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Models of Forensic Logistics in Eliminating Conflicts – Bioterrorism

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Abstract:

Purpose: *The aim of this publication is to analyze the phenomenon of bioterrorism and to indicate that it poses a threat to national and international security.*
Design/Methodology/Approach: *The research methods adopted to support the thesis and solve research problems are a literature query, based on which the phenomenon of bioterrorism is described from a theoretical perspective, and a case study in which information about bioterrorism from a practical perspective will be presented.*
Findings: *The research problem undertaken was intended to prove to what extent the threat of bioterrorism affects national and international security. There is only one answer: every use of biological weapons has a very significant impact on the loss of people's sense of security. An attack carried out in a distant country can have powerful effects in another territory, or even throughout the world. The examples of the use of biological weapons described in the work indicate that panic, like an infectious disease, can spread quickly, which is why the problem of one nation becomes the problem of the entire world.*
Practical implications: *As a result of the conducted research, the hypothesis was verified positively. It was proven that the use of biological weapons is real and causes serious consequences at the place of the event and around the world. This is confirmed by a case study, which contains details regarding both the reaction of the population to such threats and the health consequences. The perfidy of a biological attack is that the use of a biological agent against the population is visible only when the population begins to fall ill en masse. Such situations make it clear that bioterrorism is not fiction or a terrifying prognosis, but a fact that we have to deal with today.*
Originality: *New perspectives and possibilities of access to epidemiological weapons are undoubtedly created for terrorists by progress in biotechnology and genetic engineering.*

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This facilitates, among other things, access to dangerous bacteria and viruses, thus leading to a situation where the production of these weapons is completely taken over by terrorists. Current vaccines may prove ineffective and insufficient, because no one is able to determine which pathogens will be used by bioterrorists. It should also be emphasized that organizations and the entire international community are sometimes helpless in the face of today's challenges and threats. Therefore, it is important to constantly expand knowledge about bioterrorism and not focus only on eliminating the effects of the use of biological weapons, but on effectively preventing such situations. It is therefore important to shift the focus to constant forecasting and analysis of potential threats. By staying one step ahead of terrorists, we are able to prevent many dangerous situations

Keywords: *Bioterrorism, international conflict.*

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Paper type: *Research article.*

1. Introduction

International terrorism is one of the most serious threats of the 21st century. The modern world is facing new challenges and huge development opportunities, but also unprecedented threats growing to the rank of a global problem. These threats undoubtedly include terrorism, which uses, as a factor of destruction, the most dangerous weapon - ABC weapon.

One of the oldest and most serious means of mass destruction is undoubtedly biological weaponry. Low purchase costs and the ability to spread quickly are not the only qualities that make a terrorist become a bioterrorist. Progress in science, usually seen as a success, also has its bad sides and is a huge problem for global security (Rathjen *et al*., 2021).

The subject of the article is bioterrorism as a form of threat in the modern world. The research problem undertaken by the authors can be expressed by a question: To what extent does the threat of bioterrorism affect national and international security?

The prospects of using bacteriological weapons now and in the future are very worrying. Despite the many legal conditions for banning the use of these weapons, the threat of their use is still real, just to mention the currently petrifying pandemic caused by Covid-19.

It should be noted, however, that the purpose of a terrorist attack is not always to kill as many people as possible, but to provoke their helplessness and mass fear.

Therefore, it is worth considering how the previous bio-attacks have affected people's sense of security and whether this national problem is only a national one.

The authors take the view that the use of biological weapons in a terrorist attack has serious health consequences, and through a wide range of activities it influences a high sense of threat to citizens, which translates into a threat to national and international security.

The research methods adopted to support the thesis and solve legal problems include a literature search, based on which information about bioterrorism is derived from the theoretical side, and a case study, containing information about bioterrorism from the practical side.

The aim of this publication is to analyze the phenomenon of bioterrorism and to indicate that it poses a threat to national and international security.

2. Literature Review

2.1 Japanese Biological Weapons - Unit 731

After the end of World War I, Japan began to take a serious interest in biological weapons. Considerations were given to creating a research program devoted to biological weapons, but the topic quickly fell into oblivion. In 1925, the Japanese decided not to sign the Geneva Convention for some time and not to engage a large amount of funds in research on epidemiological weapons. At the end of the 1920s, the situation changed dramatically, the reason for which was the participation of General Shiro Ishii in the research. The young scientist quickly got to work, becoming one of the most dangerous mass murderers.

Initially, Shiro Ishii was a talented, ambitious scientist. He studied medicine at the prestigious Kyoto Imperial University (Langbein *et al.*, 2003). In addition to his advantages, he also had many flaws, probably suffering from a personality disorder, he was arrogant, caused a lot of problems and did not take others into account. He wanted to become a soldier at all costs to be able to serve and defend his country, and most importantly to be able to achieve goals related to medical research. When he graduated in 1920, he enlisted in the army and was soon promoted to lieutenant.

His persistence and enthusiasm were appreciated by his superiors and he was sent to postgraduate studies. Shiro Ishii's career took off quickly, he became a frequent guest at the chancellor's house, thus maintaining close social relations with someone of high social status. Eventually, their relationship was so good that he married his daughter, becoming an important figure among the academic staff of the local university (Gold *et al*., 2015). After obtaining a doctorate in microbiology, he began publishing his works in scientific journals. While they were being published, he came across a document related to biological warfare.

It was written by a doctor from the Ministry of War, who reported on the debate on the Geneva Convention (Langbein *et al.*, 2003). When the Geneva Protocol in 1925 completely banned biological warfare, Ishii stated that if something was banned, it must be effective. (https://www.thevintagenews.com).

From that moment on, he devoted himself entirely to research on the effectiveness of biological warfare. At first, he only conducted research at the Military Medical School in Tokyo, but the laboratory there became insufficient for him. Eventually, he wanted to test the results of his research on living people. According to him, there are two types of research on bioterrorism:

- Type A, concerns aggressive research, which is only performed abroad,
- Type B, is defensive research, based mainly on vaccinations. This type of research can be performed, for example, in Japan.

In 1931, Japanese troops invaded Manchuria, and the opportunity to conduct research arose very quickly. Manchuria, the northeastern province of China, was extremely important to Japan, rich in natural resources and with the port city of Dairen. For many years, Japan tried to occupy the territory there. In 1904, Japanese troops successfully expelled the Russians, gradually strengthening their influence in the province and creating the Manchukuo Protectorate as a result.

Manchuria was known for its widespread poverty and infectious diseases, which were very dangerous to people. However, what should have been a deterrent turned out to be an advantage and a great cover for starting research and experiments on biological weapons. Ishii, taking advantage of the current conditions and opportunities, immediately began action. Having a large number of people at his disposal, he subjected them to forced research (Langbein *et al.*, 2003).

Creating an effective weapon required intensive and extensive research, which could not be carried out only on animals. It would have significantly limited the obtaining of useful data, ultimately not bringing any results (Gold, 2015). The victims of the mass experiments that began in 1933 were mainly Manchurian guerrillas, communists and people caught on the streets as "laboratory rats". Their prison was the village of Beiyinhe, located near the city of Harbin. It was there that Ishii's laboratory was established shortly afterwards, creating a complex of 150 buildings intended for conducting inhumane experiments. It was a secret research center, where about 3,000 people worked.

This enterprise soon became known as "Unit 731". This name began to be used in 1941 and became a term that describes both the unit in Pingfang and other units created for research on biological weapons. They were deployed in many locations, but with one goal - to create an effective biological weapon. Pingfang is a new center that was established as a result of the resistance movement in the previous laboratory in Harbin (Gold, 2015).

The Japanese experimented mainly on humans and infected them with almost all microorganisms that could be used to create biological weapons. They were infected with cholera, plague, hemorrhagic fever, anthrax, dysentery bacillus, etc., (Langbein *et al.*, 2003). In one of the experiments carried out at the Anda training ground, Shiro Ishii ordered crosses to be placed in a circle of various diameters to which Chinese prisoners were tied (Gold, 2015). Then, 15 m from them, an artillery shell (shrapnel) with putrefactive bacteria, which cause tissue death in humans, was detonated.

During the explosion, the victims could suffer fatal injuries, so for this purpose their heads and backs were protected with special shields. However, in order to cause infection, their lower bodies were exposed, thus achieving the desired result. The victims died within a week due to extensive infections (Langbein *et al.*, 2003). Each test was based on the trial and error method, and each time the results obtained for each district were meticulously compared.

Thanks to this, scientists were able to determine the effectiveness of the action depending on the place of detonation, distance or release of microorganisms. Not all tests were the same, and the methods of obtaining data were constantly diversified. In one of the tests, prisoners were tied to vertical plates, which were placed at different distances according to the pattern of places where insects or microorganisms escaped. Speed, time, wind direction and other weather parameters were recorded with extraordinary accuracy. Each victim was marked with a number, which was placed at chest level to more efficiently and quickly identify each of the parameters (Gold, 2015).

The prisoners experienced the worst cruelty, and their lives had no meaning for Ishii and his colleagues. The greatest value was research, his goals, ambitions and intended plans. In a situation when he needed to obtain information for brain research, his men, already accustomed to the daily sight of death, would shatter the victim's skull without hesitation. They were previously infected with microorganisms in order to later examine how a given disease had taken over the internal organs of the victim. Moreover, no anesthetic was used because it was believed that anesthetics would prevent accurate examinations (Langbein *et al.*, 2003).

In 1940-1941, Japanese troops attacked China and Manchuria, dropping ceramic bombs on their territories. The bombs contained, among other things, fleas that were infected with bubonic plague bacilli. The specificity of this weapon was that they spread seeds that rats ate, which in turn infected the fleas, and so the plague bacteria spread to the human population (Croddy *et al.*, 2003). The population immediately began to fall ill and after a few days about 100 people died. In some regions in China, it was decided to close the infected area to people from outside. All this lasted until the 1960s, until it was determined that the area infected at that time no longer posed any threat.

According to eyewitness accounts, on the day of the attack, planes appeared in the sky, dropping something resembling harmless smoke. It was only wheat flour and corn, and the local population considered it nothing serious. The next day, people began to fall ill en masse, and after only three days, the first deaths began. Panic broke out and no one understood what was causing it.

Fear and great suffering were visible in the streets. The cries of children dying of pain and mothers wanting to save them from death constantly pierced every wall. In each case, it was the same, first there was fever, chills and terrible pain, the human body became more and more red every day, and after death it turned black. However, this type of attack was not the only one in 1942. Two Japanese units carried out another attack, the commander of which was Shiro Ishii himself.

Infected people were subjected to experiments, vivisections, which consisted of surgical procedures on living people. Only a few managed to escape and recover thanks to herbal medicines that they themselves produced.

Each air raid proved to Ishii that this was an easy and quick way to transmit disease, so the military doctors quickly began to redouble their efforts to produce and collect more fleas and rats (Gold, 2015).

The planes that flew to Pingfang supplied the territory with special cages for rats. In some laboratories of Unit 731, about 13,000 rats were bred to carry the disease-causing germs that the fleas fed on. (https://www.rp.pl/Historia/307199894-Zbrodnie--wimie-nauki.html?fbclid=IwAR1sDuphAx_oYWYop5EDAJHZh_t21zDLLJXw_3RVFde12LPLPcCtEfhXWwg).

In 1945, the number of rats bred amounted to about 3,000,000. (http://www.nowastrategia.org.pl/dzuma-tyfus-cholera-japonskie-eksperymenty-bronia-biologiczna-ii-wojny-swiatowej/?fbclid=IwAR2_YZg02JgASZHziiJwK1hCkWGDX9RANw9indT9RFpT4Dy6fd-19igJQh8).

However, each system has its flaws. Some of the first attacks were carried out using slow and low-altitude aircraft, which were only effective in quiet and defenseless cities or villages. However, war requires something faster and much more effective. The idea to drop bombs from a higher altitude was quickly born. Test drops from high altitude using other bomb prototypes proved ineffective, however, because the detonations killed insects. Experiments began with, among others, glass bombs, ceramic-gas bombs and liquid pathogens (Gold, 2015).

As a result of the Japanese program, approximately 10,000 prisoners died as a result of infections caused by numerous experiments. It is impossible to accurately estimate the number of victims among Chinese civilians and Manchurians.

Japan admits to killing 20,000 Chinese people who died due to biological warfare. According to Chinese publications on arms control, biological weapons were used at least 20 times in different areas of the country during the invasion of China. As a result, over 200,000 Chinese citizens fell ill. After a deeper analysis of these events, both Chinese and Japanese scientists concluded that at least 270,000 people, including Chinese soldiers and civilians, died due to the use of bacteriological weapons.

In 1986, during talks in the United States Congress, it was not possible to gather information on whether the victims of the Japanese program included Allied soldiers. However, there is evidence in the form of a record that speaks of an attack on American troops in the Pacific. General Shiro Ishii, during the fight against the American armed forces, sent a submarine armed with epidemiological weapons to Spain (Croddy *et al.*, 2003).

On board it were placed porcelain vessels, which were filled with billions of fleas infected with the plague. Ishii's plan failed because the US Navy sank his ship. The next attempt by the Japanese to attack the United States was the "Cherry Blossom at Night" action. It consisted of dropping disease-causing germs on Southern California. A pilot nicknamed "Kamikaze" was assigned to the task, but the plan turned out to be another fiasco for the Japanese, as Japan capitulated a month before the attack began.

In 1945, the Soviet Union took over Manchuria, and General Shiro Ishii, in order to erase all traces of his activities in that area, ordered the immediate blowing up of laboratories and all evidence of his experiments. One hundred and fifty prisoners who were still alive were gassed and then their bodies were burned. American agents quickly found General Ishii in hiding, but in order to avoid being brought to justice, he gave all the information from Unit 731's previous research. He died shortly afterwards of throat cancer as a mass murderer and criminal (Langbein *et al.*, 2003).

The crimes committed by Unit 731 left many sad memories and cruel experiences among the people who survived this nightmare. A person is capable of cruel things in the name of their goals, ambitions or beliefs, such a person was General Shiro Ishii, wanting to build the perfect weapon, i.e. biological weapon, he committed mass murders, thus becoming one of the war criminals of the 20th century. Based on the story of General Shiro Ishii, we know that:

- He allied himself with the president of the University to gain social status.
- He began his doctorate, where he came across an article on biological weapons.
- He began research at the Military Medical School in Tokyo on biological warfare.
- In 1931, Japan invaded Manchuria (a poor and sick country), which began forced human research.

- In 1933, Ishi's complex was established, consisting of 150 buildings.
- In 1941, "Unit 731" was established as a unit focusing on advanced research on biological weapons.
- The research consisted of combining many strains of bacteria by trial and error.
- In 1940/41, a ceramic bomb was dropped on China and Manjava, which started the Bubonic Plague. The attack was carried out without letting the residents recognize the threat.
- In 1942, Shiro Ishii repeated the attack using 2 units (each attack proved the ease of infecting a large number of people).
- Research on the transmission of the virus by rats was carried out in 1942 in Unit 731.
- Performing experiments on infected people was called vivisection.
- After 1945, General Shiro Ishii ordered Unit 731 to be extinguished.
- The end of the Plague epidemic was in the 1960s.

2.2 Anthrax Letters in the USA

The year 2001 was a major turning point in the history of international security. The terrorist attack on the World Trade Center on September 11, 2001, at that time made humanity aware of the serious threat posed by terrorism and the high probability of using unconventional weapons. In the same year, the United States experienced another threat, the use of biological weapons.

In the fall of 2001, several letters were sent to the offices of news agencies and the United States Congress, containing anthrax spores that infected 22 people. (http://www.911thology.pl/anthrax.html).

As a result of the rapid development of the disease and its pulmonary form, 5 people died. This caused a huge panic among people, quickly becoming a top-notch topic. False alarms were soon raised for every suspicious package, which generated huge costs not only in the United States but also around the world (Chomiczewski *et al.*, 2002; Pałęga *et.al*., 2023). The attack was carried out in two waves. The first letters came from Trenton, New Jersey, and were posted on September 18, 2001, which makes it a week after the attack on the World Trade Center.

Probably 5 letters were sent at that time to ABC News, New York Post and NBC News, and 1 to Florida to the National Enquirer at American Media (http://www.911thology.pl/anthrax.html), and the first fatal victim of the bioattack was 63-year-old Bob Stevens - a photojournalist for the famous American tabloid "The Sun". When he fell ill, doctors considered it an unusual case of meningitis.

However, the curiosity and determination of the epidemiologist from Atlantis - Dr. Larry Bush led to the discovery that the cause of Bob Stevens' illness was anthrax bacilli. The photojournalist died several dozen hours after infection on October 5,

2001. A routine investigation began the very next day. Special FBI units, whose task is, among other things, to combat biological threats, secured the building where Stevens worked. Equipped with special suits and oxygen masks, they began searching for anthrax bacteria throughout the editorial building. Within a few days, the disease was diagnosed in seven more people and traces of anthrax spores were detected, including on the keyboards of editorial computers. The threatening letter that Stevens received contained the largest amount of them (Szczucka-Lasota *et.al*., 2024).

FBI units also found a letter sent to the well-known television station NBC, which also contained spores of this bacteria. Shortly afterwards, a statement was issued informing that the microbes responsible for these events did not come from any military laboratories. The next victim of the "anthrax letters" was Stephani Dailey. Like Bob Stevens, she was an employee of American Media. The presence of anthrax spores was found in her nasal cavity. When it was determined that the target of the bioattacks were mainly journalists from media that were dominated by the Jewish community, another package with anthrax bacteria arrived.

It was sent from Trenton (New York) and sent to Tom Daschle (senator of South Dakota) (Prusakowski, 2001; Czarnek-Marszałek *et.al.*, 2023) and Patrick Leahy (senator of Vermont). The letters contained much more dangerous material than the previous letters. They were reported as “biological warfare” or “military” grade. The bold letters contained anthrax bacteria, which, when in contact with the skin, would immediately infect the victim (http://www.911thology.pl/anthrax.html).

Two letters were sent to Senator Tom Daschle. The first was posted on October 8, infecting a large number of people. The second arrived six days later and was received by the senator’s assistant. Within three days, people in his entourage began to fall seriously ill. This time, the letters were posted at a different location, the Brentwood Post Office. Postal workers began to fall ill immediately, and two of them died from the inhalation form of anthrax.

The wave of "anthrax mail" continued. Infections were detected in Florida, Virginia, and Washington, among other places. The letter was also addressed to a columnist for a St. Petersburg weekly. The mail contained a powder that resembled powdered sugar in consistency. The letter contained a short, laconic text: "Howard Troxler" - the first case of the plague. Now blow away this powder and watch it fly. However, the powder did not contain anthrax spores, and the whole event was to cause even greater hysteria. Panic broke out all over the world, people stopped leaving their homes, did not receive correspondence, and antibiotics were constantly disappearing from pharmacies (Prusakowski, 2001; Masłowski *et.al.*, 2024)

The investigation into this case was mainly handled by the FBI, the investigation was codenamed "Amerithrax". The perpetrator used anthrax spores, which came from the Ames strain already known to microbiologists. Thanks to this, it was

possible to determine that the bacteria had not been genetically modified. Both anthrax spores, which affected the skin by creating black, necrotic, lumpy spots on the human body that turned into painless ulcers after 1-2, and anthrax that attacked the respiratory system were used. Initially, the victim developed flu-like symptoms, high fever, respiratory tract infections, and after 3 days, respiratory failure or circulatory collapse. A person who does not detect the disease quickly enough dies. (https://criminalminds.fandom.com/wiki/Amerithrax).

Seven years after the incident, there was a breakthrough in the investigation, and officials of the Department of Justice and the FBI released documents and information in this case that indicated that charges had been filed against the American scientist Bruce Ivins.

However, he committed suicide before the proper charges were filed, and in 2010 the investigation in this case came to an end. The Amerithrax group consisted of about 30 full-time investigators from various law enforcement agencies and federal prosecutors, who conducted over 10,000 interviews worldwide. (https://www.fbi.gov/history/famous-cases/amerithrax-or-anthrax-investigation).

In 2001, letters containing anthrax spores, although they did not directly affect a large number of people, caused chaos and outrage among people around the world. Many scenarios about this topic appeared at the time, which often did not correspond to the truth and reality. The media began to feature political figures who stood out only for their lack of professional knowledge. This situation also affected trade. Many websites offered sets of equipment necessary for biological warfare. They mainly contained gas masks to protect people from viruses and one package of antibiotics (Rathish *et al*., 2023; Podulka *et al.*, 2024).

In the United States, the biological attack has greatly affected the country's economy. In some areas of the country, tourism has ceased to function, and hotels that were once bustling with activity have struggled to fill just a few rooms. In addition, the number of mail items sent has plummeted, and two-thirds of businesses have had serious financial problems.

People's investments in security have destroyed almost every branch of the economy, but the health service has suffered the most. Lack of adequate staff and financial constraints have resulted in the closure of some hospital wards. Countless people who deliberately incite panic among people have also turned out to be a serious problem. For this reason, the services that deal with protection against bacteriological and chemical weapons were put on alert for several weeks. (Langbein *et al.*, 2003; Sawa *et al*., 2022).

Decontamination of places infected with the anthrax bacteria was associated with huge costs. It took 26 months to clean the Brentwood post office area, for which 130 million dollars was paid. Many other places were closed for 5 years. In the case of

government buildings, the cost of decontamination was $41.7 million. FBI documents indicate that the total cost of damage was about $1 billion (http://www.911thology.pl/anthrax.html).

While the panic over anthrax was growing in the United States for several weeks, a case of infection with this bacterium was also detected in Pakistan. Some of the political elite have various connections with Afghan terrorists, which is why many things are beyond their control. The letter was addressed to Mehmud Sham, who was the editor-in-chief of the tabloid Daily Jang. Anyone who came into contact with the package was immediately given antibiotics.

Shortly after this incident, the media picked up information about another contaminated package sent from the US and delivered to its embassy in Vilnius. This meant that anthrax had appeared in Central Europe (Szczucka-Lasota *et al*., 2023). The fear of anthrax also reached Poland. The powder that was sent out caused people who had any contact with the suspicious package to be segregated in infectious disease hospitals.

However, the white powder did not contain anthrax spores, and microbiologists constantly drew attention to the fact that the prepared anthrax was brown in color. No cases of anthrax infections were recorded in Poland at that time, but one goal, important for terrorists and "pseudobioterrorists", was achieved. The packages sowed anxiety and fear in Polish society (Prusakowski, 2001; Próchniak, 2014).

Although the anthrax letters did not kill many people, they had a huge impact on the sense of security of people around the world. Controlling the consequences of this event became a huge challenge and hard work for thousands of people. It is inevitable, however, that such situations will repeat themselves, and terrorists will be increasingly willing to reach for this type of means. What could once only be seen on movie screens is now becoming a reality, and society should constantly prepare for such challenges.

The events of 2001 have intensified a huge panic. This is undoubtedly a new type of bioterrorism, which has an impact on the creation of a completely new, previously unknown history. The whole world is gaining unpleasant experiences, slowly illustrating the fact that such events may in the future result in a threat to the existence of humans, plants and animals, ultimately leading to self-destruction (Próchniak, 2018).

2.3 Salmonella Attack

In 1981, in the city of The Dalles, Oregon, on a long-abandoned farm, a sect began to operate, originating from India. Bhagwan Shree Rajneesh, who acted as a clergyman, was recognized as the leader. He was an extremely charismatic and intelligent man who was able to attract a crowd of followers. He recruited people to

join the sect mainly among young people who came from the middle class. Some of its members were very wealthy and well-off, thanks to which the sect's activities were constantly developing, and the Master could enjoy a life of prosperity.

Life in the sect is not only pleasures, but also hard and constant work on the farm, sometimes lasting twelve hours. Over the course of three years, they built a small town from 25,900 hectares of fallow land, housing dozens of houses, a hotel, a casino, a disco, and even a shopping center. In addition, waterworks, a system of streets and landing pads for five helicopters and jets were built there, which were exclusively the property of the sect. The number of members grew to 4,000 people, who trusted and believed in every word of the leader.

However, the residents of Wasco County in Oregon did not have such trust in them. People opposed the orgies organized by the sect members and their expansionist plans, but this did not bring the desired effect. After a short time, they began to settle in the nearby town of Antelope. The followers of Bhagwan were characterized by a cheerful attitude to life and red robes. Due to their numerical superiority, they managed to win the municipal elections held in the town, which made them more influential. They quickly renamed the town to Rajneesh, ordering its residents to start and end all meetings of the city council with a joke.

The town of Antelope lost its supermarket, cafes and other important places for them, and instead built vegetarian cafes, which caused riots among the rest of the town's residents. As part of the protest, leaflets were posted on the walls with offensive slogans directed at the cult's followers, such as "better dead than red".

The importance of the cult was constantly growing, and its own police force was created in response to the increasing repression. Finally, it was decided that the cult's leadership would take power in Wasco County. The plan did not end well because the cult's followers did not have US citizenship and were therefore not entitled to vote. After the defeat, they thought for a long time about how to increase their opportunities and power in the county. Then, the idea was born in their heads to rent a few apartments in Wasco County itself.

Then, they would register there under false names of their own people belonging to the cult. In this way, they could cast even several votes in different disguises and control the election results. Eventually, Rajneesh's followers came up with another idea on how to prevent eligible residents from participating in the elections. The idea involved the use of microorganisms (Węgrzyn *et al*., 2023).

The plan was to be carried out by Ma Anand Puja, who was in charge of medical institutions in the small town of Bhagwan. She was a nurse by education, and her greatest passion in life was poisons. Cheerful, likeable and full of energy, she inspired fear among the cult's followers. This was mainly due to the rumors that circulated on the farm. She was spoken of as a murderer because she had probably

poisoned many of the cult's members. However, sufficient evidence was never collected to prove her crimes. Her interests mainly revolved around diseases such as typhoid fever, infectious jaundice, typhus, etc.

However, according to witnesses, the HIV virus, which she intended to cultivate, aroused the greatest interest in her. Although she could easily obtain the necessary strains, it was considered too dangerous and ultimately it was decided to use Salmonella. A few years ago, a secret laboratory was built on the farm, and it was there that pathogenic bacteria were produced.

The use of salmonella bacteria by the cult's followers was recorded as early as August 29, 1984, when three officials from Wasco County showed up at the farm and were treated to water contaminated with the bacteria. Two of them became seriously ill without knowing the cause of their illness. The following month, more attacks were carried out using their own men. One of them was given a test tube with a clear, brown liquid, which he was to bring to the town of Portage Inn. When he got there, the salad bar was closed, but the dressing was left on the buffet and that's where the entire contents of the test tube were poured. Soon after, almost all the eating places in the town were contaminated (Skowrońska *et al*., 2024a).

As a result, as many as 751 cases of salmonella poisoning were recorded. Many people suffered very severely from the disease, but no one died. Discussions grew among the cult's members, which ultimately contributed to the end of biological warfare. Instead, Bhagwan's followers lured a crowd of homeless people to the town to register them and thus allow them to vote. The fraud was quickly discovered and it was announced that mandatory interviews would be held for every new voter. As a result, the sect abandoned the plan, and its candidates did not receive a majority of the votes. In addition, the sect was charged with violating immigration laws (Szala *et al*., 2024; Wieloch *et al*., 2024).

In 1985, fifty investigators arrived at the farm with a search warrant and made some horrifying discoveries. Among other things, they found a large number of vials of salmonella, which, as it turned out, were of the exact same line as those that caused the epidemic at that time. Shortly after this discovery, Bhagwan fled and disappeared without a trace. But not for long, because agents eventually tracked down his whereabouts. He was arrested and put on trial, along with his associates and disciples (Langbein *et al.*, 2003).

The use of biological weapons by Rajneesh's followers was not an event that the whole world talked about. It was only described in local newspapers, so the wider public did not know about the whole incident. Although the event did not have a media impact, it left many questions and a sense of anxiety behind. It was understood then that a biological attack can be carried out by anyone regardless of their values, religion or gender. Biological weapons in the hands of professionals can in the future result in serious implications for national and international security.

The use of more dangerous pathogens than salmonella became then even more real than before, becoming a priority and a priority for the secret services and police (Skowrońska *et al*., 2024).

3. Comparative Analysis of Events Using Biological Weapons in the Logistic Aspect

In addition to literature research, the authors of the paper conducted a comparative analysis of events using biological weapons. The analysis takes into account three most important elements, i.e. key observations and logistic aspects of events related to the use of biological weapons, as well as connections with the model of court logistics in solving problems related to bioterrorism. The research results are presented in the table.

Table 1. *Comparative analysis of events using biological weapons in the logistic aspect*

Event	**Key Observations**	**Logistical Aspects**	**Relationship to the Forensic Logistics Model**
Japanese Biological Weapons Unit 731	- Conducting comprehensive research and experiments on humans in order to develop biological weapons. - Using secret laboratories on a large scale. - Testing the effectiveness of biological weapons by deliberately and consciously infecting people with various microorganisms, such as plague, cholera, anthrax. - The death of hundreds of thousands of people as a result of the use of biological weapons in real armed conflicts.	- Production and storage of biological weapons: A complex logistical system that consisted of a developed infrastructure for the production, storage and testing of biological weapons. - Transportation and detention of victims: A transportation system that was used to move large numbers of victims. In addition, an important element of logistical management was the organization of sanitary conditions in the camps.	Evidence and data management: The forensic logistics model had to take into account the problems of recovering and securing data and evidence after years. - Victim identification: The logistics model included the use of advanced tools dedicated to victim identification and crime documentation, taking into account the complexity of such operations.
Anthrax Letters in the US (2001)	- The biological weapons incidents involved the distribution of anthrax through the postal system. - The incidents caused mass panic as well as	Crisis response logistics: Decontamination of multiple buildings, reorganization of post offices, massive	- Tracking and analysis of evidence: The forensic logistics model was based on international

	serious economic consequences. - The relatively uncomplicated method of attack was characterized by a wide range of impact. - The biological attack infected 22 people, resulting in 5 deaths. - High costs of decontamination and reorganization of postal systems.	investigation activities covering the entire country. - International cooperation: Close cooperation between different agencies and institutions at the international level was necessary to minimize the risk of further attacks. - Technological challenges: Use of advanced technologies and expertise to track the sources of bacteria.	cooperation and the use of advanced technologies to track the origin of bacteria. - Social risk management: A key element of the logistics model was an effective information policy that allowed for rapid response and panic management.
Salmonella Attack (Oregon, 1984)	- Rajneesh's sect carried out a salmonella attack, which was supposed to influence the course and results of local elections. - As a result of the biological attack, 751 people were infected, but no deaths were recorded. - Although the attack was only local, it showed that even small groups can effectively use biological weapons to achieve their goals. - In secret laboratories, members of the sect produced bacteria themselves. - Bacteria production required good organization of work and advanced infrastructure.	- Coordination of actions: The attack was carried out in a coordinated manner, simultaneously in many locations, which required very good organization within the sect. - Low cost: Low production and distribution costs made the attack easy to carry out.	- Management of small terrorist groups: The forensic logistics model had to include tools for monitoring and rapid response to bioterrorist threats. - Evidence management: The forensic logistics model had to include activities and techniques for securing evidence and linking it to the activities of the terrorist group.

Source: *Own elaboration.*

To sum up the considerations so far, it should be stated that Unit 731 is one of the most extreme examples of the use of biological weapons. Additionally, a key role in conducting mass experiments was played by logistics activities aimed at producing, storing, transporting and testing weapons on humans. Effective infrastructure management, secrecy of operations and the ability to quickly move resources and

victims should be considered key aspects determining the effectiveness of the attacks carried out. Therefore, the forensic logistics model should be based on international cooperation in holding those responsible for joint responsibility and take into account technological solutions designed to secure and analyze evidence of the attacks carried out. In turn, the analysis of bioterrorism attacks using anthrax letters has shown that in this case the most important logistics activities focused on decontamination activities, reorganization of postal systems and international cooperation of investigators.

Therefore, in this case we are talking about logistics of response to attacks using biological weapons. Analysis of the course of attacks proves that the forensic logistics model must be able to respond quickly and effectively to this type of threat. An important element of this model is also the proper management of public information, which is supposed to prevent global panic.

Additionally, the salmonella attack carried out by Rajneesh's sect showed that its effectiveness results, among other things, from the secret production of bacteria and coordinated actions to distribute them. In this context, the forensic logistics model should be characterized by the ability to quickly secure evidence of the attack, as well as monitor the relationships between individual bioterrorist threats (Skowrońska B., *et.al*., 2024b).

4. Discussion

The analysis of the course of events using biological weapons and the related logistics activities showed the need to develop a new forensic logistics model, which should, on the one hand, enable a quick response to various types of bioterrorist threats, and on the other hand counteract bioterrorism. In the context of bioterrorism logistics, it is important to understand that the effectiveness of a biological attack depends not only on access to biological agents, but also on the ability to manage logistics processes, which include production, storage, distribution and response to incidents.

The key scientific aspects are:

- optimizing the supply chain in the production of biological weapons,
- minimizing the risk of the operation being discovered,
- coordinating actions that maximize the reach and effectiveness of the attack,
- crisis response logistics, including decontamination and securing evidence.

Such analysis indicates that logistics play a key role in planning and implementing both bioterrorist operations and the response to them, which requires close cooperation between individual state and international bodies and institutions.

The answer to the above problems is the original concept of a forensic logistics model aimed at eliminating incidents involving the use of biological weapons. It is assumed that it should be an advanced and comprehensive system that would integrate the most important elements of crisis management, criminal prosecution, and military and civilian logistics to effectively counteract and respond to threats related to bioterrorism. This model encompasses both prevention and response to incidents involving the use of biological weapons, and its effectiveness relies on a rapid and coordinated response, as well as precise tracking and logistics analysis.

Biological factors known from experience pose a serious threat to the entire world. According to experts, this threat can be controlled provided that the defense of developed countries is strengthened. However, the greatest concern revolves around significant progress in the field of biotechnology, and above all in genetic engineering. Analyses conducted so far indicate that the progress of life sciences has at least one element contributing to the development of increasingly better and more dangerous biological weapons.

In the future, it is assumed that data on people susceptible to specific diseases will be available, which will make it possible to design individual drugs, but also to select a homogeneous group in order to hit them with a specially prepared biological weapon. It is also possible that personal databases will be created, to which insurance companies and employers will have access, which may affect employment opportunities or the level of insurance rates for people genetically burdened with the ability to get sick with certain diseases. Worse still, access to such databases may be obtained by people who want to use them for terrorist attacks.

5. Conclusions

This work confirms that the use of biological weapons in a terrorist attack is a new, huge challenge for the whole world. Each bioattack carried out affects people's sense of security to a greater or lesser extent.

To sum up, the separation of forensic logistics as a scientific discipline is still associated with certain shortcomings, which is why it is not possible to fully outline its issues. Research and analysis should be carried out to verify whether a given specialty is so useful. However, with the above-mentioned aspects, it can be stated that forensic logistics has many benefits, first of all that it uses the sciences of many domains, provides evidentiary information for the court, and develops specific scenarios regarding crimes. Forensic logistics initiates quite a rich range of research, which will improve the search for answers to pressing questions in the field of forensics in the future.

The evidence in the work confirms that the use of biological weapons in a terrorist attack is a new, huge challenge for the whole world. Each bioattack carried out affects people's sense of security to a greater or lesser extent.

The analysis of the bioterrorism phenomenon and indication of its impact on national and international security is the main goal of the work. It has been fully achieved, as it has been proven to what extent bioattacks affect people's sense of security. Considering the possibilities of unconventional weapons' impact on humans and the potential effects of their use, it can be stated that it is epidemiological weapons that cause great terror.

Moreover, among other types of terrorism, bioterrorism turns out to be the most dangerous and insidious. Widespread panic, a sense of fear and disorganization of society are the most common reaction to biological weapons, and uncontrolled can even affect human existence.

As a result of the conducted research, the hypothesis was verified positively. It was proven that the use of biological weapons is real and causes serious consequences at the place of the event and around the world. This is confirmed by a case study, which contains details regarding both the reaction of the population to such threats and the health consequences. The perfidy of a biological attack is that the use of a biological agent against the population is visible only when the population begins to fall ill en masse. Such situations make it clear that bioterrorism is not fiction or a terrifying prognosis, but a fact that we have to deal with today.

New perspectives and possibilities of access to epidemiological weapons are undoubtedly created for terrorists by progress in biotechnology and genetic engineering. This facilitates, among other things, access to dangerous bacteria and viruses, thus leading to a situation where the production of these weapons is completely taken over by terrorists.

Current vaccines may prove ineffective and insufficient, because no one is able to determine which pathogens will be used by bioterrorists. It should also be emphasized that organizations and the entire international community are sometimes helpless in the face of today's challenges and threats.

Therefore, it is important to constantly expand knowledge about bioterrorism and not focus only on eliminating the effects of the use of biological weapons, but on effectively preventing such situations. It is therefore important to shift the focus to constant forecasting and analysis of potential threats. By staying one step ahead of terrorists, we are able to prevent many dangerous situations.

The research problem undertaken was intended to prove to what extent the threat of bioterrorism affects national and international security. There is only one answer: every use of biological weapons has a very significant impact on the loss of people's sense of security. An attack carried out in a distant country can have powerful effects in another territory, or even throughout the world.

The examples of the use of biological weapons described in the work indicate that panic, like an infectious disease, can spread quickly, which is why the problem of one nation becomes the problem of the entire world.

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