

Biological weapons: developments, threats, and biodefense



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Biological weapons are tools made to hurt a large number of people via bacteria, toxins, and viruses (Riedel). The use of biological weapons has been going on for millennia, starting with the use of dead bodies that could be thrown at others to infect the enemy (Riedel). Now, as technology becomes increasingly advanced and diseases and toxins are studied more in-depth, the creation of biological weapons has gotten easier, especially because strains of viruses can be bought online or smuggled across borders (Ezepchuk). Because every country can obtain access to biological agents to make weapons, it is important to learn from past biological attacks in world history and to develop vaccines and biological weapons in order to effectively combat enemies who use it against the United States of America and the country's allies.

Historical examples of the use of biological weapons are necessary to understand the fear that can ensue and the damage that can be done to the populations affected. One of the earliest documented cases of biological weaponry was by the Tartars; Tartar troops threw decaying plague victims over Caffa's city walls to infect the Genoese people (Riedel). The Russians also threw dead plague victims over a city's walls to kill the Swedes in 1710 (Riedel). Giving or selling clothes that were contaminated with smallpox was a type of biological warfare used by the Spanish to kill Native American Indians so they could conquer them and take the native's land (Riedel). This decimated Native American Indian populations, proving that diseases are lethal and effective weapons. During World War I, Germany sent cattle and horses infected with anthrax, a bacteria, and glanders, a bacterial disease, to the United States of America and infected sheep to the Soviet Union in the

hope of creating a mass outbreak that would disrupt the country's society and force their militaries to back off from the war against Germany (Riedel). These examples prove how often and easily biological weapons can be used and shed light upon their political uses, especially as technology is made to better weaponize biological weapons.

The use and study of biological weaponry has been controversial for decades because its potential for mass destruction, but that has not stopped a handful of groups and nations. Countries have been creating and manufacturing biological weapons since World War I but was at its height in World War II, and continued through the 1980s (Roffey). In the 1990s, most countries decided to stop biological warfare research based on the fact that a massive outbreak could kill most of the human population. The use of biological warfare on people is considered a war crime, and the research and testing of biological weapons, even if none of it hurts anyone, breaks the standards set by the Biological Toxin Weapons Convention, where countries met and signed a treaty that stated that biological weapons should not be developed or used (Roffey). While the manufacture and research of biological weapons are discouraged, many research operations have continued. For this reason, it is imperative that countries be aware of what other countries have available in terms of biological agents that can be weaponized, create vaccines, and have detailed procedures in place in case another country, or the United States, experiences a biological attack.

Biodefense, the preparedness of a country to fight a biological attack or outbreak through vaccines, is important to combat enemies that try to hurt a lot of people. The Biological Toxin Weapons Convention did one disservice to <https://assignbuster.com/biological-weapons-developments-threats-and-biodefense/>

the countries that signed the agreement because not every country will abide by the standards set up, thereby putting everyone else at a disadvantage to be attacked and have no solution to people who are affected. The 9/11 Anthrax Attacks happened three weeks after the is one example of a bioterrorism attack in the United States. A bioterrorist attack uses biological agents to create mass panic and hurt people for a political gain. That 9/11 Anthrax Attacks are proof of how bad it can be for a country to have a poorly organized biodefense system, as there were no set procedures to follow and no vaccine to be given to civilians - only the military had access to it (Ezepchuk). The 9/11 Anthrax Attacks were aimed at media companies and Democrat politicians, including American Media, NBC News, and Senators Tom Daschle, Patrick Leahy, and Alan Greenspan (Ezepchuk). The perpetrator behind these biological attacks sent letters contaminated with anthrax powder through the mail to their victims (Ezepchuk). The FBI investigated microbiology labs and workers, including military microbiologists, completely disregarding the idea that it could have been someone working with another person from a foreign country (Ezepchuk). The FBI concluded that the perpetrator was an American microbiologist working at Fort Detrick in Maryland, although there is a lot of evidence that the 9/11 hijackers were the culprits with the help of a microbiologist in New Jersey (Ezepchuk). The evidence consists of a doctor in Florida treating one of the hijackers for severe skin lesions, a symptom of anthrax exposure (Ezepchuk). The medicine prescribed to the hijacker was then found in the plane he hijacked (Ezepchuk). Anthrax powder was also traced back to the New Jersey facility as the powder in the letters was

contaminated with another strain of bacteria that was being studied there (Ezepchuk).

Treating those exposed to the anthrax spores in the letters proved to be tedious and expensive. Several United States Postal Service facilities in Florida, New Jersey, Nevada, and New York had to be completely sanitized to get rid of all of the anthrax that had been leaked from the contaminated letters (Ezepchuk). The United States did not vaccinate those exposed to the anthrax, instead opting to put them on Cipro, an antibiotic, for months to treat them and to prevent anthrax symptoms from arising (Ezepchuk). The use of an antibiotic to prevent a virus is incredibly discouraged because the virus could become immune to the medicine, build up resistance, and become more harmful to the person (Ezepchuk). This was a blatant sign that the United States was lacking in biodefense materials, resources, and procedures.

Biodefense is also important to combat a country's enemies that use and are developing biological weapons. ISIS, the radical Islamist terror group that attacks anyone who disagrees with their beliefs, has been acquiring biological agents in the hopes of finding a way to weaponize them (Speckhard et al.). They have had chemical weapons for years now and frequently use them on enemies, such as the Syrians. ISIS does know how to weaponize a few toxins as a person in Germany was arrested for making ricin in his house in 2018 (Speckhard et al.). The German said he found the procedure online from an ISIS website (Speckhard et al.). This proves that some of the world's most dangerous and hateful people have weapons that

have the potential to decimate a population and cause mass panic throughout the world.

In order to focus energy and money on proper biodefense, a country's intelligence services must figure out what biological weapons other nations have access to in order to make the right vaccines. As of right now, anthrax, botulin, smallpox, the bubonic plague, and ricin are the biggest threats. Anthrax is fairly easy to weaponize, which is why it is a popular biological weapon. In 1980, Russia created a stronger strain of the virus with even more severe symptoms (Riedel). Anthrax has three different strains: cutaneous, intestinal, and inhalational (Centers for Disease Control and Prevention). It has a seven-day incubation period before symptoms start (Centers for Disease Control and Prevention). Anthrax symptoms are similar to the flu but progressively get worse as lesions, inflammation, and rashes appear (Centers for Disease Control and Prevention). Anthrax is not the most deadly virus to create an outbreak with, but the cutaneous strain has a 20% fatality rate and the inhalational strain, the most lethal, has a 75% fatality rate (Centers for Disease Control and Prevention). Smallpox, another popular virus, has a 30% fatality rate and has a seven-to-twenty-day incubation period before the symptoms start to appear, mostly rashes and a fever (Centers for Disease Control and Prevention). Not only does Russia have access to anthrax and smallpox, but they also weaponized typhus and the bubonic plague during World War II (Roffey). Unsuccessfully, Russia has tried to weaponize Marburg, the measles, and Ebola (Bellamy e. al.). Iraq also has biological weapons, including strains of aflatoxin, botulin, and anthrax (Bellamy et al.).

The Ebola virus caused mass panic during the 2015 outbreak where tons of people were infected and died. The virus has been studied by several groups, including Russia and ISIS, because it is highly contagious and deadly and, as President Trump wisely stated, “ can tear apart the fabric of society” (Maron). Microbiologists and national security specialists believe that nations do not have any need to worry about Ebola being weaponized because those that are working on it would probably kill themselves before they could hurt anyone else because the virus is so easy to contract, not to mention the incredible expense of such an operation (Maron). For this reason, the United States biodefense organization thinks it is more important to be wary of the threat and figure out a more efficient way to treat the disease rather than finding a vaccine or weaponizing it.

While outbreaks and biological attacks do occur, the likelihood of it being on a big scale that could affect millions of people at once are unlikely at this point in time. Recent attacks have only affected a small number of people because it is hard to infect people with a biological agent unless exposure is the only thing necessary. Besides the 9/11 Anthrax Attacks, there have only been a few documented attacks in recent history. In 1789, the Soviet Union had an anthrax outbreak that affected the military and the people just outside the complex (Roffey). The Soviet Union denied that they had been testing anthrax as it broke the Biological Toxin and Weapons Convention (Roffey). The Soviet Union’s alibi was that contaminated meat killed sixty-seven people (Roffey). In 1984, the Rajneeshee cult poisoned salad bars with the salmonella bacteria in an Oregon city to make people sick in order for fewer people to vote the next day; 751 people contracted salmonella

(Riedel). The purpose of this attack was to open a church for the Rajneeshee cult to worship in, but it had to be voted on and they doubted that most people would vote in favor of the new place of worship, so they decided to poison people to prevent a lot of people from voting against the church (Riedel).

All of these different and dangerous viruses, toxins, and bacteria are hard to control, especially when they are used as weapons, which is why it is imperative that countries should have biodefense funds, procedures, and research. The United States has a more developed biodefense administration compared to other countries, but it is still vastly unprepared if an attack should occur - that was proven during the 9/11 Anthrax Attacks. The United States spends some of the most money on biodefense in the world. In 2000, the United States spent \$336 million just to be used for biodefense operations (Bellamy et al.). The Trump administration, in 2018, released a National Biodefense Strategy that would tackle communication errors and unpreparedness (Schnirring). The National Defense Strategy creates the first interconnected committee that joins the national health organizations with the national security and intelligence organization (Schnirring). The committee intends to meet together at least once a month in order to keep up with new research that can be used to protect the country from outbreaks and biological attacks (Schnirring). One action the government approved that should be eliminated is the legalization of research that deliberately tries to make more harmful strains of the bacteria, toxin, or virus by changing its DNA (Vaida). This allows worse strains of a biological agent to be leaked, sold, or used. The reason this is so bad is because anything can

be bought covertly, if done right, over the internet. In Canada, two researchers bought the horsepox virus online that they were then going to alter so it would share even more similarities to the smallpox virus, in hopes of creating an effective biological weapon (Vaida). Ideas to prevent biological attacks range from just being prepared to combat the biological agents through quarantine, vaccines, and antibiotics, to scaring the enemy with worse and more deadly weapons than they have, to threatening to bomb the enemy (Kosal). Another suggestion is to make it illegal for people to purchase lethal bacteria, toxins, and viruses (Kosal). The hardest part of this idea is trying to enforce it and getting other countries to make it illegal, too. With the internet, anyone could get anything with just a few clicks, so it would require massive cooperation between police within the national level and between diplomats and officials on the international level.

While biodefense is generally seen as a huge advantage for a country, some people may be against it because of its cost and potential dangers.

Biodefense facilities are incredibly expensive as they contain machinery, computers, basic and advanced lab equipment, safety devices and technology, chemicals, and dead and alive viruses, toxins, and bacteria that all require specific storage necessities, such as temperature and sealing conditions. On top of that, the money mostly comes from taxes because biodefense is funded by the government, which not everyone may agree with. Despite that millions of dollars from the American people is being used for biological agent research, it is good to know that there will be vaccines and treatment plans for those affected by the next biological attack and that the United States will be prepared to contain the disease before a major

outbreak occurs. The biggest problem people have with biodefense is the fear of an accident occurring. While human error causes most accidents in industry, these accidents are not likely as all operations have set procedures and knowledgeable and experienced researchers supervising the studies and maintenance of equipment.

As technology develops, machinery, microbiology techniques, and internet use, biological attacks become a more concerning threat as biological agents become easier to obtain and make. While there have been few biological attacks, they are memorable because of the number of people they affect and the lesson they teach people and nations: biological weapons are incredibly dangerous, and to prevent more death procedures and vaccines must be developed to use. Although many countries were in the process of creating biological weapons during the 1930s-1980s, most stopped the creation of them, choosing to only research for treatments and vaccines (Roffey). While all biological agents are dangerous to work with, some viruses will not become biological weapons because of their high contagion rate, such as Ebola (Maron). To protect people, biodefense laboratories should find vaccines and treatments for common biological agents that are the most probable to be weaponized.

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