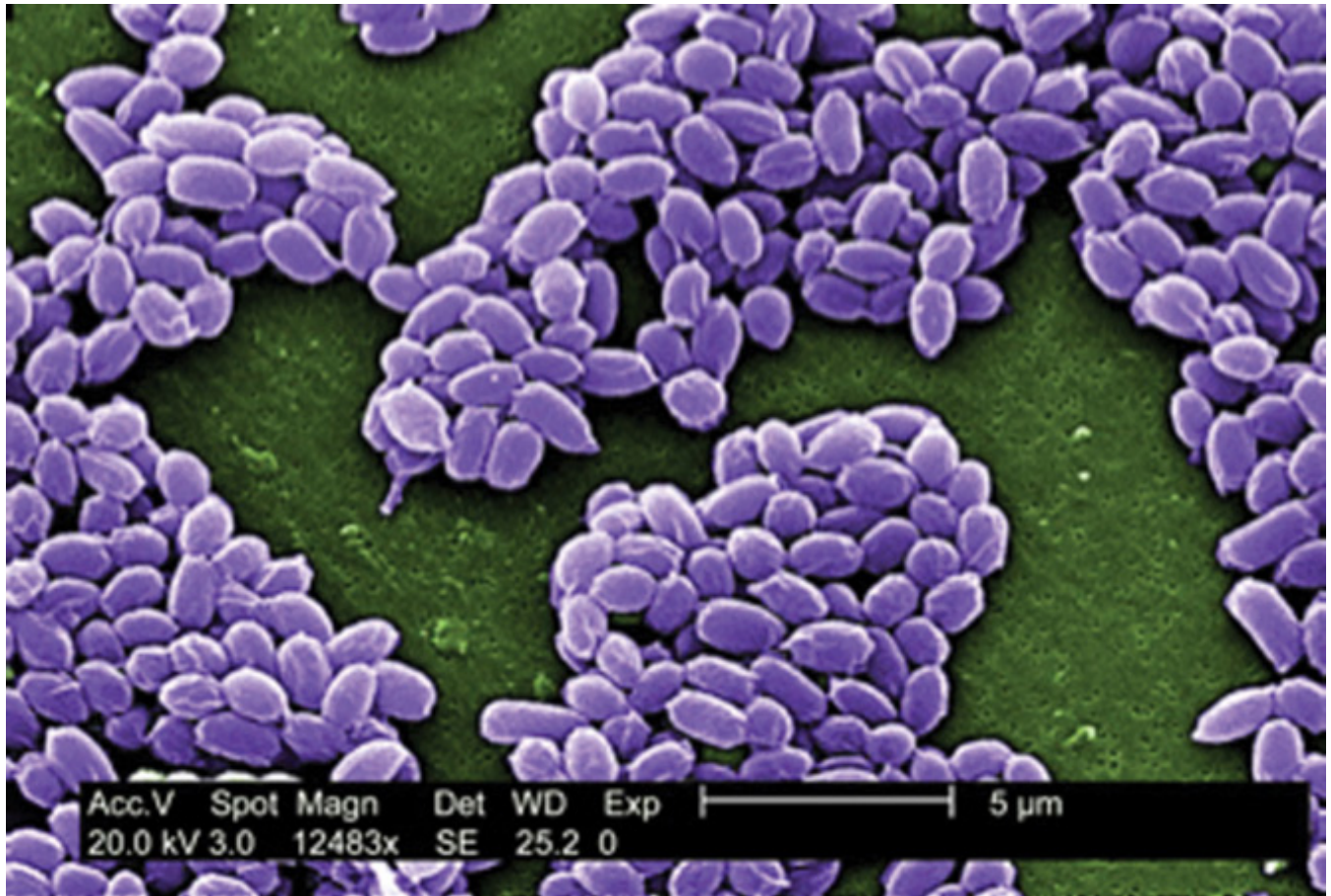


Bioterrorism

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From Opposing Viewpoints in Context



[Bioterrorism](#) refers to the use of lethal biological agents to wage terror against a civilian population. It differs from [biological warfare](#) in that it also thrives on public fear, which can demoralize a population. An example of bioterrorism is provided by the [anthrax](#) outbreak which occurred during September-November 2001 in the [United States](#). Anthrax spores intentionally spread in the mail distribution system caused five deaths and a total of twenty-two infections. The Centers for Disease Control (CDC) classifies bioterror agents into three categories:

- Category A Diseases/Agents can be easily disseminated or transmitted from person to person and that can result in high mortality rates while causing public panic and social disruption. Anthrax, botulism, [plague](#), [smallpox](#), tularemia, and viral hemorrhagic fever viruses belong to this category.
- Category B Diseases/Agents are moderately easy to disseminate and that can result in low mortality rates. Brucellosis, food and water safety threats, melioidosis, psittacosis, staphylococcal enterotoxin B, and typhus belong to this category.
- Category C Diseases/Agents include emerging pathogens that could be engineered for mass dissemination in the future because of availability or ease of production and dissemination and that have potential for high mortality rates.

The anthrax attacks of 2001 were very limited in scope compared to the potential damage that could result from large-scale bioterrorism. A large-scale bioterrorism attack on the United States could threaten vital [national security](#) interests. Massive civilian casualties, a breakdown in essential services,

violation of democratic processes, civil disorder, and a loss of confidence in government could compromise national security, according to a report prepared by four non-profit analytical groups, including the Center for Strategic and International Studies and the John Hopkins Center for Civilian Biodefense Studies.

Probably the first sign of a bioterrorism attack is when people infected during the attack start developing symptoms and showing up in hospital emergency departments, urgent care centers, and doctors' offices. By this time, people infected in the initial attack will have begun spreading it to others.

An added concern is that most physicians have never treated a case of a bioterrorism agent such as smallpox or Ebola. This is likely to cause a delay in diagnosis, further promoting the spread of the contagious agent. For example, based on past smallpox history, it is estimated that each person infected during the initial attack will infect another ten to twelve persons. In the case of smallpox, only a few virus particles are needed to cause infection. One ounce of the smallpox virus could infect 3,000 persons if distributed through an aerosol attack, according to William Patrick (1927-2010), senior scientist in the United States [biological weapons](#) program before its official termination in 1969, in a 2001 *Washington Post Magazine* interview. Given these numbers, a terrorist with enough smallpox virus to fill a soda can could potentially infect 36,000 people in the initial attack who could then infect another 360,000-432,000. Of these, an estimated 30 percent or 118,800-140,400 would likely die.

Using disease as a weapon is not a new idea. It goes back at least hundreds of years and possibly much further. One account of the beginning of the great plague epidemic which occurred in Europe in the fourteenth century and killed a third of the population states that it started with an act of bioterrorism, as reported by A. Daniels in *National Review*. The Tartars were attacking a Genoan trading post on the Crimean coast in 1346 when the plague broke out among them. Turning the situation into a weapon, the Tartars catapulted the dead and diseased bodies over the trading post walls. The Genoans soon developed the deadly disease and took it back with them to Genoa, where it soon engulfed all of Europe. Another example from early North American history is provided by the British soldiers who deliberately gave smallpox-infected blankets to Native Americans in the 1700s.

The Hague Conventions of 1899 and 1907 included clauses outlawing the deliberate spread of a deadly disease. However, during World War I, German soldiers attempted to infect sheep destined for Russia with anthrax. After the war, forty members of the League of Nations, the precursor of the United Nations, outlawed biological weapons. But many countries continued biological warfare research. During World War II, the Japanese mass-produced a number of deadly biological agents, including anthrax, typhoid, and plague. They infected water supplies in China with typhoid, killing thousands, including 1,700 Japanese soldiers. Bioterrorism entered popular literature more than a century ago when British science fiction writer H. G. Wells (1866-1946) wrote "The Stolen Bacillus", a novel in which a terrorist tries to infect the London water supply with cholera, an acute and often deadly disease.

Throughout the Cold War era, several nations, including the United States and Soviet Union, developed sophisticated facilities to produce large amounts of biological agents to be used as weapons. Most nations have renounced the manufacture, possession, or use of biological weapons. However, a few rogue nations, including Iran, Iraq, and North Korea, still have active biological warfare programs according to the United States military. Many experts in the field believe that [terrorists](#) could obtain deadly biological agents from these rogue nations, or from other terrorist or criminal groups

active in nations of the former Soviet Union.

Among the Category A Diseases/Agents, six highly lethal biological agents are most likely to be used by terrorists, according to the CDC. Depending on the biological agent, disease could be spread through the air, or by contaminating the food or water supply. Scientists are conducting research to develop methods of detection for bioterrorist attacks. Methods of real-time outbreak detection of diseases are referred to as biosurveillance. Researchers at the University of Pittsburgh Center for Biomedical Informatics developed an automated detection system in 1999. The system, Real-Time Outbreak Disease Surveillance (RODS), is able to access and collect data from hospitals, clinic, laboratories, and pharmacies for early detection of a potential bioterrorism attack. U.S. President George W. Bush issued a proposal to provide biosurveillance detection systems for all fifty states as part of the [Public Health](#) Security and Bioterrorism Preparedness and Response Act of 2002. Other software programs have been developed for advanced detection such as Electronic Surveillance System Early Notification for Community-Based [Epidemics](#) (ESSENCE), Early Aberration Response System (EARS), Biowatch, and Bioshield. Biosense is a surveillance system used by the U.S. Center for Disease control. By 2008, more than one hundred sites in the U.S. were employing at least one method of biosurveillance.

- Anthrax, caused by *Bacillus anthracis*, is an acute infectious disease that most commonly occurs in hoofed animals but can also infect humans. Initial symptoms are flu-like and can occur up to several weeks after exposure. Treatment with antibiotics after exposure but before symptoms develop is usually successful in preventing infection. There is an anthrax vaccine used by the military but it is not available for civilian use. About 90 percent of people who are infected die.
- Botulism is a muscle-paralyzing disease caused by a toxin produced by a bacterium termed *Clostridium botulinum*. The botulinum toxin is the single most poisonous substance known, according to the Center for Civilian Biodefense Strategies. It is a major bioterrorism threat because of its extreme potency and high rate of death after exposure. It is not contagious and would likely be used by terrorists to contaminate food or water supplies. Flu-like symptoms, along with difficulty speaking, seeing, or swallowing, usually occur 12-72 hours after exposure.
- Plague is a disease caused by *Yersinia pestis*, a bacterium found in rodents and their fleas in many areas around the world. When released into the air, the bacterium can survive for up to an hour. Of the three types of plague (pneumonic, bubonic, and septicemic), pneumonic is the one most likely to be used by terrorists since large stockpiles were developed by the United States and Soviet Union in the 1950s and 1960s. Symptoms include fever, headache, weakness, chest pain, and cough. Early treatment with antibiotics can reduce the risk of death.
- Smallpox is caused by the *Variola major* virus and was eliminated from the world in 1977. However, the Soviet Union had large stockpiles of the virus in the 1980s and much of it may still be stored in the former Soviet republics and available to terrorists. Although only two facilities in the world are authorized to maintain smallpox specimens, in 2013, workers at a U.S. government laboratory in Maryland discovered vials of smallpox that had been in storage since the 1950s. The incident raised fears that other undiscovered smallpox samples could be in storage in the former Soviet Union or elsewhere. Smallpox spreads directly from person to person and can be dispersed in the air. Also, the amount needed to cause infection is very small. Symptoms, including high fever, fatigue, and head and back aches, commonly develop in about twelve days. Flat, red skin lesions follow initial symptoms. Death occurs in about 30 percent of the cases. There is a vaccine against smallpox but routine vaccinations ended in 1972. The government has an emergency supply of about 15 million doses of the vaccine.
- Tularemia, an infectious disease caused by the bacterium *Francisella tularensis*, is usually found in animals but can also infect humans. It could be delivered in a terrorist attack through food, water, or air. Symptoms of tularemia include sudden fever, chills, headache, muscle ache, dry cough, weakness, and pneumonia. The disease can be treated with antibiotics if started early. A vaccine has been developed, but is not available to the general public.
- Exotic diseases, including viral hemorrhagic fevers, such as Ebola, and arenaviruses, such

as the one causing Lassa fever, are also biological agents of interest to terrorists. The Ebola virus is one of the most lethal known, and easily spreads from person to person, with no vaccine or effective treatment presently known.

The possibility that bioterrorists may strike at food and water supplies is of serious concern to health and environmental officials. Such an attack initially could be perceived as unintentional food poisoning, which might delay recognition of the outbreak, and complicate identification of the contaminated food. What many consider an act of bioterrorism by domestic terrorists occurred in The Dalles, Oregon, in 1984. Members of a religious cult contaminated restaurant salad bars with *Salmonella typhimurium*, a nonlethal bacterium that nonetheless infected 751 people. The incident was reportedly a trial run for a more extensive attack to disrupt local elections later that year.

"The United States [food supply](#) is increasingly characterized by centralized production and wide distribution of products," according to a May 2002 article in *The Lancet*. The "Deliberate contamination of a commercial food product could cause an outbreak of disease, with many illnesses dispersed over wide geographical areas." The article also stated that the anthrax letter attacks of 2001 have shown that even a small biological attack can produce considerable public nervousness and challenge the health care system.

- [Bioterrorism](#)

Further Readings

Resources

Books

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Web Sites

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