

Bioterrorism and Homeland Security

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**“Disease has long
been the deadliest
enemy of mankind.”**

President George Bush

In November 2001, President George W. Bush said, “Disease has long been the deadliest enemy of mankind. Infectious diseases make no distinctions among people and recognize no borders. We have fought the causes and consequences of disease throughout history and must continue to do so with every available means. All civilized nations reject as intolerable the use of disease and biological weapons as instruments of war and terror.”

What is bioterrorism?

The deliberate release of anthrax, smallpox, ebola, plague, or any highly fatal organism in a large, unsuspecting population

But what is bioterrorism? Biological agents are living organisms—viruses and bacteria or biotoxins—that cause disease in people.

A biological terrorist attack would be the deliberate release of anthrax, smallpox, ebola, a plague, or another highly fatal organism in a large, unsuspecting civilian environment that would be conducive to the rapid spread of the organism.

Many of these agents

- Inhaled
- Through skin or eaten
- Are not contagious — anthrax
- Are highly contagious — smallpox

Many of these organisms must be inhaled, enter through a cut in the skin, or be eaten to make you sick. Some biological agents, such as anthrax, are not contagious. Others, like the smallpox virus, can result in diseases that are highly contagious.

History

- Assyrians
- Plague
- Smallpox
- World War I
- World War II research



The use of biological weapons has been recorded numerous times in history. Two of the earliest reported uses occurred in the 6th century BC, with the Assyrians poisoning enemy wells with rye ergot—a fungus blight that forms hallucinogenic drugs in bread—and Solon's use of the purgative herb hellebore during the siege of Krissa.

In 1346, a plague broke out in the Tartar army during its siege of Kaffa. The attackers hurled the corpses of those who died over the city walls. The plague epidemic that followed forced the defenders to surrender and may have started the Black Death pandemic that killed 25 million Europeans in 5 years—about one-third of the population.

On several occasions, smallpox was used as a biological weapon. Pizarro is said to have presented South American natives with variola-contaminated clothing in the 15th century. The English did the same when Sir Jeffery Amherst provided Indians loyal to the French with smallpox-laden blankets during the French and Indian War of 1754 to 1767.

During World War I, German agents are believed to have inoculated horses and cattle with glanders in the United States before the animals were shipped to France. Glanders is a bacteria-caused infectious disease carried by horses, mules, and cattle, which can be transmitted to humans caring for these animals. Mortality rates were over 50 percent.

World War II

- 1940 plague epidemic in China and Manchuria
- By 1945, Japanese stockpiled anthrax
- U.S. began research in 1943



A post-World War II investigation revealed that the Japanese had an ambitious biological warfare program and conducted experiments on prisoners of war, most on victims exposed to aerosolized anthrax.

In 1940, a plague epidemic in China and Manchuria followed reported over-flights by Japanese planes dropping plague-infected fleas. By 1945, the Japanese program had stockpiled 400 kilograms of anthrax to be used in a specially designed fragmentation bomb. In 1943, the United States began research into the offensive use of biological agents. This work was started, interestingly enough, in response to a perceived German biological warfare threat as opposed to a Japanese one. The United States produced biological agents until 1969, when President Nixon stopped all offensive biological and toxin weapon research and production.

History

Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological and Toxin Weapons —

the Biological Weapons Convention (1972)



In 1972, the United States and many other countries signed the Biological Weapons Convention. This treaty prohibits the stockpiling of biological agents for offensive military purposes and also forbids research into such offensive employment of biological agents. However, despite this historic agreement, biological warfare research continued to flourish in many countries hostile to the United States, including Cuba, Iran, Iraq, Syria, and North Korea.

History

- Yellow Rain in Southeast Asia
- Anthrax in Sverdlovsk
- Ricin “umbrella” assassination in London

Among the most notorious cases of suspected or actual use of biological weapons were the yellow rain incidents—possible attacks with aerosolized trichohecene toxins—in Southeast Asia in the late 1970s, the accidental release of anthrax at Sverdlovsk in 1979, and the use of the poison ricin in the infamous “umbrella assassination” of journalist Georgi Markov in London by the communist Bulgarian government.

History

Iraq

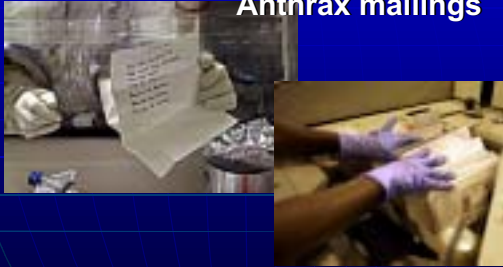


In August 1991, representatives of the Iraqi government announced to leaders of United Nations Special Commission Team 7 that they had conducted research into the offensive use of biological weapons. This was the first open admission of biological weapons research by any country in recent memory.

In 1995, further information on Iraq's offensive program was made available to United Nations' inspectors. Iraq conducted research and development work on anthrax, botulinum toxins, *Clostridium perfringens*, aflatoxins, wheat cover smut, and ricin.

History

Anthrax mailings



In October and November 2001, letters containing anthrax were sent to locations in five different geographic areas in the United States: Boca Raton, Florida; New York City; Washington, DC; Hamilton, New Jersey; and Oxford, Connecticut. Twenty-three people developed anthrax as a result of these mailings. Eleven suffered from the inhalation form of the disease and five of these people died.

Anthrax Mailings



Thousands more were directly affected, including individuals working in facilities contaminated by the attacks such as the Brentwood postal facility in Washington, DC, the Congress, and NBC News in New York.

Hundreds of suspicious powder incidents also have been reported at our embassies and consulates overseas—fortunately none involving real anthrax—and a new State Department pouch and mail facility had to be constructed. The FBI is actively investigating these anthrax attacks.

The Threat

I want to provide you with a realistic appraisal of the threat of a terrorist attack in which biological or chemical weapons are used. In doing so, it is vital that we place this threat into meaningful perspective.

Attacks by Al-Qaida

- U.S. Embassies in Kenya and Tanzania
- *U.S.S. Cole*
- World Trade Center and Pentagon
- Tunis synagogue in 2002
- U.S. Consulate General in Karachi (2002)
- Suicide bombings at U.S. housing compounds in Riyadh

Al-Qaida and its affiliates, surrogates, and off-shoots have undertaken operations using large-scale, explosive-laden vehicles or hijacked aircraft against chosen targets. Examples of past attacks include:

- U.S. Embassy bombings in Kenya and Tanzania in 1998
- Suicide bombing of the *U.S.S. Cole* in Yemen in 2000
- Attacks on the World Trade Center and the Pentagon in 2001
- Truck bombing of a synagogue in Tunis in 2002
- Attempted bombing of the U.S. Consulate General in Karachi in 2002
- Suicide bombings of the U.S. housing compounds in Riyadh in 2003

- Threat remains real
- Terrorist groups other than Al-Qaida
- Increasing interest in biological weapons

However, while the threat of an attack in which biological agents are used is real and remains a distinct possibility, it is not the sole purview of Al-Qaida. We cannot rule out the possibility that terrorists other than Al-Qaida may attempt to use a chemical or biological weapon. In recent years, we have seen an increasing interest by terrorists of diverse motivations and political persuasions to develop, acquire, and employ biological weapons. We have seen a series of arrests in Europe of possible Al-Qaida affiliates who have been in possession of ricin.

Usama bin Laden has publicly endorsed and advocated the use of weapons of mass destruction, including biological agents, against the United States.

Motivation

- Create mass casualties
- Overwhelm emergency response systems
- Disrupt normal routine
- Shut down and contaminate facilities
- Create panic and confusion
- Loss of faith in ability to prevent attacks

Terrorists use biological or other weapons of mass destruction agents to cause one or more of the following effects in a very economic or dramatic fashion:

- Create mass casualties
- Overwhelm and create a loss of faith in emergency response systems
- Disrupt normal city routine
- Shut down and contaminate facilities
- Create and maintain panic and confusion
- Create a loss of faith by the general public in the government's ability or desire to protect the population or to prevent terrorism

Terrorists' Considerations

- Terrorists can easily maintain covert and clandestine posture
- Small quantities create large impact
- Biological weapons are inexpensive
- Agents difficult to detect
- Biological weapons potentially available from states that support terrorism

Terrorists' decisions to use biological weapons may be based on several considerations:

- It is relatively easy for terrorists to maintain a covert and clandestine posture
- Small quantities of biological agents can produce a very large terrorist impact
- Biological weapons are relatively cheap and easy to produce
- Biological agents are difficult to detect
- Many biological weapons are potentially available from states and organizations that support terrorism

Terrorists' Considerations

(continued)

- Soviet disintegration increased concerns about protection, control, and accountability of agents
- Agents need not be pure to create casualties
- Attacks create psychological damage regardless of casualties

- The disintegration of the former Soviet Union and the Warsaw Pact increased concerns about the protection, control, and accountability of biological agents and other weapons of mass destruction, the related materials and technologies, and the potential unemployment and proliferation of thousands of scientists skilled in the field.
- Biological agents do not have to be pure to create casualties
- Attacks do not have to be successful in creating casualties to be successful psychologically in damaging the government and population.

Potential Targets

- Tendency toward large, indiscriminate targets with high contamination rate
 - Mass transit systems
 - Modern office buildings
 - Large indoor shopping areas
 - Airports, crowded ports, and train stations
 - Congested, open-air events with restricted exit routes
 - Large indoor sports arenas, convention centers, concert halls

Terrorists tend to attack larger, more indiscriminate targets—such as special events, areas of specific or general congregation, and targets where a high contamination or infection rate would be more assured.

Targets include:

- Subway systems or other heavily used mass transit systems
- Modern office buildings that rely solely or mostly on air conditioning systems to supply air flow
- Large modern indoor and outdoor shopping areas that are crowded with people and activity
- Airports, crowded ports, and train stations
- Large, congested, open-air events and sites with restricted exit routes, such as inner-city market areas, open-air stadiums, main streets during rush hour
- Large indoor sports arenas, convention centers, and concert halls and theaters.

It is quite possible that two different chemical or biological agents could be used in the same area at the same time to confuse or delay recovery and response actions by authorities.

Current Biological Weapons Programs

- 10-12 countries pursuing biological weapons programs
- Black market
- Materials used in universities / medical research vulnerable

The United States believes that a number of countries are currently pursuing offensive biological weapons. Chemical and biological weapons are colloquially referred to as “the poor man’s atomic bomb.”

It is unknown exactly how much and which types of biological weapons may be on the black market or in unauthorized hands after the dissolution of the Soviet Union, the Warsaw Pact, and the subsequent logistical chaos in the former Red Army. The potential that these materials could fall into the hands of extremists and terrorist organizations is real.

In addition, many universities—which may have limited security—conduct medical research with various forms of dangerous bacteria, toxins, chemicals, and radiological materials. These items are vulnerable to misuse in these facilities and also are vulnerable to theft at hospitals, universities, and at some storage and disposal sites.

Facilities

- Production requires rudimentary skills and facilities
- Production can be hidden behind screen of legitimate research

The facilities required to culture and produce many biological weapons require only rudimentary skills and facilities.

Many states, universities, and private individuals can hide biological weapons production under the screen of legitimate medical and humanitarian research.

Our Mission

- Be prepared!
- Long-term strategy
- Significant investment in healthcare system

One of the most important missions we have as a nation is to be prepared for the threat of bioterrorism. An effective biodefense requires a long-term strategy and significant new investment in the U.S. healthcare system.

U.S. Response Today

- Improvements in preparedness
 - National stockpile of medical countermeasures expanded and more accessible
 - Additional diagnostic tests, drugs, and vaccines under development

Today, the country is better prepared than ever to meet the threat of terrorist attack with a biological, chemical, radiological, or nuclear agent. The national stockpile of medical countermeasures is more extensive and can be accessed more rapidly than ever, and additional diagnostic tests, drugs, and vaccines are under development.

Since 9/11— Steps Taken

- HHS Office of Public Health Preparedness to address bioterrorist threats
- New director of CDC is noted for her work in combating anthrax and bioterrorism
- Plans announced to inoculate 10 million health care, emergency, law enforcement, and military personnel against smallpox
- System designed to detect airborne release of anthrax and smallpox

Since the September 11 attacks, the U.S. Government has taken steps to significantly improve our ability to protect American citizens against the threat of bioterrorism.

The Department of Health and Human Services established a new Office of Public Health Preparedness to address bioterrorist threats.

Dr. Julie Gerberding, an infectious disease expert noted for her work in combating anthrax and bioterrorism, was named director of the Centers for Disease Control and Prevention.

In December 2002, the Bush administration announced plans to start inoculating some 10 million healthcare, emergency, law enforcement, and military personnel against smallpox before making the vaccine available to the general public.

In January 2003, the Bush administration created a system designed to detect the release of deadly germs such as anthrax and smallpox within 24 hours by adapting many of the EPA's 3,000 air-quality monitoring stations nationwide.

Since 9/11 *(continued)*

- Increase in funding to combat terrorism
- June 2002 bioterrorism law for stockpiling medicines and vaccines
- Project Bioshield proposes spending \$5.9 billion to defend against bioterrorism
- NIH development capabilities strengthened
- Make promising treatments quickly available

Funding to combat bioterrorism shot up dramatically following the September 11 attacks and the 2001 anthrax letters. A June 2002 bioterrorism law provided \$4.6 billion for stockpiling medicines and vaccines, enhancing inspections of the nation's food supply, increasing water-system security, and improving hospital preparedness. More than \$3 billion has already been spent.

In his 2003 State of the Union address, President Bush announced Project Bioshield, which proposes spending \$5.9 billion to defend against bioterrorism. Project Bioshield will ensure that resources are available to pay for next-generation medical countermeasures and will allow the government to buy improved vaccines or drugs for smallpox, anthrax, and botulinum toxin. Funds would also be available to buy countermeasures to protect against other dangerous pathogens, such as ebola and plague, as soon as scientists verify the safety and effectiveness of these products.

We are strengthening NIH development capabilities by speeding research and development on medical countermeasures based on the most promising recent scientific discoveries.

The FDA is being given the ability to make promising treatments quickly available in emergency situations. This tightly controlled new authority can make the newest treatments widely available to patients who need them in a crisis.

Responding Agencies

- Department of Homeland Security
 - Federal Emergency Management Agency
- Department of Health and Human Resources
 - Centers for Disease Control
 - ✦ Monitors public health threats
 - National Institutes of Health
 - ✦ Oversees infectious disease research and new drug therapies
- Department of Defense
 - Research and detection of biowarfare agents
- First line of response — clinicians and hospital personnel

The threat from bioterrorism is serious, but quick and effective health and medical responses could save many lives. Preparedness has improved significantly in the last 2 years, and public health authorities are on alert. A number of federal agencies are ready to respond in the event of an attack.

The Federal Emergency Management Agency, now part of the Department of Homeland Security, would coordinate the overall federal response to a biological attack.

The CDC is responsible for monitoring public health threats, including those from a deliberate release of biological agents.

The National Institutes of Health oversees research efforts on infectious diseases and the development of new drug therapies.

The Defense Department is active in research and detection of biowarfare agents.

But the critical first level of response to a bioterrorist incident would come from the clinicians and hospital personnel around the country who would treat the initial victims of an attack and make an early diagnosis. They would report their findings to state and local health authorities, who would then inform federal agencies.

Diseases that concern most authorities are those that cause potentially high death rates, trigger public panic, and require special action to cure and contain.

Diseases of Concern

- High death rates
- Public panic
- Require special attention to cure and contain



Anthrax

- Danger depends on various factors
- Not contagious
- Three methods of contamination
 - Skin anthrax: 5 to 20% fatality
 - Lung anthrax: 80% fatality
 - Ingested anthrax: 70% fatality

Anthrax is a bacteria often found naturally in the soil. It is also made in research and military labs. The danger of anthrax depends on how it is contracted, on the age and health of the victim, and on the potency of the anthrax strain. It is not contagious and generally enters the body in one of three ways.

- Skin anthrax is the least dangerous form. Untreated, it may kill 5–20 percent of its victims.
- Lung anthrax is genuinely life threatening. Untreated, it may kill over 80 percent of its victims. However, following the 2001 mail attacks, doctors learned that people who inhale the spores can recover even if treatment starts after their symptoms appear.
- Ingested anthrax is also dangerous. Untreated, it may kill between 25–70 percent of its victims. The United States has never had a documented case of ingested anthrax.

Smallpox

- Extremely contagious virus
- 30% fatality rate
- No known cure
- Vaccine prevents infection and reduces severity of illness

Smallpox is an extremely contagious virus that is spread like the common cold. Historically, smallpox killed about 30 percent of those infected, with small children and the elderly proving the most vulnerable.

There is no known cure for smallpox. The vaccine will prevent infection and can reduce the severity of the illness, even prevent symptoms, if given within 4 days of exposure.

Botulism

Potentially fatal, but noncontagious

Botulism is a potentially fatal but noncontagious disease marked by muscle paralysis. A single gram of botulism toxin theoretically would be enough to kill more than a million people if a lethal dose were administered to each person individually.

Plagues

- **Bubonic Plague**
 - Carried by rodents, transmitted by flea bites
 - Cannot spread from person to person
 - More common, less deadly

Two plagues are of concern: Bubonic Plague is carried by rodents and transmitted to humans via flea bites—it cannot be spread from person to person. It is more common and less deadly than Pneumonic Plague.

Pneumonic Plague

- Affects lungs
- Travels through air, highly contagious
- Very rare and lethal
- 100% mortality, if untreated

Pneumonic Plague affects the lungs. It travels through the air and is highly contagious. It is very rare and lethal. If untreated, the mortality rate is 100 percent.

Tularemia

- Carried by small mammals
- As a weapon — aerosolized
- Death rates could climb to 60%

Tularemia—or Rabbit Fever—is caused by bacterium carried by small mammals such as rabbits and squirrels. If used as a weapon, it would probably be aerosolized, causing an especially serious, inhaled form of the disease. If untreated, death rates could climb to 60 percent.

Hemorrhagic Fever

- Deadly class of viruses
- HRFs carried by animals in Africa, Asia, Middle East, and South America
- Cause of spread unknown
- Transmitted via blood or other bodily fluids

Hemorrhagic Fever viruses are a deadly class of viruses that produce high fever and leakage from blood vessels, ultimately causing bleeding from internal organs as well as the eyes, ears, nose, and mouth. HFVs are carried by animals in Africa, Asia, the Middle East, and South America. We don't know how these diseases are spread from animals to humans, but once they do, they can be transmitted from person to person via contact with blood or other bodily fluids.

New Laws

- Created to address homeland security concerns
- Patriot Act of 2001
 - Electronic surveillance and physical searches
 - Essential sources of information

New laws were created to address concerns about homeland security and issues that may impact domestic prosecution. Congress reacted to the terrorist attacks of September 11, 2001, by passing laws providing new tools to fight terrorism, the most important of which is the Patriot Act of 2001. The Patriot Act is a comprehensive document, but I want to mention a few of provisions relevant to our discussion today.

Crime Control and Safe Streets Act

- Title III concerns authorization and use of electronic monitoring by government for criminal activities
- Court authorization needed to gather information on threats to national security?

In 1968, Congress passed the Omnibus Crime Control and Safe Streets Act. Title III of that act contains provisions concerning the authorization and use of electronic monitoring by the government to gather information regarding criminal activities. Under Title III, the government has specific authorization procedures and rules to follow when it monitors people and places to collect evidence of violations of criminal laws. But Title III did not answer the question of whether or not the government is required to obtain court authorization for electronic monitoring conducted for the collection of information regarding threats to national security.

Foreign Intelligence Surveillance Act

Passed to:

- Require Judicial approval prior to electronic surveillance and searches for foreign intelligence purposes
- Set up FISA Court to review government applications for national security monitoring

To establish the necessary authority and procedures for the government to conduct wiretaps in response to foreign threats, Congress passed the Foreign Intelligence Surveillance Act (FISA) in 1978. FISA established a requirement of judicial approval before the government engages in an electronic surveillance (as well as physical searches) for foreign intelligence purposes. The act established the FISA Court, consisting of U.S. District Court judges designated by the Chief Justice of the United States. The court's purpose is to review government applications for national security electronic monitoring and searches and authorize their use with appropriate limitations.

FISA vs. Title III

FISA

— Gather foreign intelligence information

Title III

— Gather information for criminal prosecution

Resulted in a separation of, and lack of coordination between, criminal and foreign intelligence investigators

In essence, the purpose of a FISA order is to gather foreign intelligence information, while the purpose of a Title III wiretap order is to gather evidence for criminal prosecution.

Patriot Act

Amends FISA to allow greater sharing of intelligence information between law enforcement and national security investigators

The Patriot Act amended FISA so that intelligence officials may coordinate efforts with law enforcement to investigate or protect against attacks, terrorism, sabotage, or clandestine intelligence activities without undermining the required certification for FISA orders.

The result is that Congress rejected the idea of having a wall between foreign intelligence and law enforcement officials when the object of the investigation is to detect, prevent, or prosecute foreign intelligence crimes. It is now permissible for intelligence and law enforcement officials to coordinate their efforts using all available resources, including FISA surveillances and searches, to detect, frustrate, and convict spies and terrorists.

Other Significant Laws

- 18 USC 175—Prohibitions with respect to biological weapons
- 18 USC 2332a—Use of certain weapons of mass destruction
- 18 USC 2332b—Acts of terrorism transcending national boundaries
- 18 USC 2339—Harboring or concealing terrorists

I would like to mention a few other significant laws pertaining to biological weapons or bioterrorism.

- 18 USC 175 — Prohibitions with respect to biological weapons
- 18 USC 2332a — Use of certain weapons of mass destruction
- 18 USC 2332b — Acts of terrorism transcending national boundaries
- 18 USC 2339 — Harboring or concealing terrorists

If there is an attack . . .

- May not be immediately obvious
- Pattern of unusual illness
- Become aware through media broadcasts
- Immediate information on what to do may not be available

Unlike an explosion, a biological attack may or may not be immediately obvious. While it's possible that you would see signs of a biological attack, as was sometimes the case with the anthrax mailings, it's more likely that local health care officials will report a pattern of unusual illness, or there will be a wave of sick people seeking emergency medical attention. You would probably learn of the danger through an emergency radio or TV broadcast, or some other signal used in your community.

In the event of a biological attack, public health officials may not be able to provide immediate information on what you should do. It will take some time to determine exactly what the illness is, how it should be treated, and who is in danger.

Stay Tuned to Media/Internet

- Are you in immediate danger area?
- What are signs?
- Are medications available?
- Where?
- Who should get them?
- Where to seek emergency care?

However, you should watch TV, listen to the radio, or check the Internet for official news, such as:

- Are you in the area authorities consider in danger?
- What are the signs and symptoms of the disease?
- Are medications or vaccines being distributed?
- Where?
- Who should get them?
- Where should you seek emergency medical care if you become sick?

Contacts

Domestic Preparedness Chemical/Biological Hotline	(800) 424-8802
Centers for Disease Control/ Emergency Operations Center	(770) 488-7100
Federal Bureau of Investigation	www.fbi.gov
Federal Emergency Management Agency	www.fema.gov
Office of Emergency Preparedness	www.ndms.dhhs.gov
Metropolitan Medical Response System	www.mmrs.hhs.gov
State Health Agencies	www.statepublichealth.org

Information is available from several sources, as shown on this slide.

You can call the Domestic Preparedness Chemical/Biological Hotline, which is manned by the National Response Center and operates 24 hours a day, 7 days a week.

You can contact the Centers for Disease Control, Emergency Operations Center, your local health department, local police, or other law enforcement agency if you believe you have been exposed to a biological or chemical agent.

Additional emergency contacts include the Federal Bureau of Investigations, the Federal Emergency Management Agency, the Office of Emergency Preparedness, the Metropolitan Medical Response System, and state health agencies.

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