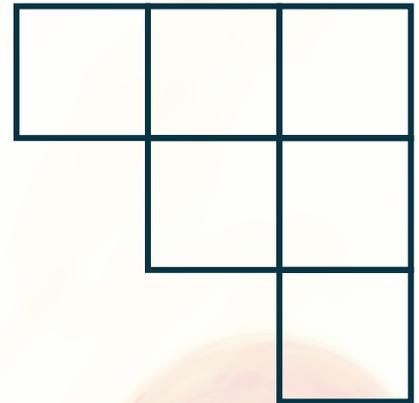
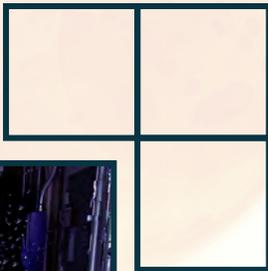


# COUNTERING BIOLOGICAL THREATS

Advances within the life sciences hold extraordinary potential for beneficial progress, but they also can empower those who would use biological agents for ill purpose.\*



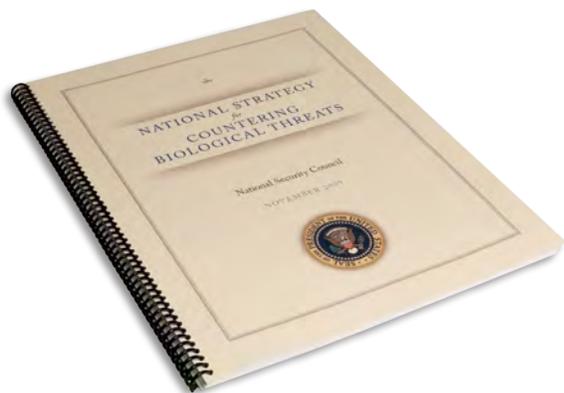
The effective dissemination of a lethal biological agent ... could place at risk the lives of hundreds of thousands ... The economic cost could exceed one trillion dollars ... a direct impact on our way of life and the public's trust in government.\*

\*National Strategy for Countering Biological Threats, November 2009

The global life sciences community has exploded in size, sophistication, and mobility. Scientists enjoy greater access to education and Internet-based information, and now are working in more facilities worldwide on a greater variety of biological materials that have become cheaper to buy and easier to manipulate. This has created a more challenging threat environment for U.S. and international security.

The same advances that have produced new therapeutics and improved the health of communities around the world have also increased the threat of accidental and malicious use of the life sciences to harm people, livestock, and critical resources. Further, changing demographics – from population growth to urbanization to the accelerated movement of people to the increasing frequency of natural disasters – have also made everyone more vulnerable to naturally occurring pandemics.

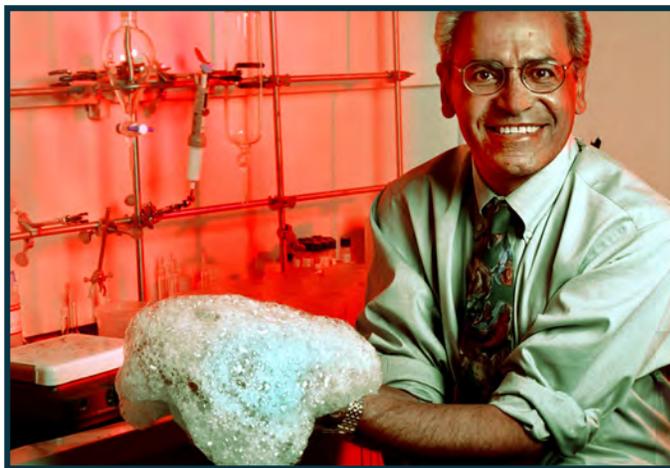
Government policies and the scientific community have evolved significantly in response to this changing threat environment. There is now a recognition that the biological threat spectrum is very broad, including emerging and reemerging disease; accidental discovery, manipulation, and release of disease; and criminal and terrorist use of biological agents.



With the release of the *National Strategy for Countering Biological Threats*, U.S. policy expanded from an emphasis on preparing to respond to the next crisis to embracing efforts to reduce the chance that a crisis could ever occur. This strategy recognizes that mitigating biological threats requires a comprehensive set of programs – from awareness to prevention, preparedness to detection, and response to recovery – that utilize diverse technical and operational capabilities.

## **FORESIGHT IN PROGRAMS ANTICIPATE THREAT EVENTS**

Sandia National Laboratories maintains a comprehensive and integrated set of capabilities for confronting the entire biological threat lifecycle that were developed over decades to solve some of the nation's toughest national security challenges. Some of Sandia's capabilities were developed well before the anthrax letter attacks in 2001, and contributed to the U.S. response:



- Decontamination foam was used to clean up contaminated buildings.
- Scientists were asked to examine the anthrax spores to determine whether they had been manipulated for use as a weapon.
- Environmental detection systems that monitor for airborne pathogens were deployed in about 30 U.S. cities.
- Biosecurity specialists were dispatched to help ensure dangerous pathogens in laboratories worldwide were secure.

Further, the experience as a U.S. partner in the Cooperative Threat Reduction program, launched following the collapse of the Soviet Union to thwart the proliferation of nuclear materials, positioned Sandia to recognize the important role that professional engagement can play in protecting dual-use materials, technologies, and expertise. Sandia scientists work with life sciences communities in more than 40 countries to instill safe, secure, and responsible laboratory practices, and to help advance beneficial life sciences pursuits that can reduce biological threats.

## ***COMPREHENSIVE REACH ACROSS THE THREAT LIFECYCLE***

---

In the decade since the anthrax letters, Sandia has continued to deepen its expertise and industry reach. Sandia's global partnerships, industry leadership, multidisciplinary research capabilities, proven methodologies, and vision support a range of national and international security initiatives to protect and prepare global communities that face an increasingly complex biological threat environment.



### ***AWARENESS AND PREVENTION***

---

#### **Systems Analysis**

Building and using analytical models and simulation tools to develop operational and response plans, assess and analyze risk and vulnerabilities, and anticipate future threats and needs.



#### **Global Engagement**

Engaging scientific communities globally to promote responsible use and handling of biological materials, technologies, and expertise, as well as advance beneficial life sciences pursuits.

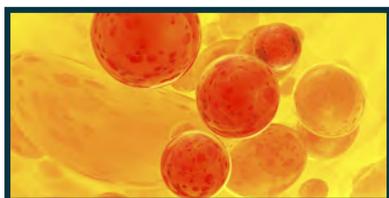


### ***PREPAREDNESS AND DETECTION***

---

#### **Environmental Sensors and Systems**

Designing next-generation screening tools, human diagnostics, and support systems and methods that help authorities identify biological threats.



#### **Biological Countermeasures**

Probing pathogen behavior and producing presymptomatic diagnostic profiles that could trigger the earlier deployment of resources, therapeutics, and protective measures to communities affected by disease.

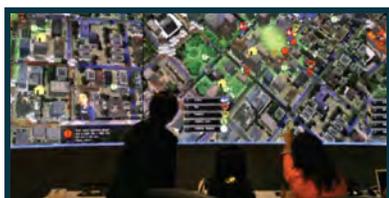


### ***RESPONSE AND RECOVERY***

---

#### **Forensics**

Combining state-of-the-art imaging technologies, biological research, and national security insights to help law enforcement and public health responders understand the biological threat spectrum.



#### **Consequence Management**

Developing operational models and supportive environments so government planners, protective forces, and emergency response personnel can use new technologies when responding to threat scenarios.



#### **Decontamination and Restoration**

Integrating science-based solutions and operational plans and processes to minimize casualties and speed the cleanup and recovery of communities in the wake of a major disease-driven event.

**Contact Us:**  
Reynolds M. Salerno, Ph.D.  
[biothreats@sandia.gov](mailto:biothreats@sandia.gov)  
[biosecurity.sandia.gov](http://biosecurity.sandia.gov)



*Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000*



SAND2011-4286P