Harvard Model Congress
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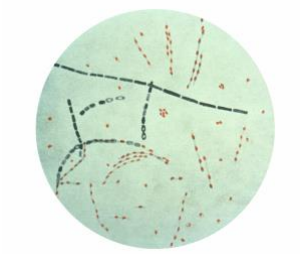
THE THREAT OF BIOLOGICAL WEAPONS

By Quinn Brussel

INTRODUCTION



Bacillus anthracis, a bacteria which causes Anthrax, was used in a terrorists in 2001

Wikipedia

In the fall of 2001, at least five envelopes containing large amounts of *Bacillus anthracis*, a bacteria that causes the serious infectious disease anthrax, were mailed to several prominent politicians and media organizations (CDC, 2023). Among them were Senator Patrick Leahy (D-VT) and Senator Thomas Daschle (D-SD). As a result of the mailings, at least 22 people contracted anthrax poisoning, five of whom died from their infections. These anthrax shipments were eventually classified as biological terrorist attacks (United States Department of Justice, 2001).

Anthrax attacks are just one of many **biological warfare** tactics. Biological warfare is the use of biological toxins or infectious agents with the intent to kill, harm, or incapacitate humans, animals, or plants as an act of war. Large-scale biological warfare has been a concern of military and political leaders for over a century (Charlet, 2018). In 1925, Winston Churchill lamented that "blight to destroy crops, anthrax to slay horses and cattle, plague to poison not armies only but whole districts—such are the lines along which military science is remorselessly advancing" (Charlet, 2018). Despite Churchill's dire forecast, the use of biological weapons today remains rare and limited to small-scale events.

However, recent breakthroughs in gene editing now allow scientists to modify an organism's DNA more efficiently, cheaply, and accurately than before. While these advancements are exciting for applications in medicine and health, it is easy to see how this technology can be misused to create biological weapons. Many experts fear that even with moderate capabilities, foreign powers or terrorists could develop deadly pathogens (Charlet, 2018). Such technological developments beg the question of whether advances in

biotechnology could cause states to revive biological weapons programs and destabilize the international balance of power.

EXPLANATION OF THE ISSUE

Historical Development

To understand the current risk that biological weapons pose, we must first analyze how nations have historically weighed their benefits and drawbacks. Since 1945, only six countries have admitted publicly to developing biological weapons. However, evidence suggests that this number is likely a dozen or more (Charlet, 2018).

World War I and II

The United States, the United Kingdom, Russia, Japan, Iraq, and South Africa are among the nations known to have had biological weapons programs.

By the beginning of the 20th century, advances in germ theory and bacteriology brought a new degree of sophistication to biological warfare. During World War I, the Imperial German Government engaged in biological sabotage by using anthrax and glanders, a disease that primarily affects horses (U.S. Intelligence Community, 2023). The 1925 Geneva Protocol established a general international prohibition on the use of asphyxiating or poisonous gases in war (United States State Department, 2023).

Despite this treaty, World War II saw the continued development of biological weapons. The United Kingdom established a biological warfare program that weaponized tularemia, anthrax, brucellosis, and botulism toxins. Although, the UK never used these weapons offensively. At this time, France and Japan also began to develop their own biological weapons programs. Although the Japanese program was less sophisticated than those of the United States or the United Kingdom, Japan outstripped other nations in its application of biological weapons, notably in its campaign against China (U.S. Intelligence Community, 2023). When the United States entered World War II, it established an expansive research program for biological and chemical weapons in Fort Detrick, Maryland (US Intelligence Community, 2023).

The Cold War

Biological warfare *– the use of biological toxins or infectious agents with the intent to kill, harm or incapacitate humans, animals, or plants as an act of war.*

During the Cold War, the United States developed an advanced biological weapons program capable of large-scale lethal operations. The program was initially designed as a deterrent, but researchers began to value the flexibility of biological weapons, as they can also temporarily sicken or disable enemies instead of killing them (Charlet, 2018).

At the same time, the Soviet Union also developed a range of biological weapons. While some of these had lethal uses, others targeted agriculture (Charlet, 2018).

In 1969, President Richard Nixon terminated the offensive biological weapons program in the US, now only allowing scientific research for defensive measures. The Soviet Union continued to expand its offensive biological weapons program (US Intelligence Community, 2023).

Scope of the Problem

Biological weapons have not historically been deployed on a significant scale. There are many reasons for this. Firstly, there can be a substantial lag time between the deployment of a biological weapon and any significant effect. Furthermore, target populations can protect themselves with vaccines or other countermeasures. Many factors, such as wind, variation in terrain, and incorrect dosage, could lead a biological attack to fail. Once released, a pathogen could be difficult to control, and there is a non-negligible risk of it returning to the country that deployed it (Charlet, 2018). Nevertheless, new developments in technology mean that some of these hurdles are easier to overcome.

CRISPR *– a recently developed Clustered, Regularly Interspaced, Short Palindromic Repeat which many worry could be misused to create biological weapons.*

CRISPR

With the help of CRISPR sequences, gene editing has been rendered cheaper and easier than ever before. Using CRISPR, scientists can cut and edit DNA sequences in order to modify an organism's traits (Smith, 2023). Many scientists and government agencies are concerned that this technology could be used to develop dangerous new bioweapons, ones that could cause more severe illness, infect a larger number of people, and resist treatment more effectively (Charlet, 2018).

It is worth noting that CRISPR technology is primarily used in ways that attempt to improve quality of life. So far, it has been used to fix deadly genetic mutations, grow disease-resistant crops, and treat cancer, among many other applications.

Bioterrorism

Biological weapons are difficult to detect, relatively accessible, and easy to use, which makes them appealing to many terrorist groups. Many pathogens, such as *Bacillus anthracis*, can be found in nature and do not even need to be cultivated in a lab (Pinto, 2013).

Other notable instances of bioterrorism include a 1972 attempt to poison the Chicago water supply, as well as a poisoning of salad bars, grocery store produce, and doorknobs in Oregon by followers of Bhagwan Shree Rajneesh (Pinto, 2013).

A Revitalization of State Bioweapons Programs

Due to the ethical challenges and volatility of biological weapons, many nations have dialed back or completely abandoned

their biological weapons programs. However, new technologies have changed the playing field (Charlet, 2018).

It is hard to say how many nations will take advantage of these new technologies, but Russian President Vladimir Putin has already instructed his defense minister to develop weapons based on genetic principles (Charlet, 2018).

Targeted Assassinations and Discrimination

With the introduction of gene editing, there are growing concerns that it will become easier to carry out targeted assassinations. It is possible that a government could edit the genome of a deadly virus so that it would only affect a single individual based on their genetic code. While this capability does not yet exist, it is possible that it will emerge, given the pace of scientific advancement (Charlet, 2023).

Similarly, advanced gene editing could allow scientists to create weapons that can discriminate based on genetically determined characteristics like biological ancestry, a factor that can be used to discriminate by race (Charlet, 2018). Bioweapons have a troubled history with ethnic conflicts. In the 1970s, the Rhodesian intelligence agency used cholera to contaminate wells in areas occupied by black guerilla forces (Cross, 2017).

In 1981, the apartheid government of South Africa launched Project Coast. It is believed that this project investigated biological methods to assassinate opponents. Some accounts reveal researchers from Project Coast crafted plans to selectively administer antifertility vaccines to black women (UNIDIR, 2023).

During the Rhodesian Bush , cholera was used to contaminate wells
Wikipedia

Congressional Action

Since President Nixon terminated the US offensive biological weapons program in 1969, most Congressional action has been focused on defensive strategies and the regulation of other nations.

In 1972, the United States signed the Biological and Toxin Weapons Convention (BWC), which was an international effort to control biological weapons and prohibit their development (National Library of Medicine, 2023). In 1989, Congress followed up with the Biological Weapons Anti-Terrorism Act of 1989 (BWATA). This act implemented the norms established by the BWC. The BWATA established penalties for violating the prohibitions enacted by the BWC. This law authorizes the federal government to apply for a warrant in order to seize any **biological agent** that cannot be justified for peaceful purposes (National Library of Medicine, 2023).

The Antiterrorism and Effective Death Penalty Act of 1996 regulates the transportation of bio-agents which pose a severe threat to public health through their potential use in terrorism. The act requires the Secretary of Health and Human Services to issue regulations that govern the transportation of such agents (National Library of Medicine, 2023).

The Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 follows up on the BWATA, adding more penalties for individuals. The act makes it an offense "for a person to knowingly possess any biological agent, toxin, or delivery system of a type or in a quantity that, under the circumstances, is not reasonably justified by prophylactic, protective, bona fide research, or other peaceful purpose" (National Library of Medicine, 2023).

The Public Health Security and Bioterrorism Preparedness and Response Act, better known as the Bioterrorism Act of 2002, adds more regulations on the possession of select biological agents. These include background checks conducted by the FBI for lab personnel handling said agents (National Library of Medicine, 2023).

To protect against attacks on food supply chains, Congress enacted the Agricultural Bioterrorism Protection Act of 2002, which established a list of biological agents and toxins that can pose a severe threat to animal or plant health (National Library of Medicine, 2023).

Biological agent – *substance that is made from a living organism or its products.*

As we have seen, much of the congressional action surrounding this issue acts to penalize and regulate the possession of biological weapons within the United States, rather than internationally. Furthermore, Congress does not often act on the United States biological weapons program, which is mostly governed by the executive branch and military.

Other Policy Action

The Biological and Toxin Weapons Convention is one of the most important treaties on the usage of biological weapons. The BWC was signed in 1972; enforcement began in 1975. It is an international effort to control bioweapons and attempts to prohibit the development, production, and stockpiling of these weapons. The agreement emphasizes the intent behind the possession or development of a biological agent, meaning that substances are allowed if and only if they are justified by some peaceful use (National Library of Medicine, 2023).

In 2006, the Centers for Disease Control and Prevention (CDC) issued guidance (*Applicability of the Select Agent Regulations to Issues of Synthetic Genomics*) to address concerns related to genetic engineering. The purpose of the document is to guide the application of existing regulations, such as the Agricultural Bioterrorism Act of 2002 and the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, to new technologies in gene editing (National Library of Medicine, 2023).

The Department of Health and Human Services issued additional guidance to manufacturers of synthetic DNA. This again aims to regulate new DNA editing technology by defining the boundaries in

which synthetic DNA providers should work (National Library of Medicine, 2023).

Finally, in 2010, President Obama issued an executive order entitled Optimizing the Security of Biological Select Agents and Toxins in the United States. This order directed federal agencies to make changes in existing implementation of regulations to improve coordination, consolidation, and oversight of biological agents (National Library of Medicine, 2023).

IDEOLOGICAL VIEWPOINTS

Conservative View

Republicans and Democrats generally agree on the importance of preventing further proliferation of biological weapons among foreign states and terrorist organizations. However, members of the two parties have different visions of how to achieve this.

Many Republicans emphasize the importance of a strong national defense and maintaining military superiority. Conservatives often advocate for investments in defense capabilities, which include measures to counter threats posed by biological weapons (Boese, 2023).

Similarly, conservatives often emphasize the need for effective intelligence gathering, surveillance, and early warning systems to detect and prevent the use of biological weapons. Many advocate for increased funding for intelligence agencies and for research into advanced detection technologies (Boese, 2023).

Conservatives typically value national security, military strength, and intelligence in addressing biological weapons.

Additionally, many Republicans have expressed concerns regarding bioterrorism. They often support measures to enhance domestic security, including border control and intelligence sharing, to prevent biological weapons from infiltrating the United States (Boese, 2023).

As we have seen, Republicans generally support military and intelligence-based strategies to deter the proliferation of bioweapons. However, many are in favor of international treaties and agreements such as the BWC (Boese, 2023).

Liberal View

Democrats also think it is important to deter the proliferation of biological weapons. Yet, there are some notable differences in approach between the two parties.

Democrats usually prioritize diplomatic efforts and international cooperation to address the threat of biological weapons. Many advocate for increased funding for international organizations, like the World Health Organization, as well as for US participation in international arms control agreements like the BWC (Boese, 2023).

From the angle of prevention, Democrats often promote scientific research and public health preparedness in this context. Democrats support bolstering public health infrastructure and emergency preparedness measures to detect and respond to biological threats. Many Democrats support increased funding for research on infectious diseases, surveillance systems, and medical countermeasures (Boese, 2023).

This outlook extends outside of just the United States. Democrats typically emphasize the importance of global health security and international cooperation when addressing biological weapons. They often show support for initiatives aimed at strengthening multilateral partnerships for the prevention, detection, and response to biological threats. These initiatives include early warning systems, information sharing, and improved capacity in developing countries (Boese, 2023).

Finally, like Republicans, Democrats recognize the concern that bioterrorism poses. They may support measures to improve domestic preparedness. Such measures include investments in law enforcement, emergency response planning, and streamlining the coordination of federal agencies responsible for biosecurity (Boese, 2023).

The National Science Foundation is federal organization responsible for scientific research.

Wikipedia

AREAS OF DEBATE

Since the United States adopted the BWC and ended its use of biological weapons, the further development of these weapons in the US is essentially off the table. Therefore, the principal focus of policymaking on this issue is to prevent the proliferation of bioweapons elsewhere.

Export Controls

Dual-use technology *– goods, software, and technology that can be used for both civilian and military applications.*

A major concern is that **dual-use technologies** and materials can be exported from the United States and fall into the wrong hands to be used to create biological weapons. Certain toxins, chemicals, fermenters, pumps, and valves fall under the category of dual-use technology (Bureau of Industry and Security, 2023).

The US government can establish **export control regulations**, which are federal laws governing the export of US goods and services through various agencies—including the Department of Commerce and the Department of State—to restrict the export of dual-use technology. These controls could help prevent the malicious use of sensitive equipment, technology, and pathogens (Michigan Tech, 2023).

Those in favor of export controls point out that they serve both the purpose of deterring the proliferation of bioweapons and of protecting national industrial interests by limiting the ability of

foreign competitors to acquire unauthorized goods and services. Furthermore, export controls allow the government to target specific foreign actors which are deemed untrustworthy. Finally, export controls promote international cooperation and partnerships. By adhering to export control regimes and cooperating with other nations, governments can enhance information sharing, strengthen enforcement, and collectively deter the spread of sensitive technology (Michigan Tech, 2023).

Opponents of this strategy argue that export controls could have negative economic consequences, as they limit market access for companies and hinder international trade. Industries reliant on exports may be hurt by export controls due to reduced competitiveness and loss of potential revenue (Michigan Tech, 2023).

Political Perspectives on this Solution

Free market conservatives may take issue with this strategy due to the economic consequences described earlier. However, not all conservatives think this way, and many believe that the national security risk justifies the consequences. Liberals, on the other hand, are almost unilaterally in support of export controls.

Manufacturers of dual-use technologies would typically be against export controls and would likely lobby to prevent them. This would affect members of Congress who represent areas where such companies have a strong presence.

Biodefense and Preparedness

First responders during an emergency exercise in Saint-Étienne, France

Foreign Affairs

While the federal government may wish to prevent biological weapons from being produced in the first place, it is important to be prepared for attacks if prevention fails. Investments in biodefense and preparedness measures could enhance the nation's ability to respond to biological threats.

This sort of investment could take the form of research funding for medical countermeasures, improving public health infrastructure, establishing better early warning systems, and conducting exercises and training for emergency response personnel. Given the developments in gene editing technology such as CRISPR, investment in research could be particularly fruitful (ASPR, 2023).

Those in favor of this kind of legislative action point out that not only does improving biodefense and preparedness make the US more prepared for an attack, but doing so also deters enemies from attacking at all (ASPR, 2023).

Those who oppose this kind of action might do so because they oppose military investment in general and believe that diplomacy and international cooperation should be the first priority (ASPR, 2023).

Political Perspectives on this Solution

Support for biodefense and preparedness is bipartisan. However, as stated above, a minority of anti-military Democrats may oppose further investment in national defense.

Nonproliferation Assistance

Even if the United States does all it can to deter the proliferation of bioweapons, legislation could also assist other nations in their efforts to do the same. This assistance could come in the form of support for robust biosecurity measures or capacity-building programs (US Department of State, 2022).

There are several arguments in favor of nonproliferation assistance. Firstly, while it protects the United States, it is also beneficial for global security. By providing technical and financial support to other countries, nonproliferation assistance strengthens their abilities to prevent and respond to bioweapons. Secondly, it fosters international cooperation and goodwill. Finally, nonproliferation assistance helps nations uphold international treaties, such as the BWC, by giving them the means to do so.

President Nixon and Secretary of State William Rogers at the signing of the BWC.

Richard Nixon Presidential Library

However, this strategy has some opposition. Some argue that aiding other countries is costly and uses up resources that could instead be used for domestic priorities. They contend that the responsibility of nonproliferation belongs to individual nations and that assistance can create dependency, weakening self-reliance. Additionally, skeptics worry about the potential misuse or diversion of nonproliferation assistance, as resources provided for peaceful purposes could inadvertently fall into the wrong hands or contribute to malicious activities. Critics also question the effectiveness of nonproliferation assistance, claiming that proliferators could find other means of acquiring sensitive technologies. Finally, there are concerns about infringement on sovereignty, as some nations may view such assistance as unwanted interference (US Department of State, 2022).

Political Perspectives on this Solution

Liberals generally approve of nonproliferation. They argue that providing support to other nations builds trust, strengthens global norms, and creates peaceful relations. Liberals claim that nonproliferation assistance is proactive in addressing the root causes of proliferation, such as economic instability, lack of technical expertise, and poor governance. They also emphasize that nonproliferation assistance not only enhances global security but also aligns with goals of promoting peace, human rights, and sustainable development.

Conservatives, on the other hand, are generally not very supportive of nonproliferation assistance. The conservative view

emphasizes the importance of national security interests and maintaining a strong defense posture. They argue that while nonproliferation is important, the responsibility for ensuring national security lies with individual nations. Conservatives prioritize domestic capabilities to address the threat of proliferation and advocate for strong national defense infrastructure. While some conservatives may support limited forms of nonproliferation assistance, they generally want to ensure that assistance programs are well-managed, monitored, and aligned with national interests, to avoid the risk of misuse by recipient countries (US Department of State, 2022).

Intelligence and Surveillance

A crucial factor to consider when dealing with biological weapons is effective detection. Catching an attack early can mean that the spread of a pathogen can be stopped before it spreads beyond control. Improved intelligence and surveillance could be key in detecting future attacks.

The US intelligence community is instrumental in monitoring and detecting potential threats. Intelligence agencies gather information on global trade, the movement of actors involved with bioweapons programs, and the spread of new technologies. Investment in intelligence and surveillance could improve the nation's ability to prevent bioterrorism.

There are many arguments in favor of investing in intelligence and surveillance. As stated, intelligence and surveillance provide important information about the intentions, capabilities, and activities of proliferators. Furthermore, surveillance investment empowers policymakers and military leaders to make informed choices when responding to a bioterrorism threat. Such investments allow for the rapid detection and assessment of incidents. Finally, the existence of intelligence and surveillance deters adversaries from pursuing biological weapons programs for fear of detection (US Government Accountability Office, 2023).

Critics of this approach are often concerned about infringements on privacy and civil liberties. One concern is that the intrusive nature of surveillance programs can lead to misuse of collected data. Some also question the effectiveness of intelligence and surveillance in detecting covert bioweapons programs. Proliferators, they argue, may use sophisticated methods to hide their activities. Many are also concerned about allocation of resources, claiming that the large investments required for a strong surveillance program could be put to better use in areas such as public health infrastructure, emergency preparedness, and international cooperation (USGAO, 2023).

Political Perspectives on this Solution

Both liberals and conservatives recognize the importance of intelligence and surveillance to monitor and detect biological weapons. Liberals generally support its use as part of a broader strategy to address the threat of biological weapons. However, liberals also emphasize the importance of international cooperation, multilateral efforts, and respect for civil liberties while conducting surveillance. Liberals believe in transparency, oversight, and accountability to ensure that surveillance programs are conducted legally and ethically.

Conservatives, on the other hand, tend to prioritize national security considerations. They believe in a robust and proactive approach, with comprehensive surveillance programs and intelligence gathering. Conservatives typically place a greater emphasis on the threats posed by proliferators and support assertive measures to protect national interests (US GAO, 2023).

International Cooperation

Since bioweapons are a global threat, effectively preventing their proliferation requires international cooperation. This involves sharing information, expertise, and best practices, as well as participating in international agreements such as the BWC.

Meeting of States Parties at the Biological Weapons Convention in 2019.
United Nations

Cooperating with other nations has the advantage of fostering international goodwill and trust among participating nations. Additionally, if effective, it means that national defense need not be as strong. However, there are many questions about the effectiveness and enforcement of international agreements. Furthermore, many believe the United States should focus on national defense and preparedness rather than relying on diplomacy to defend against bioterrorism (Roffey et al., 2002).

Political Perspectives on this Solution

While conservatives acknowledge the importance of diplomacy, they tend to prioritize national defense. In addition, they tend to believe that anti-proliferation efforts are the responsibility of individual nations. Liberals, on the other hand, are very supportive of diplomatic efforts and international cooperation, believing this to be the most productive and ethical way forward (Roffey et al., 2002).

BUDGETARY CONSIDERATIONS

As we have seen, investment in science and research could be a potential path forward to address biological weapons. The current budget of the National Science Foundation, the federal agency responsible for this area, is $11.314 billion. However, it is important

to keep in mind that this money is allocated for many uses other than biological weapon related issues (NSF, 2023).

Additionally, intelligence agencies may play a large role in biodefense. The current budget of the National Intelligence Program is $72.4 billion (Director of National Intelligence, 2023). The budget for the Department of Homeland Security is $103.2 billion (DHS, 2023). Finally, improving public health infrastructure and training medical personnel will require adequate funds.

CONCLUSION

Because the threat of biological weapons is growing, it is imperative that Congress address it. Legislators must consider ways to monitor technological development, uphold international norms, and prepare on the home front. They must also figure out how to balance national defense interests with global cooperation as well as balance compromise with party views.

It is very important that delegates come up with effective solutions. While the threat of biological weapons has historically been low, it is important that we not lose this advantage as technology progresses. Public health crises like COVID-19, though not resulting from biological attacks, have exposed U.S. weaknesses in public health management and demonstrated the devastating impacts that biological attack may have. As global tensions rise and warfare embraces technological development, it is essential that Congress be proactive in its approach to biological weapons. Delegates will need to combine multiple solutions, be creative, and work together to achieve this.

GUIDE TO FURTHER RESEARCH

It's important to research voting history, previous bills, and party platforms before the conference.

Delegates should make sure to do independent research both on the issue as a whole and on their policymaker's point of view. A good place to look for past legislation is the library of Congress.gov. Wikipedia can also provide an excellent overview of topics. It can also be a good idea to consult foreign policy websites and journals to dive deeper into the general overview of a topic that Wikipedia can provide.

It will be helpful to look up voting history, read the provisions of past bills, and scan party platforms.

GLOSSARY

Biological Warfare – The use of biological toxins or infectious agents with the intent to kill, harm or incapacitate humans, animals, or plants as an act of war.

CRISPR – a recently developed gene editing technology (Clustered Regularly-Spaced Palindromic Repeats) that many worry could be misused to create biological weapons.

Biological Agent – A substance that is made from a living organism or its products.

Dual-use Technology – Goods, software, and technology that can be used for both civilian and military applications.

Export Control Regulations – Federal laws that govern how technology, technical data, technical assistance, and items or materials are exported from the US to foreign countries, persons, or entities.

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