Scientists man bioterror front lines post-9/11

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Informatics program leader Tom Slezak gestures in front of the mobile lab Wednesday, July 13, 2011, at the Lawrence Livermore National Laboratory in Livermore, Calif. Detectors developed by Slezak and other government researchers to sniff the air for germs such as anthrax and smallpox have become a hidden fixture of the country's post-September 11 urban landscape. (AP Photo/Ben Margot)

(AP) -- Just hours after the first death in the 2001 anthrax attacks, Tom Slezak was told to gather his team, collect his gear and get on a plane.

The longtime Lawrence Livermore National Laboratory biodefense researcher landed at Andrews Air Force Base outside the nation's capital and immediately realized he was on the front lines of a new type of war.

"We were met by a colonel in the Army," Slezak recalled. "He said, `Our nation is at war. And you've been drafted.'"

For decades, federal research labs like Lawrence Livermore had served as the government's Cold War research and development division. After Sept. 11, those same labs transformed themselves to invent new lines of defense against new terror threats, developing a nationwide system to sniff the air for germs such as anthrax and smallpox.

Slezak and other government researchers created the airborne pathogen early warning system known as Biowatch that is now deployed in about 30 cities across the country and has become a hidden fixture in the country's post-September 11 urban landscape. The program is designed to alert authorities of a release of deadly germs even before patients start showing up sick. This would allow affected areas to be evacuated, and potentially infected people could get drugs and vaccines.

The system works via detectors mounted in secret locations near potential high-profile targets such as stadiums and subways. They suck city air through filters that technicians collect daily and test for the DNA of dangerous bacteria and viruses.

To keep potential terrorists from dodging Biowatch's defenses, officials keep secret how many detectors monitor the air in each city, what the detectors look like and how many different pathogens they guard against. The list of cities themselves is also secret, though officials say Washington and New York are among those monitored. In all, the system covers about 80 percent of the U.S. population, Slezak said.

So far Biowatch has raised several alerts about the possible presence of malicious microbes. The day after a 2005 anti-war protest on the Washington Mall, for example, the system detected the bacterium that causes tularemia, a potentially fatal respiratory illness. But in each case, further testing found that germs had occurred naturally - and no public alarm was sounded.

To be effective, Biowatch must turn out test results quickly - and never be wrong, researchers said.

If bad information led to a shutdown of an Olympic Games or a presidential inaugural, they said, that would destroy trust in the system, making the country more vulnerable to a real attack.

"We have to be able to make millions of measurements and never have a single false positive measurement," said David Rakestraw, who manages Lawrence Livermore's weapons of mass destruction countermeasures program.

Work on Biowatch began even before the Sept. 11 attacks as a way to provide biosecurity for the 2002 Salt Lake City Winter Olympics. The system had undergone just one test run before Slezak was summoned to Washington in the midst of the anthrax crisis to set up the detectors for their first real-life use.

Lab technicians on 12-hour shifts worked around the clock for weeks as anthrax powder sent through the mail ultimately claimed five lives.

Slezak remembers being pulled from the lab to see an unfolding drama on television. With chagrin, he watched as workers ran from the Hart Senate Office Building after anthrax powder was discovered in an envelope sent to Senate Majority Leader Tom Daschle.

"That was just kind of one of those `duh' moments where you realize you can't always pick what the most probable threat is going to be," he said.

Months later, Biowatch was set up and running as planned during the Olympics. In 2003, the Bush administration began rolling out the system in cities across the country. Since then, the government has spent more than a half-billion dollars on the program, according to budget analysts at

the Center for Biosecurity at the University of Pittsburgh Medical Center.

Much of that money pays for workers to collect the air filters from the detectors and run the lab tests. The heavy manpower needed to keep Biowatch running points to one of the system's key weaknesses, say officials connected to the program.

"What we basically deployed were glorified vacuum cleaners," said Penrose "Parney" Albright, who oversaw Biowatch's rollout as the Department of Homeland Security's director of anti-weapons of mass destruction research and development under President Bush.

Now head of global security science and technology research at Lawrence Livermore, Albright and others say new labor-saving technology could dramatically streamline the process.

Relying on major advances over the past decade in technology to read and analyze DNA, small chips in the detectors themselves can scan for more than 3,000 different germs, as opposed to the handful sought now. If a sample tests positive, the detectors would send an alert to scientists.

Such devices, set to be tested in one city this year and four more next year, would eliminate the daily need to collect filters and run lab tests. The huge labor savings, Albright said, could make it possible to deploy many more automated detectors, creating a wider, denser net of biosensors across U.S. cities.

But some public health officials remain less than convinced about the value of Biowatch compared to traditional approaches to disease outbreak detection, such as monitoring hospital and emergency room visits, as happened with the anthrax mailings.

"I wouldn't say it has no value, but I think we have to be realistic about what the value is," said Dr. Frances Downes, director of public health laboratories for Michigan.

In 2008, Downes told Congress the Biowatch program was draining public health lab resources across the country without adequate reimbursement. While she said some of those concerns have since been addressed, she says Biowatch should be seen only as one piece of a broader public health approach to biodefense.

"It's not all that we need," Downes said. "We can't assume it's a safety blanket and it's covering us and we're always going to know about a (bioterror) attack."

However the U.S. chooses to defend itself, scientists at Lawrence Livermore say the increasing accessibility of biotechnology tools and know-how makes the threat of a bioterror attack as real as ever.

"It's very clear that there's a trend toward more and more people having capabilities and more and more people having the knowledge to do these things," Rakestraw said. "I think we need to be prepared."

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