

Bioterrorism: A threat without borders

On Nov. 9, 2001, President George W. Bush established a Task Force on Citizen Preparedness in the War on Terrorism. The task force will recommend ways Americans can prepare for a possible terrorist attack and will support state and local officials in efforts to prevent and respond to such an attack.

The task force's creation reflects that terrorism has become a reality for America.

After last year's anthrax cases, use of chemical or biological weapons is one of the most feared threats in America — and the world. Responding to the threat of bioterrorism will require cooperation across national boundaries and levels of government.

“Suddenly all of us are engaged in a war that ignores national boundaries and threatens the very fiber of our societies,”

said John R. Bolton, undersecretary for arms control and international security at the U.S. Department of State, at the Biological Weapons Convention in Geneva in November. To address this threat globally, U.S. officials presented a proposal to strengthen the international agreement.

Domestically, much of the burden for bioterrorism preparedness falls to state and local governments. Coordination among agencies and funding are critical challenges.

Bioterrorism and emergency communications will cost states \$43 billion in the first year of implementation of the homeland-security measures called for by the Bush administration, according to preliminary figures released in December by the



National Governors' Association.

As federal, state and local officials gear up to secure the homeland, this article looks at preparedness in regard to three potential targets of bioterrorist attack — the nation's population, agriculture system and water supply. But first, no matter what the target, the role for coordinating communication and response falls to public safety officials.

— Magdalena Mook

Biological Weapons Convention

The Biological Weapons Convention serves to prevent countries from developing, producing, stockpiling or obtaining the means to employ bacteriological, biological or toxin weapons as a means of warfare. Activated in 1976, the convention now has 143 member states.

The United States proposed strengthening the convention in November 2001. U.S. proposals included:

- to enact national criminal legislation to enhance member states' bilateral extradition agreements with respect to biological-warfare offenses and to make it a criminal offense for any person to engage in activities prohibited by the convention

- to develop strict standards for the security of pathogenic microorganisms
- to agree to international investigations of suspicious disease outbreaks and/or alleged biological warfare incidents
- to adopt and implement strict biosafety procedures, based on World Health Organization or equivalent national guidelines
- to provide rapid emergency medical and investigative assistance, if requested, in the event of a serious outbreak of infectious disease and to indicate in advance what types of assistance member states would be prepared to provide.

Source: U.S. Department of State

Public safety: Coordination is key

Public-safety agencies, especially emergency management services, coordinate among other agencies when preparing for and responding to acts of bioterrorism. Constant communication among key decision-makers is critical.

“Information is the best tool, not only for the public, but the government coordinators as well,” said Kentucky Rep. Tom Burch, who sponsored legislation that would require state and local agencies to collaborate on bioterrorism preparedness and response planning. “Coordinating information between health services, the National Guard, law enforcement and emergency management is critical to responding quickly and efficiently.”

In recent years, states and communities have taken steps to develop emergency management plans — step-by-step procedural policies to be used in the event of a bioterrorist attack. All states had emergency management bodies in place prior to Sept. 11 and since then several states have developed new and innovative bodies aimed at terrorism.

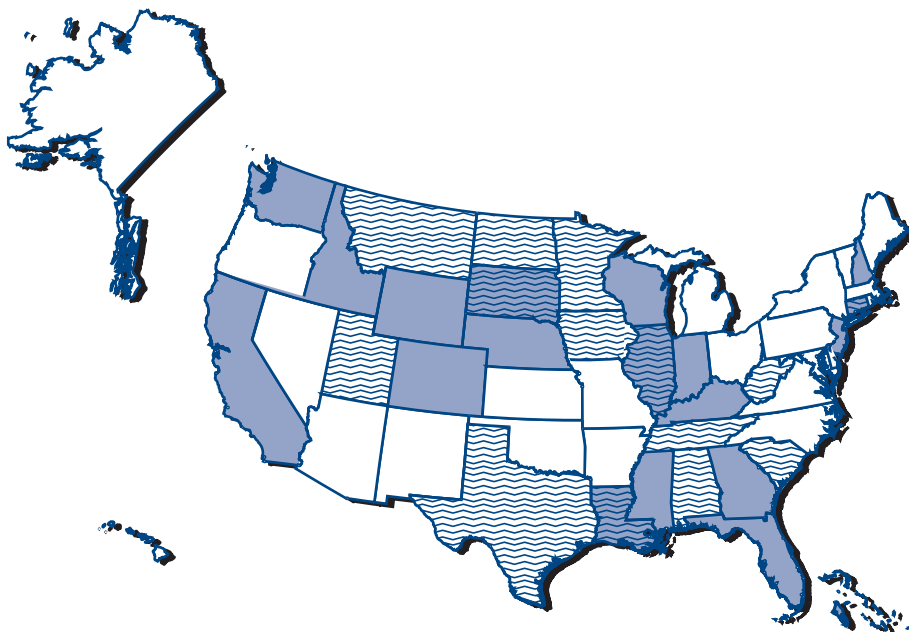
Following the federal government’s example, 14 states have established offices or advisory positions for homeland security. Eighteen states have set up




task forces, commissions or advisory groups specifically to address terrorism. Many state legislatures have proposed or enacted sweeping legislation to prevent terrorism. States tackled legislation on terrorism and bioterrorism in 2000 and 2001 and are gearing up with bills in 2002. For example, in 2001 Kentucky criminalized the use of weapons of mass destruction. New York is considering a bill to define biological terrorism as a crime and require life-without-parole or death sentences for those convicted.

With federal resources focused on seeking out those responsible for the Sept. 11 attacks and preventing potential future attacks, states have picked up law-enforcement duties that traditionally fall to federal officials. This is an increasing burden on the states financially, especially in a year of budget and state revenue shortfalls.

In addition, state and local law enforcement agencies find themselves competing with private security firms for staff.

State entities established to address terrorism



-  Homeland security offices or advisory positions
-  Terrorism task forces, commissions or advisory groups
-  States in both categories

Source: National Emergency Management Association, December 2001

State planning and coordination

Critical areas of planning and coordination for states in preparing for chemical and biological attacks

1. Mass casualty capability. Hospitals and health care providers should have appropriate and adequate resources to respond to an incident, and government agencies should have processes to coordinate the medical response and respond to those hardest hit first.

2. Intelligence sharing. The right people need to know the right information at the right time, and reciprocal sharing agreements should be established both vertically and horizontally across governmental agencies and responders.

3. Interstate mutual aid and regional planning. States should take advantage of the Emergency Management Assistance Compact to assist one another in responding to catastrophic events, whether natural or man-initiated. Regionally, states should plan and strategize for preparedness and response, recognizing the unique cultural, geographical or resource benefits and limitations of their region.

4. State coordination. Adequate communication and coordination needs to occur between the states, federal government and local communities. Federal agencies, which often require certain audits and assessments of state preparedness and planning, should coordinate information and requests and streamline bureaucracy, eliminating red-tape for states.

Source: Testimony by Gary McConnell, director of the Georgia Emergency Management Agency, to the U.S. Senate Governmental Affairs Committee, Oct. 17, 2001.

Bioterrorism and terrorism bills

- **Kentucky:** Passed HB 1 in 2001 to criminalize terroristic threatening and the use of a weapon of mass destruction. The General Assembly will consider BR 914, which requires various state and community agencies to collaborate on a strategy preparing for and responding to a terrorist act involving chemical or biological weapons.
- **New York:** SB 5811, currently under consideration, creates the crime of biological terrorism. A person convicted of biological terrorism shall be sentenced to life in prison without parole or death, even if the biological terrorism does not cause the death of another person.
- **Florida:** The Legislature formed two committees to address the issues of security, preparedness and planning, biological and chemical attacks and agroterrorism. A package of bipartisan supported bills was expected in 2002.
- **Michigan:** The Legislature passed three bills (SB 497, SB 498 and SB 675) in 2001 that specified penalties for the use of chemical or biological weapons or the threatening of attack or even a hoax.

States can pass all the legislation and regulations they want regarding terrorism preparedness and response, but without adequate funding they will be empty laws.

— John Mountjoy

Public health: The weakest link?

Health care, considered the nation's frontline defense in the event of a bioterrorist attack, in reality may be the weakest link.

The system's ability to handle a large increase in patients has been squeezed over the past decade by managed care and government cost cuts. In most areas of the country, there are not enough hospital beds, pharmaceutical and medical supplies, laboratory facilities or personnel to

handle a large-scale bioterrorist attack.

State and local health departments also have been doing more with less. "Public health has traditionally been underfunded," said Dr. James Hodge of the Center for the Law and the Public's Health. "A bioterrorist attack would expose the weaknesses in the system very quickly."

State statutes governing public health were developed in the late 19th and early 20th centuries to deal with outbreaks of typhoid fever, syphilis and tuberculosis, not bioterrorist attacks.

State officials are trying to shore up the nation's public-health system, to enable state and local authorities to respond quickly and appropriately to a bioterrorist attack. Three trends are outlined below.

Emergency-powers legislation. After the terrorist attacks, the Center for Law and the Public's Health drafted the Model State Emergency Health Powers Act. The model law outlines permissible actions by authorities in the event of a public health emergency. State officials have used the model law to identify gaps in existing state law. California, Hawaii, Illinois, Maine, Massachusetts, Minnesota, Nevada, New York, South Carolina and Virginia have prepared legislation based on the model act, according to a Dec. 12 review of introduced and prefiled legislation.

Proponents contend the model law safeguards due process and compensates owners of seized property. Civil libertarians protest that the legislation grants overly broad powers to a few state officials and does not adequately protect against abuse. Defenders refute that existing state laws may allow broader powers than the model legislation. "In states where there are no due process provisions, this model is a big improvement on existing public health laws," Hodge said.

In response to state officials' comments, the Center for Law and the Public's Health prepared a revised draft of the model act.

Improving public-health infrastructure. States are addressing serious shortcomings in public health infrastructure — the system of facilities, laboratories and personnel necessary to detect and respond to a disease outbreak.

A 1999 federal survey found that half of local public-health departments lacked Internet service, and only one in five had e-mail capabilities.

To improve its bioterrorism readiness, the Texas Legislature recently authorized the state Department of Health to redirect \$6 million toward hiring more epidemiologists, improving its disease-surveillance network and laboratories,

and expanding staff training. "The Homeland Security Task Force is also



Model State Emergency Health Powers Act

The Centers for Disease Control asked the Center for Law and the Public's Health at Georgetown and John Hopkins universities to draft the model act. Released on Oct. 23, the act would permit authorities in the event of a public health emergency to:

- Quarantine large numbers of people
- Seize control of hospitals and other facilities
- Mandate examination, vaccination and/or treatment
- Destroy contaminated articles or property
- Monitor, track and share health care information
- Ration medical supplies
- Charge those who refuse to comply with emergency measures with a misdemeanor crime.

The model act is available at www.publichealthlaw.net.

Most feared bioterrorist threats

- Anthrax
- Smallpox
- Cholera
- Plague
- Ebola virus
- Botulism
- Tularemia

For more information on biological or chemical agents, see the Centers for Disease Control and Prevention's Web site at www.bt.cdc.gov/Agent/Agentlist.asp.

looking to establish 10 regional rapid-response teams to handle bioterrorist attacks," said Texas Rep. Arlene Wohlgenuth.

Funding. Increased funding is most crucial to preparedness. Without additional money, state health departments will not have the equipment and personnel to protect the public's health in the case of a bioterrorist attack.

"The biggest question is who pays the bill," said Georges Benjamin, secretary of the Maryland Department of Health and Mental Hygiene. "There has to be adequate funding to build the continued capacity to respond."

— Trudi Matthews

Water supplies: Unlikely but deadly threat

Though experts think the threat of chemical and biological attacks on the nation's water supplies is minimal, policy-makers and utilities are preparing for the possibility.

Harmful microbiological agents can be introduced to water supplies at the source, such as a reservoir, treatment plant, or water-distribution system. An attack on the water supply could be deadly. "The ideal waterborne agent of bioterrorism has a low infectious dose, produces severe gastrointestinal disease in a population with little or no immunity, and

results in a higher percentage of systemic complications leading to death," said Nelson P. Moyer of the University of Iowa Hygienic Laboratory.

However, such an attack on the water supply is unlikely due to the large quantity of biological agent needed to cause an outbreak and measures used to detect and destroy pathogens at drinking-water treatment plants. Contaminated water most likely would be treated before reaching the public.

Still, more research is needed on harmful microbiological agents. The Centers for Disease Control and Prevention is investigating the viability and resistance of potential waterborne agents, including smallpox, anthrax, botulinum toxin, tularemia and hemorrhagic fever viruses.

To guard against the worst, many cities such as Baltimore are adding security measures and guards at water-treatment plants.

"Because of our population bases, American cities are the frontlines of any possible terrorist attack, biological or otherwise," said Baltimore Mayor Martin O'Malley. Some states are assisting municipalities in the costly task of fortifying security.

In preparation for the 2002 Olympic Winter Games Feb. 8-24, Utah, with the help of the FBI, employed planes and satellites to identify places where it can tighten reservoir security.

At the federal level, congressional proposals include funding for research into technologies for prevention, detection and response needed to protect drinking-water sources, treatment plants and distribution systems. The U.S. Environmental Protection Agency and the American Water Works Association have jointly assured that water supplies are unlikely to be compromised by terrorist threats. The EPA Office of Ground Water and Drinking Water has about 30 staff assigned to water-security issues through a new task force. The new unit provides guidance for drinking and wastewater

systems and is training water officials across the country on how to conduct vulnerability assessments.

The AWWA is providing training



While biotoxins could be introduced at many points in water systems, treatment and dilution will likely minimize risks to public safety.

workshops and assessment tools to assist water utilities to respond to the potential terrorist threat. Many water utilities are implementing additional security measures, including limited access to treatment and storage facilities, closer monitoring of incoming shipments,

testing of water-treatment chemicals and additional personnel training, according to the AWWA.

Lack of information impedes the safety of water supplies, said Jim Snyder, a con-

Protecting water supplies

Two barriers to improved detection and management of bioterrorism assaults are the efficient identification of the agent's presence and the efficient flow of information to those needing it. Quick and portable sensing systems capable of detecting a wide range of biological threats are critical to enabling an appropriate response. For example, a mass spectrometry method, known as MALDI-MS or Matrix-Assisted Laser Desorption/Ionization Mass Spectrometry, sorts and identifies bacterial components. With this instrument, researchers are aiming for pathogen identification within five minutes. This technology could lead to advances in food safety, counterterrorism, air and water quality, as well as health care. These detection technologies do not require moving samples to the laboratories, saving time and money.

For more information on portable detection devices for microbiological agents, such as the MALDI-MS, contact Pacific Northwest Laboratories (www.pnl.gov/dcbpweb/index.htm).

sultant to the Clinton administration on U.S. and international water systems. The EPA, FBI and the Association of Metropolitan Water Agencies are developing an Information Sharing and Analysis Center, which would provide secure, two-way communication links between the federal government and industry.

Snyder recommends that legislation aimed at protecting the water supply include a liability clause to free contractors from the fear of a lawsuit should they be unable to thwart a terrorist attack.

— Malissa McAlister

Agriculture: Vulnerable but on alert

Experts do not agree whether a chemical or biological attack on American crops or livestock is likely, but one might undermine the U.S. economy and public confidence in government.

The effects of accidental animal-disease outbreaks demonstrate the potential danger. Just last year, Great Britain spent \$2.7 billion and killed 4 million animals to control foot-and-mouth disease, which is highly contagious but is not harmful to humans.

The outbreak had a psychological impact on European consumers, who already mistrusted the government's ability to protect the food supply. A comparable outbreak in the United States could shake Americans' confidence in our traditionally safe and abundant food supply.

"[Chemical or biological] attacks against livestock and the food chain are substantially easier and less risky to carry out than those directed at civilian targets," wrote Peter Chalk, a terrorism expert at RAND Corporation, in the Feb. 9, 2001, issue of *Jane's Intelligence Review*.

At least 22 diseases are lethal and highly contagious to animals, Chalk said. These diseases are fairly easy to acquire or produce, can be handled with little danger to the terrorist and can exist in the environment for a long time. Foot-and-mouth disease, for example, can be transmitted through the air and can survive on tires or in cloth, such as clothing. Once introduced, animal diseases could spread in highly concentrated U.S. livestock populations.



State and federal officials are on alert for accidental or intentional disease outbreaks in U.S. livestock populations.

However, federal and state officials, veterinarians and agriculture producers have been on high alert for devastating livestock diseases since foot-and-mouth disease was discovered in Britain last February. Whether an outbreak is intentional or accidental, prevention and response strategies are similar.

Since Sept. 11, the U.S. Department of Agriculture has intensified and expanded its prevention and preparedness efforts introduced last spring. Anti-terrorism activities include increasing inspection personnel at ports of entry, tightening security at agriculture research facilities and coordinating more closely with state and federal agencies and industry organizations.

State officials also are building on their plans for detecting and responding to an accidental outbreak. Some states, including Arizona, Colorado, Kentucky, Montana and Nebraska, have developed emergency response plans in case of an outbreak of a foreign animal disease, according to the National Association of State Departments of Agriculture. State agriculture departments will quickly alert farmers and veterinarians to new threats and provide them with information on guarding against accidental or intentional contaminations and recognizing symptoms of harmful diseases.

Kansas passed a law (HR 2468) last April that made it a felony to knowingly infect livestock with disease. In

December, the Legislature's Special Committee on Agriculture recommended expanding the law to include the intentional exposure of plants to disease.

Human lives would be endangered if terrorists contaminate livestock with a zoonotic disease — one that originates in animals but can infect humans — such as plague, tularemia, anthrax or brucellosis.

Initial detection of the West Nile virus in New York in 1999 demonstrated the need for better communication between public- and animal-health systems. A veterinary pathologist at the Bronx Zoo suspected birds were dying from West Nile virus five weeks before human cases were detected, but scientists at the Centers for Disease Control disregarded his reports, said Jonathan Tucker of the Monterey Institute of International Studies. The zoonotic disease has killed nine humans and tens of thousands of birds since it was first discovered in the United States.

— Cindy Lackey

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Recent natural outbreaks

Avian influenza in Pennsylvania in 1983 tallied \$465 million in direct costs and \$150 million in lost trade.

Foot-and-mouth disease in Taiwan in 1997 cost more than \$5 billion, required the slaughter of 4 million swine and resulted in a total shutdown of swine exports.

Recent foot-and-mouth disease outbreaks in Great Britain cost more than \$13 billion in lost animals and exports. A similar outbreak in the United States would cost between \$54 million and \$690 million, excluding the value of lost exports, depending on size and numbers of species involved.

Source: Farm Journal, November 2001