# PROACT:

## Bolstering airport defense against chemical or biological attacks

> "The real learning has been in understanding how to put together systems that can be used in an end-to-end defensive capability."
>
> *Duane Lindner, deputy director, Chemical and Biological Program*

### Context

Mass casualties, worldwide economic disruption, and widespread emotional fallout—these and other catastrophic outcomes are just part of what makes an airport attack attractive to terrorists. But securing these much-used public facilities is a daunting task. Although airport officials have extensive experience in defending aircraft against conventional weapons and explosives, many would welcome information on defending airport facilities from chemical or biological threats.

### Solution

Knitting together decades of expertise in fortifying facilities and understanding chemical and biological threats, Sandia National Laboratories' PROACT program is aimed at reducing the likelihood and consequences of chem-bio attacks in airports. In keeping with Sandia's long tradition of providing end-to-end solutions, PROACT is examining all elements of the challenge: vulnerability assessment, passive protection, biological and chemical detection architectures, response planning, and simulation exercises. Tight collaboration with San Francisco International Airport (SFO) is helping ensure that PROACT activities stay focused on viable solutions to real-world problems.


*Harmless gases dispatched through SFO's empty international termninal helped the team create evacuation, air handling, and response procedures.*

### Benefits

The PROACT program is yielding knowledge and capabilities that fill a critical gap in airport defense planning—and is laying the groundwork for a viable system to warn of possible biological attacks. The dissemination of PROACT information and systems could reduce the likelihood of high consequence chem-bio attacks and minimize the severity of any attack that might occur, potentially saving lives and curbing economic losses and disruption.

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**Approach**

PROACT is currently concentrating on two major program components:

- Developing guidelines in collaboration with Lawrence Berkeley National Laboratory (LBNL) to help airports nationwide understand the threat, recognize their areas of vulnerability, harden their facilities to prevent and mitigate attacks, and respond to alleviate attack consequences

- Testing a system of early warning sensors (EWS) that could alert authorities of a bio-aerosol attack


*Tight collaboration with SFO keeps PROACT focused on real-world solutions.*

Tests at SFO have been instrumental to PROACT's progress in both areas. While the SFO International terminal was still under construction, the PROACT team dispatched theatrical smoke and harmless tracer gas through the empty building to test dispersal paths. Analysis based on this and experiments conducted two years later helped the team develop operational strategies to minimize exposure, including evacuation routes and air-handling operations and responses.

Further, short-term field tests at SFO of real-time biological detectors showed sufficient promise to prompt more in-depth evaluation. To launch such an investigation in a real-world environment, the team conducted a bio-defense tabletop exercise at SFO in November 2003. This exercise helped demonstrate the operation of a rapid bio-detection system for the airport and allowed airport and regional responders to explore consequence management strategies in a simulated bio-terrorism scenario.

**Status**

The PROACT team has published a report, *Guidelines to Improve Airport Preparedness Against Chemical and Biological Terrorism*, to help airport planners better prepare against this serious threat. Following review by an initial set of airport operators and experts from the chem-bio defense community, the team will publish an updated version of this report for further dissemination to facility defense teams.

The team also proposes to continue longer-term testing of biological EWS in 2004 to determine their sensitivity in an airport environment, taking a proof-of-principle approach to system components, integration, operation, and consequence management. If successful, this demonstration will pave the way for future deployment of full-scale systems.

***Learn more at***
*http://www.ca.sandia.gov/chembio/facilities_protect/*

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