

April 15, 1998

## Biological and Chemical Weapons

### Harbingers of a Perilous Future

*The bombing of the World Trade Center in New York and of the Alfred P. Murrah Federal Building in Oklahoma City increased Americans' awareness of our vulnerability to terrorism and re-emphasized the critical importance of those who help to protect our lives and our property. Now, the role of security professionals has taken on a new urgency as Americans begin to recognize that each attack could have been much worse. Consider the casualties and panic that would have resulted had canisters filled with biological or chemical agents been timed to explode in concert with the bombs. Even more frightening, recent developments suggest that the possibility of a biological or chemical attack is greater than ever.*

*First, the U.S. Department of Defense has begun systematic vaccination of all military personnel against anthrax, identified as the primary biological warfare threat faced by U.S. forces. Second, two Americans carrying a suspicious biological culture thought to be weapons-grade anthrax were arrested in February in Las Vegas. One of the detainees was a former member of the white supremacist organization Aryan Nations. The suspect substance turned out to be a harmless vaccine, but details of the case underscored the ease with which deadly materials can be obtained and transported. Third, despite overwhelming evidence of the existence of a massive biological weapons capability in Iraq, United Nations weapons inspectors have not been able to locate the Iraqi stockpile. Fourth, scientists in March urged the United States to increase its supply of smallpox vaccine by 20 million doses to reinstate protection in populations whose immunity has plummeted since routine inoculations against the deadly disease ceased worldwide in 1980. And fifth, on March 18, British air and sea ports were put on alert after intelligence sources revealed an Iraqi plot to smuggle anthrax into "hostile countries."*

*This issue of The Lipman Report documents the circumstances that are making the United States and the world ripe for such disasters and offers suggestions for defense against them.*

### The spreading threat

Biological and chemical agents have been used to harm or subdue enemies for centuries. Many of the recorded instances have occurred in wars. In 1346 the Tatars catapulted plague-infested cadav-

ers over the walls of Kaffa, now the Ukrainian city of Feodosiya, a port city on the Black Sea. Some medical historians speculate that this single attack led to the spread throughout Europe of the Black Death, which killed roughly one-third of the continent's population. In World War I, chlorine and mustard gas and other chemicals were implicated in more than 1.3 million casualties, including 100,000 deaths. In the 1930s and 1940s, Japan used plague and other bacteria against China. From 1983 to 1988, Iraq used poison gas extensively against Iran and against its own Kurdish civilians.

But since the 1980s, the threat of biological and chemical weapons has spread beyond declared battlegrounds. Although the military troops of a nation at war are at risk of attack from biochemical agents, the nation's population and institutions are increasingly at risk as well. Despite treaties to contain the proliferation, more nations and splinter organizations than ever before have or have the capacity to produce biochemical arsenals. The broadening threat affects individuals and companies as well as governments. As illustrated in the examples below, it is of particular concern to the security professionals who help make our communities and workplaces safe for routine activities.

In 1984, a cult follower of the late Bhagwan Shree Rajneesh—the controversial religious leader from India—was convicted of spreading salmonella bacteria on salad bars in four restaurants in a small Oregon town. After eating in the restaurants, 750 people became ill. In 1995, members of a Japanese cult released the chemical sarin in the Tokyo subway system, killing at least 11 people and injuring at least 5,500 others. Subsequent raids on the cult's facilities uncovered large quantities of the virulent toxin that causes botulism. In addition, the U.S. Senate Permanent Subcommittee on Investigations alleges that members of the cult who traveled to Zaire in 1992 to help victims of the Ebola virus were in reality seeking samples of the virus for use in biological attacks.

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Indeed, as the world shifts from military to economic competition, potential targets of biochemical attack are virtually limitless. The deliberate infection of livestock, crops, water supplies, foods or pharmaceuticals, or the deliberate release of toxic agents in crowded arenas would have major current and future economic consequences for individual companies and for the country.

#### Why the threat is so great

Numerous characteristics of the agents described above have increased the likelihood of their use by terrorists.

To begin, most chemical and biological agents are easy to obtain and inexpensive to produce. A former U.S. Air Force officer alleges that Saddam Hussein himself acquired his original supply of anthrax bacteria by mail order from a U.S. company. In recent years, worldwide supplies of lethal agents have been boosted by the breakup of the former Soviet bloc. Some former military officials, unregulated entrepreneurs and common criminals sell sophisticated weapons and components to the highest bidder. Once acquired, germ supplies can be increased quickly. A single germ, by dividing every 20 minutes, can become a colony of more than one billion in 10 hours. Nor does such production require advanced technology or scientific expertise. A former assistant director of a key U.S. arms control agency believes "that a major biological arsenal could be built with \$10,000 worth of equipment in a room 15 feet by 15 feet." Anthrax in particular is easy to weaponize. It is extremely stable and can be stored almost indefinitely as a dry powder, a property which permits it to be loaded in weapons for later use on short notice.

Chemical and biological weapons are difficult to detect in all phases. Production facilities are easily disguised as legitimate sites for agricultural, medical, and nutritional research and manufacture. Equipment is frequently dual use and can be converted easily from one task to another. In the trans-

port phase, physical search offers the only means to identify lethal substances. Detection is made still more difficult by the fact that only minuscule quantities of an agent are needed to produce massive numbers of casualties. One gram of anthrax, for example—less than one-tenth of one ounce—could kill 10 million people. In the deployment phase, chemical and biological weapons can be fatal before the victims' symptoms can be diagnosed. If inhaled, sarin can kill within minutes, anthrax and Ebola within days. Victims may well be buried before the cause of their illness is known.

A third factor in the growing threat of chemical and biological weapons is the lack of dependable countermeasures. While symptoms produced by chemical agents typically appear immediately, symptoms produced by biological agents usually are delayed. Victims of the latter are unaware that they are infected until symptoms appear, but by then, it is often too late. Even when treatment is available, healthcare professionals may not be able to identify the infecting agent quickly enough to administer the appropriate antidote. And even when both the infecting agent and the treatment are known, effective protection often requires immunization prior to exposure.

Yet another factor in the growing threat of bioterrorism is the will to use such weapons. Dissident nations and individuals acting alone appear impervious to conventional taboos and public opinion. The ethical repugnance, the certain retribution that once stayed the hand of nations exercise scant influence over the destructive inclinations of fanatical ethnic, religious and political organizations.

#### Response to the threat

The federal government has taken several actions in recent years that reflect the shift of biochemical warfare from a devastating possibility to a "clear and present danger."

The December 1997 decision by the U.S. Department of Defense to vaccinate all U.S. mili-

tary personnel against anthrax represents an important step toward protecting Americans on foreign soil, where they face the greatest risk of a biological attack. Still, the effectiveness of the FDA-approved vaccine is uncertain against weapons-grade anthrax, and questions remain about the vaccine's ability to protect against new or genetically altered strains of the bacteria. Moreover, no vaccine exists to combat Ebola, and the chemical sarin requires protective clothing.

In another important step, the federal government has allocated increased funding in recent years for the detection of biological and chemical weapons—the first and most important defense against this apocalyptic threat. The Pentagon has already begun work on programs that would allow rapid identification of dangerous agents from a distance; unfortunately, these promising technologies are still in the developmental stage.

The Biological Integrated Detection System (BIDS) is the only detection system currently in operation, but it has serious drawbacks. Identification takes approximately 30 minutes; the system can only identify four specific agents at this time; and it is unable to identify biological agents at a distance. In addition, BIDS is only available to U.S. military personnel; civilian emergency crews have no detection system.

This last point reveals one of the nation's greatest vulnerabilities: lack of civilian protection. While the military has conducted studies on biological and chemical warfare for decades, the United States of America began efforts to protect its civilian population from such attacks only during the last two years. Recent tests confirm the need for greater protection on the domestic front. Working with the FBI, three of the largest U.S. cities staged simulated biological attacks. Local emergency responders rushed into the "contaminated" areas without protective clothing. In a real attack, hospitals would have been overwhelmed.

## The Road Ahead

The following recommendations address changes that must take place on both a national and local level to offer protection against the growing danger of biological attack.

*Recognize the threat.* First, the American public—especially local authorities, security directors, law enforcement personnel and other emergency responders—must become aware of the nature and scope of the threat posed by biochemical warfare. The tests cited above indicate that most first responders would not know how to react if faced with a biochemical attack, a failure that could prove catastrophic for the American population. Local authorities must educate themselves about the wide variety of biological and chemical weapons available to terrorists, as well as about each agent's destructive potential and methods of use. Security directors should recognize the biochemical threat as viable and conduct vulnerability analyses that take this danger into account.

*Increase intelligence efforts.* Prevention remains the nation's best protection against biochemical warfare or terrorism. Intelligence gathering efforts must expand so that law enforcement authorities can thwart planned attacks before they occur. Efforts must focus on the role of human intelligence agents. Because of the dual-use nature of the equipment and facilities involved in producing biochemical weapons, the effectiveness of electronic and satellite reconnaissance is limited. To apprise their personnel of possible threats, security directors should maintain open communication lines with other industries in the area, other companies within the industry and local law enforcement agencies, as well as with the Federal Emergency Management Administration (FEMA).

Intelligence efforts must include stringent regulation of commercial orders of pathogens and more sophisticated programs to identify and control emerging diseases. One solution is a project

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called ProMED (Program to Monitor Emerging Diseases), sponsored by the Federation of American Scientists, headquartered in Washington, D.C. Although not designed specifically for biological weapons, ProMED would create a warning system of disease outbreaks that could halt the spread of new pathogens and prevent the re-emergence of known pathogens in epidemic proportions. Supporters of ProMED believe the program could distinguish disease outbreaks from hostile sources more effectively than current monitoring systems.

*Initiate total protection.* A well-informed security staff can help deter a biochemical attack through strict attention to both physical and procedural security. One of the first steps should be a thorough, team-based security assessment survey, in which the security director works with facility engineers to identify potential vulnerabilities. In addition, companies should screen employees carefully, deny access to unauthorized individuals and monitor closely the actions of all authorized visitors. The security staff should give special attention to the water supply, the facility's ventilation system and food preparation areas.

**A watchful eye is often the best line of defense. For this reason, security directors should work closely with their organizations' health and safety departments. By forming a joint committee, these entities can coordinate to form an internal intelligence network and to develop an emergency response team. This cooperative effort would allow an educated work force to report any suspicious activities to the response team, who could then investigate and defuse the matter according to carefully planned procedures.** Just weeks after the Tokyo subway attack, for example, a cleaning woman discovered two plastic bags in a rest room at another busy subway station in Tokyo. An automatic trigger was rigged to combine the contents of the bags to produce cyanide gas. Had

the woman not intervened, the gas would have traveled through the ventilation, system and killed thousands of commuters.

*Develop a response plan.* Security directors must develop a crisis management plan to minimize the consequences of a biochemical attack. An effective plan should delineate the role of all emergency responders at the facility and should include procedures for notifying local authorities, evacuating the premises and dispatching trained medical assistance. A successful response plan requires absolute commitment from the highest levels of management. If emergency responders lack the appropriate education and equipment, a crisis management plan v founder in the face of a biochemical attack.

*Just as Alfred Nobel, the inventor of dynamite, recognized the destructive potential of his discovery, so the world recognizes the destructive potential of many of its greatest discoveries. Achievements in chemistry and biology have fed the world, healed the sick and revolutionized industry. These same advancements now have greater potential than ever to destroy humanity*

*Chemical and biological weapons are not a new threat, but they are a newly urgent one. Evidence shows that the problem is enormous. Experience shows that the consequences are unspeakable. We must ensure that in our workplaces, in our communities and in our government, the issue is given top priority. So far, we have been lucky. The men arrested in Las Vegas could have been carrying a lethal cultural. Poisons or germs could have been released in the Oklahoma and New York bombings. Will it take a catastrophe to move us to action? We must initiate total protection, and we must do it now. Prevention of biochemical attacks must be our goal. Recovery from such a nightmare may not be possible.*



The Lipman Report Editors