specifically for the detect-to-treat mission. Planned for use

in civilian settings, it will detect a biological incident within a few hours of attack, early enough to allow the public health system to mount an effective medical response. To ensure that BASIS supports real-world operational needs, it was developed in close cooperation with the federal, state and local public health agencies that are responsible for emergency response and medical operations in the event of a bioterrorist attack.

The BASIS Architecture

To meet its 2002 deployment goal, BASIS integrates proven technologies

with national laboratory advances in instrumentation and networking. The BASIS open architecture is flexible, allowing it to readily incorporate new technologies as they are developed.

BASIS consists of a network of distributed sampling units deployed in and around potential target sites. Each unit continuously collects, stores and time-registers aerosol samples. The samples are regularly retrieved and brought to the relocatable field laboratory where they are analyzed with the most sensitive and reliable detection and identification techniques available. All samples are DNA analyzed using sophisticated polymerase chain reaction techniques that have been validated through a multi-agency process. These techniques provide rapid, high-volume throughput with high sensitivity and high selectivity at low cost.

If a biological agent is detected, the authorities are notified and provided with information on the agent type as well as where and when it was collected. BASIS will also provide estimates of exposure levels and duration to assist the public health system in identifying the population that requires treatment.

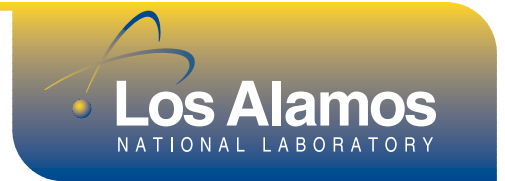
Benefits to the Nation

BASIS will provide public health and law enforcement authorities with timely and accurate information about airborne biological attacks. With a complete cycle time of just a few hours to collect, transport and analyze the samples, BASIS can alert authorities to a covert biological attack well before symptoms appear in exposed individuals. By enabling timely treatment, BASIS can

Since 1943, Los Alamos has created and applied advanced science and technology to solve critical challenges in national defense and civilian research.



The early information provided by BASIS will allow cross-agency coordination and information sharing that is crucial in dealing with a biological or chemical attack.



help save thousands of lives. Although BASIS is focused initially on major special events, the concept can be readily adapted to other operations.

About the Chemical and Biological National Security Program

The National Nuclear Security Administration's Chemical and Biological National Security Program is tasked with developing technological capabilities, both near- and far-term, to significantly improve domestic defense against chemical and biological attacks. Key to this strategy are the Domestic Demonstration and Application Programs, such as BASIS, which combine advanced technologies from the national laboratories with commercially available products to field prototype operational systems in a two- to three-year time frame. This systems approach is essential to fully evaluate and incorporate emerging technologies into systems that meet real-world needs.



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