UDC 327
DOI: https://doi.org/10.21564/2075-7190.45.200934

Trebin Mikhail Petrovich, Doctor of Philosophical Sciences, Professor,
Head of the Department of Sociology and Political Science, Yaroslav Mudryi
National Law University, Kharkiv, Ukraine
e-mail: m.p.trebin@nlu.edu.ua
ORCID ID: 0000-0002-1328-9865

BIOLOGICAL TERRORISM: PREPARING THE ESSENCE

Biological terrorism is the reality of today. It is understood as the deliberate use by individuals, terrorist groups or organizations, separate structures of state bodies of biological weapons of destruction of people, animals and plants in order to destroy or disable people, causing great economic, social, political, demographic and environmental losses to the country and the world community , imposing a certain line of behavior on international organizations, states, local governments in solving external and internal issues problem. The negative consequences of bioterrorism are revealed, three classes of biological agents, the main methods of combat use of biological weapons are analyzed.

Keywords: *biological terrorism, biological weapons, national security, epidemic, pandemic.*

Problem setting. Modern terrorism is cynical and diversified. If, at the stage of the origin of this phenomenon, the purpose of most terrorist acts, as a rule, was the destruction of individuals, today it is the mass destruction of people, the undermining of material well-being, and the destruction of cultural property [1]. In addition, due to the recent increase in the socio-political effect of the terrorist attack, their organizers and executors are expanding their geography, scaling up and increasing the sophistication of terrorist acts. Today, in order to achieve their goals, terrorists are ready to use any means without any restrictions. Due to the increase of material equipment and technical capabilities, terrorists seek to use modern information and cyber technologies in their criminal activity, to seize weapons of mass destruction. Biological weapons, due to a number of inherent combat and functional characteristics, make it very convenient for a larger-scale terrorist attack. The current revolution in the field of biotechnology is capable of creating biological weapons that are not inferior to nuclear weapons in terms of astonishing parameters and have flexibility in use.

Recent research and publications analysis. The problems of terrorists using weapons of mass destruction, especially biological weapons, were constantly in the spotlight for Western (M. Armstrong, W. S. Carus, A. Collins, D. D. Dones,

C. Enemark, B. C. Garrett, L. Gray, L. Idzikowski, K. Y. Johnson, P. M. Nolan, M. Kerrigan, M. G. Kortepeter, F. Lentzos, K. Newby, M. Olshaker, M. T. Osterholm, V. N. Pinto, T. Renders, E. Rice, A. T. Tu, M. E. Vargo, M. Wilkinson at al. [2–21]) and Ukrainian researchers (M. Andreichin, O. Bardin, M. Velichko, M. Horlach, O. Glinska, V. Kopcha, A. Laputina, V. Radchenko, A. Serdyuk, Yu . Skaletsky, K. Cherednichenko et al. [22–27]). But at the same time, the events surrounding the COVID-19 pandemic indicate that the problem of combating biological terrorism will be problem of our future.

Paper objective. The purpose of the article is to reveal the essence of biological terrorism, its main features and consequences.

Paper main body. The world in which we live is constantly is putting humanity to the test. As a representative of a biological species, a person is exposed, first of all, to such possible threats as: activation of cells of endemic infections due to regional and global anthropogenic influence (malaria, yellow fever, Rocky Mountain spotted fever, Japanese encephalitis, tick-borne encephalitis, cholera, hemorrhagic fever, etc.); the appearance of previously unknown infectious diseases (AIDS, Lyme disease, Marburg fever, Lass, Ebola, legionellosis, spongiform encephalopathy, toxic shock syndrome, helicobacter infections, cryptoscoridioses); the epidemic spread of «old» infections, including defeated ones (tuberculosis, meningococcal and streptococcal infections, diphtheria, shigellosis, salmonellosis) in the new ecological and social environment of human habitation; increased risk of exotic and quarantine infections (tropical helminthiasis, West Nile fever, malaria, yellow fever, cholera, etc.) due to the globalization of the economy and trade and mass migration of the population; the deliberate distribution of biological agents in order to infect people, animals and plants (biological weapons and biological terrorism). We will discuss about the last type of biological threat in this article.

The history of mankind abounds with examples of using arsenic, cicuta, mercuric chloride and other toxic substances against their own kind by humans. One of the first recorded cases of villainous poisoning was told by the stories of the Greek physician Ctesias, who lived in the 5th century BC. This doctor was a witness of how the mother of the Persian king Artaxercus I named Parisatida poisoned her daughter-in-law Statira. But this and similar cases were directed against a specific person. In the twentieth century, mankind decided to go further by using biological (bacteriological) weapons against large groups of people. Thus, the Japanese during World War II developed such weapons: they used the plague virus in China from 1936 to 1945; Germans threw a bomb with anthrax causative agents on the small northern island of Grunland. Up to now, only those animals that do not suffer from anthrax live there.

The events of the fall of 2001 in the United States, related to the spread of anthrax spores through mail, indicate that bioterrorism as hypothetical threat

gradually turning into a real danger of the 21st century. Words spoken by an American infectious disease epidemiologist, regents professor, and director of the Center for Infectious Disease Research and Policy at the University of Minnesota Michael T. Osterholm few years before the attack, that the threat of biological poisoning is inevitable, turned the question from «if», into «when» and «where», ends up being harsh reality. Two weeks after the first case use of anthrax in the United States, FBI Director Robert Muller confidently stated that those were «acts of terrorism.»

Although both the scale and the results of the bioterrorist campaigns carried out there most likely pointing out towards the psychological orientation of these actions, and not the widespread usage of biological weapons against the population. Nevertheless, it should be noted that bioterrorism in the 21st century turned into a very serious problem for humanity. This is largely facilitated by the living conditions of modern society. American military experts believe that in the near future, if the terrorists are faced with the task of destroying as many people as possible within a short timeframe, they will give preference to its simplest implementation – with help of biological agents. The American side has substantial grounds for such conclusions. Back in the 1950s, military researchers conducted an experiment of unprecedented scale on humans, spraying two types of «harmless» microbes (Serratia marcescens and Bacillus glodigii) from warships in San Francisco in order to determine the spread of bacterial aerosol among the population of large American's cities. This experiment in a short amount of time contributed to the development of an epidemic with one fatal outcome.

In 1960 in New York, military researchers launched light plastic bags filled with the saprophytic microbe Bacillus subtilis into the mine ventilation system underground. The guards who were there showed surprising indifference to the actions of the experimenters, satisfied with their statement that they were conducting a scientific study. In this experiment, it took only a few minutes for the bacteria to spread to all stations of the given underground line. So, model studies have shown that the underground is a very convenient place to carry out acts of biological terrorism. According to estimates, in the case of using Anthrax, out of 12,000 people who will get sick in such situation, 11,400 will die; if tularemia pathogens are used, the number of patients will be 200 thousand, and 300 thousand people will suffer from pathogens of brucellosis. The appearance of such number of patients over a short amout of time will completely paralyze the normal life and health care system of even such powerful city as New York. We see happening in Italy and Spain in the context of the COVID-19 pandemic.

Therefore, today it is necessary to have a fairly clear idea of such a phenomenon as biological terrorism, which should be understood as the deliberate use by individuals, terrorist groups or organizations, some structures of state bodies of

biological means of defeating people, animals and plants in order to destroy or incapacitate people, inflicting heavy economic, social, political, demographic and environmental losses on the country and the world community, imposing a certain line of behavior of international organizations, states, local authorities in dealing with internal and external problems. Biological terrorism in any state, even a member of the «golden billion», can turn into a catastrophe, because its consequences are unpredictable and they do not have territorial borders. To infect a person, it is enough that from ten to one hundred viral particles get into the lungs, onto damaged skin or mucous membrane (nose, mouth, eyes). For comparison: up to ten thousand of such particles are placed in a drop hanging on the tip of a syringe needle. That is one drop that can kill thousand people on the spot! A teaspoon is enough for the inhabitants of the whole city. Half of the sick will die, the rest will remain disabled.

Professor Y. Suchkov, who worked for so many years on the so-called «fifth problem» – protecting troops and the population from weapons of mass destruction, in the interview with «Top Secret» noted that the consequences of using «fighting» strains as a means of terrorist attacks would be monstrous. «Those involved in the development of bacteriological weapons induced the so-called multidrug resistance on strains, leaving one reserve antibiotic so that saboteurs and developers could use it. They say that scientists were required to obtain a strain with virulence at the level of one cell, that is, one cell should infect the animal. Thousands of cells are required to infect humans. And in vitro there are billions of them. Several years ago, the head of the museum of living cultures of one of the closed institutes, in order to «annoy» his director, sent an ampoule of a not very virulent strain of cholera to the FSB to prove the possibility of leakage of dangerous microbes. State security officials quickly figured this person out. Condemned. But this case showed that strains can be stolen [28].

Biological terrorism has a number of negative consequences:

social – mass diseases of people with a severe course of the disease and a high degree of fatal outcomes, panic, fear, neuropsychiatric disorders, disability, paralysis of the will, depletion of medical resources, high mortality among medical staff, disruption of medical institutions, decline in living standards of citizens;

economic – the collapse of the country's economy, the disease and death of productive farm animals, the destruction of crop plants, which are the main source of food for the population, mass hunger, an increase in the number of refugees, devastation, discrediting the country on the world market as a trading partner, excessive material and financial costs of conducting anti-epidemic, quarantine and other measures to eliminate the epidemic (pandemic), self-paralysis of the transport system;

political – elimination or blackmail of undesirable political leaders, creating an atmosphere of distrust of the country's leadership, intensifying activity of the political opposition;

demographic – a significant reduction in population;

military – covert incapacitation of military personnel of a eventual or real adversary without coming into contact with his armed forces.

The list of potential biological weapons agents that can be used by terrorists, according to various sources, ranges from 10 to 50 names. As a criterion for their priority, virulence, persistence in the external environment, the possibility of industrial production using relatively simple and cheap technologies, and the absence of specific prophylaxis and treatment are used.

A bioterrorism attack is the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants. These agents are typically found in nature, but it is possible that they could be changed to increase their ability to cause disease, make them resistant to current medicines, or to increase their ability to be spread into the environment.

Bioterrorism agents are classified as categories A, B, and C [16].

Category A: High-priority agents include organisms that pose a risk to national security because they can be easily disseminated or transmitted from person to person, result in high mortality rates, and have the potential for major public health impact. They might cause public panic and social disruption, and require special action for public health preparedness. Agents/diseases include anthrax (Bacillus anthracis), botulism (Clostridium botulinum toxin), plague (Yersinia pestis), smallpox (Variola major), tularemia (Francisella tularensis), and viral hemorrhagic fevers [filoviruses (e.g. Ebola, Marburg) and arenaviruses (e.g. Lassa, Machupo)].

Category B: The second highest priority agents include those that are moderately easy to disseminate, result in moderate morbidity rates and low mortality rates, and require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance. Agents/diseases include brucellosis (Brucella species), epsilon toxin of Clostridium perfringens, food safety threats (e.g., Salmonella species, Escherichia coli O157:H7, Shigella), glanders (Burkholderia mallei), melioidosis (Burkholderia pseudomallei), psittacosis (Chlamydia psittaci), Q fever (Coxiella burnetii), ricin toxin from Ricinus communis (castor beans), Staphylococcal enterotoxin B, typhus fever (Rickettsia prowazekii), viral encephalitis [alphaviruses (e.g. Venezuelan equine encephalitis, eastern equine encephalitis, western equine encephalitis)], and water safety threats (e.g. Vibrio cholerae, Cryptosporidium parvum).

Category C: The third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of availability, ease of production and dissemination, and potential for high morbidity and mortality rates and major health impact. Agents include emerging infectious diseases such as Nipah virus and Hanta virus, and Mycobacterium tuberculosis (multidrug-resistant strains). Newer trends are products of microbes that can kill or incapacitate targeted hosts, e.g. hormones, neuropeptides, cytokines called as «designer

substances» to target a particular organ or type of enemy. Others are «ethnic bombs» and parasite biological weapons under trial to affect cash crops.

There are following methods of combat use of biological warfare (BW):

spraying biological formulations to infect the surface air layer with aerosol particles – aerosol method;

dispersion in the target area of blood-sucking carriers artificially infected with biological agents – transmission method;

biological infection of air and water in confined spaces [29].

Military experts consider the aerosol method as main, most effective and promising, since it allows you to suddenly and stealthily infect surface masses of air in large areas with biological agents, the terrain and the people on it, equipment, machinery. In this case, people are exposed to biological aerosol not only on opened locations on the ground, but also in unsealed facilities, vehicles, equipments. This method allows: to use for combat purposes almost all types of BW, to ensure infection of the body with both massive doses of one type of BW, and a combination of their various types. In addition, the protection of the body from aerosols of BW during their penetration through the respiratory system proved to be more difficult than with other methods of using BW. This is explained by the lack of effective protective barriers on the body and the occurrence of severe pulmonary forms of diseases that are much more severe and have bigger fatality. All this can reduce the effectiveness of emergency protective measures, create atypical lesion, acceleration of getting people out of order, increase the severity and mortality of the lesion. Foreign sources indicate that the most effective use of biological aerosol should be in the autumn-winter season (at air temperatures from minus 15 to plus 10 C, in inversion or isothermal conditions of vertical air stability, with average values of relative humidity, wind speed 1–4 m/s, the absence of solar radiation and precipitation) [30].The relief effects on the efficiency of aerosols. On a flat open area the spread of the aerosol cloud occurs evenly. All other terrain features to one degree or another increase the dispersion of the cloud and reduce the area of infection. In gorges, hollows, ravines, forests, settlements with dense residential and industrial buildings, where the circulation of air masses and direct solar radiation are limited, it is possible to stagnate a cloud of biological aerosol, preserving its damaging properties for a longer time. Aerosol particles deposited on the ground combine with dust particles of the soil and when the wind is strong, as well as when people and vehicles move through the contaminated area, they again rise into the air, forming a secondary biological aerosol. In cases where the enemy uses persistent types of biological agents, this aerosol becomes an additional source of possible infection of people.

It is possible to use a transmission method, which consists in deliberate dispersion of bloodsucking carriers artificially infected with biological means in a given area

using entomological ammunition (aircraft bombs and containers of a special design). The method is based on the fact that many of the existing blood-sucking arthropods in nature are easy to perceive, keep for a long time, and then, through bites, they transmit the causative agents to a number of diseases dangerous to humans and animals. Thus, certain types of mosquitoes are capable of transmitting yellow fever, dengue fever, Venezuelan encephalomyelitis of horses, fleas – plague, Sucking lice – typhus, mosquitoes – Pappataci fever, hard ticks – Q fever, encephalitis, and others. Artificially infected carriers are most likely to be used in warm seasons (at temperatures from 15°C and above) and environmental conditions close to the natural habitat of carriers [31].

After the events of September 11, 2001, the US secret services worked out a version of a possible spraying bacteriological weapons over cities using agricultural aircraft, since these aircraft were getting interest from people suspected of conducting air attacks on New York and Washington, water contamination (effective in case of introducing a sufficient amount of infectious material into tanks and water towers, where drinking water enters after purification), food contamination (the most dangerous is the contamination of ready-to-eat meals or cold snacks at public catering facilities), infection of mail messages, sabotage enterprises for the production of vaccines, diagnostic and medical biologics, etc. [32–33]. Regardless of the application method, the biological agent can cause the sudden onset of mass diseases, the nature of which should be distinguished from epidemic outbreaks of natural origin.

The main signs of an epidemic caused by the deliberate spread of an infectious agent are: the sudden onset of massive cases of a rare or sporadic infection; identification of group diseases outside the endemic cell; the occurrence of an epidemic in a season uncharacteristic for this infection; extremely rapid spread of infection among people who have experienced exposure to a biological agent; atypical age characteristics of patients; mass infections of a known infection in an unusual way; short and approximately the same incubation period for most patients; isolation of pathogen strains in patients and from external objects with altered antigenic and biochemical characteristics, unusually high virulence and resistant to antibiotics; the presence of clinical signs in sick people that are not inherent in this nosological form; a large proportion of severe cases and fatal consequences; ineffectiveness of treatment with known drugs.

All of the above makes us look a little differently at the problem with the pandemic of the coronavirus COVID-19, especially in the context of the statements made by Chinese biologists Botao Xiao and Lei Xiao. They believe that the appearance of the virus is associated with the activities of biological laboratories in Wuhan [34]. Although we will never know the truth from the Chinese leaders,

the official version that – SARS-CoV-2 is apparently a hybrid of the coronavirus found in bats and another coronavirus of unknown origin. In the next step, the researchers found out that the virus was probably transmitted to humans from snakes. Researchers from South China Agricultural University in Guangzhou believe that pangolins could be the source of the new coronavirus [35], that is, no trace of the activity of the biological laboratory. The situation is not new. It is worth recalling the events that took place back in the 1970s in the Soviet Union. In April – May 1979 in Sverdlovsk (now Yekaterinburg) there was an unusual epidemic of Anthrax, during which 95 people fell ill (68 of them died, or 71.5%). In fact, the number of deaths and injuries in that disaster is immeasurably greater, including those whose health was undermined by subsequent vaccination, as well as those who died and became ill ten years later or were born with serious health conditions. Soviet officials said the outbreak was related to eating meat from sick Anthrax animals, whose diagnosis was not promptly diagnosed.

Nevertheless, as follows from retrospective investigations and a survey of victims and doctors who treated patients and performed an incision of the dead, the main route of infection for people and animals was the inhalation route. The main number of patients were workers of a secret facility in which biological weapons were developed. The experiments with Anthrax bacilli were carried out in the experimental block No. 19 of the secret microbiological center of the USSR Ministry of Defense, where for unknown reason there was a large release of infectious material into the atmosphere.

In Western print media there were reports that it was made specially by special services to obtain objective data on the damaging effect of the Anthrax on humans. It is difficult to agree with this point of view, but it is need-to-know information. Moreover, it is highly correlated with the activities of the KGB, which investigated the causes of these tragic events and conducted a total seizure of all documentary materials, including medical records of deceased people. Currently, NATO experts are using detailed descriptions of the Sverdlovsk epidemic as a classic example of the largest Anthrax epidemic in history, caused by an accident or deliberate action.

The first patients in this outbreak appeared two to three days after the aerosol release that occurred on April 2. The last patient was registered 43 days after a likely infection. According to calculations, a fatal disease in humans caused the inhalation of 8–10 thousands of spores. This concentration was recorded at a distance of 4 km from the place of release. Sheep turned out to be more susceptible to the Anthrax than people and laboratory monkeys (rhesus, cynomolgus). They fell ill with a fatal infection, receiving a dose of 2 thousand spores and being at a distance of 50 km from the source. Non-fatal diseases of moderate severity were found in people who probably received a dose of infection of no more than 100 spores [36].

At the end of the twentieth century, using dates and places data of patients registration, the incubation period, as well as official reports on Sverdlovsk of that time, Mikhail Supotnitsky and Stanislav Petrov wrote an article «Biological diversion in the Urals», which proved that what happened in Sverdlovsk – diversion of western intelligence services. The authors of the article explained that the set and the duration of this outbreak (more than one and a half months) during the incubation period of the disease equal to 2–3 days were determined only by repeated spraying of anthrax spores in various places of the region. That is, saboteurs are not once, but sprayed at bus stops 5–6 grams of the recipe many times. They did this in the morning when the adult population went to work. This explains why the children were not affected [37]. General Petr Burgasov, former Chief State Sanitary Doctor of the Soviet Union (from 1965 to 1986), completely agrees with these findings: «How else to explain this fact: «Voice of America» reported mass deaths «as a result of the Anthrax spores being released by the military town of Sverdlovsk-19» already on April 4, and the final diagnosis was made by us only on the 15th, when the first patient died?! The diversion was real! And everything was thought out carefully. There is a cold war. The outbreak started. Near a military town that was engaged in research on anthrax. So the place was not chosen by chance – there are no such coincidences!» [38].

Conclusions of the research. Thus, the potential threat of biological terrorism in modern conditions is global in nature. It is obvious that at the head of effective joint measures to counter this threat should be the regulatory framework of the international level that meets the requirements of the present. Noting the leading role of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (1972) in the development of its basic principles and provisions, new international legal acts should provide transparent and parity mechanisms for mutual information and control in the field of dual-use technologies, genetic engineering using pathogenic biological agents, biological food safety and agricultural production, of course, taking into account specific issues of economic and national security of States. Without the combined efforts of all countries in the fight against bioterrorism, success is impossible.

REFERENCES

1. Trebin, M. (1999). Terrorizm – bolezn' sovremennogo obshhestva (Terrorism – a disease of modern society). *Zhurnalist – Magazineist, 11*, 18–24 [in Russian].
2. Armstrong, M. (2017). *Germ wars: the politics of microbes and America's landscape of fear*. Oakland, California: University of California Press.

3. Carus, W. S. (2017). *A short history of biological warfare: from pre-history to the 21st century*. Washington, D. C.: National Defense University Press.
4. Collins, A. (2018). *Biological weapons: using nature to kill*. New York: Lucent Press.
5. Dones, D. D. (2019). *Terrorist recruitment of U. S. gangs: global criminal alliances and biological weapons*. Lanham: Lexington Books.
6. Enemark, C. (2017). *Biosecurity dilemmas: dreaded diseases, ethical responses, and the health of nations*. Washington, DC: Georgetown University Press.
7. Garrett, B. C. (2017). *Historical dictionary of nuclear, biological, and chemical warfare*. 2nd ed. Lanham, Maryland: Rowman & Littlefield.
8. Gray, L. (2018). *Dirty bombs and shell shock: biology goes to war*. Minneapolis: Lerner Publications.
9. Idzikowski, L. (Ed.) (2020). *Chemical and biological warfare*. New York: Greenhaven Publishing.
10. Johnson, K. Y. & Nolan, P. M. (2016). *Biological weapons: recognizing, understanding, and responding to the threat*. Hoboken, N. J.: Wiley.
11. Kerrigan, M. (2018). *Protecting against biological and chemical attack*. Broomall, PA: MASON CREST.
12. Kortepeter, M. G.(2020). *Inside the hot zone: a soldier on the front lines of biological warfare*. Lincoln, NE: Potomac Books.
13. Lentzos, F. (Ed.) (2016). *Biological threats in the 21st century: the politics, people, science and historical roots*. London: Imperial College Press.
14. Newby, K. (2019). *Bitten: the secret history of lyme disease and biological weapons*. New York, NY: Harper Wave.
15. Osterholm, M. T. & Olshaker, M. (2017). *Deadliest enemy: our war against killer germs*. New York: Little, Brown and Company.
16. Pinto, V. N. (2013). Bioterrorism: Health sector alertness. *Journal of Natural Science, Biology and Medicine*, *4*(1), 24–28.
17. Renders, T. (Ed.) (2019). *Weapons of mass destruction: chemical, biological, and nuclear*. New York: Nova Science Publishers, Inc.
18. Rice, E. (2017). *Biosecurity: preventing biological warfare*. New York, NY: Enslow Publishing.
19. Tu, A. T. (2018). *Chemical and biological weapons and terrorism*. Boca Raton: CRC Press, Taylor & Francis Group.
20. Vargo, M. E. (2017). *The weaponizing of biology: bioterrorism, biocrime and biohacking*. Jefferson, North Carolina: McFarland & Company, Inc., Publishers.
21. Wilkinson, M. (2018). *Before intelligence failed: British secret intelligence on chemical and biological weapons in the Soviet Union, South Africa and Libya*. London: C. Hurst & Co. (Publishers) Ltd.
22. Cherednychenko, K. Yu. & Hlynska, O. V. (2018). Biolohichnyi teroryzm yak naibilsh nebezpechnyi vyd terorystychnoho aktu (st. 258 KK Ukrainy) (Biological terrorism as the most dangerous type of terrorist act (Article 258 of the Criminal Code of Ukraine)). *Molodyi vchenyi — Young scientist*, *10*(2), 693–695 [in Ukrainian].

23. Gorlach, N. I. & Trebin, M. P. (Eds.) (2006). *Sovremennyj terrorizm* (Modern terrorism): uchebnoe posobie dlja vysshej shkoly. Har'kov: Timchenko [in Russian].
24. Laputina A. Yu. (2014). Svitovyi dosvid orhanizatsii ta pravovoho zabezpechennia protydii biolohichnomu teroryzmu (World experience in the organization and legal support of counteraction to biological terrorism). *Nauka i praktyka. Mizhvidomchyi medychnyi zhurnal. Medychni aspekty natsionalnoi bezpeky Science and practice. Interagency medical journal. Medical aspects of national security, 1*(2), 17–21 [in Ukrainian].
25. Serdiuk, A. M. & Skaletskyi, Yu.M. (2016). Biolohichna bezpeka Ukrainy: realii ta problem (Biological security of Ukraine: realities and problems). *Ukraina. Zdorovia natsii – Ukraine. Nation's health, 4*(1), 7–12 [in Ukrainian].
26. Trebin, M. P. (2002). Biologicheskij terrorizm (Biological terrorism). *Biznes Inform Business Inform*, *3–4*, 8–19 [in Russian].
27. Velychko, M. V. & Radchenko, V. H. (Eds.) (2016). *Biolohichna bezpeka Ukrainy* (Biosecurity Ukraine): monohrafiia. Kyiv: Nats. akad. SBU [in Ukrainian].
28. Belousova, T. (2001). Pjataja problema (The fifth problem). *Sovershenno sekretno Top secret*, *11*, 16 [in Russian].
29. Frist, W. H. (2002). *When every moment counts: what you need to know about bioterrorism from the Senate's only doctor*. Lanham: Rowman & Littlefield.
30. Henderson, D. A., Inglesby, T. V. & O'Toole, T. (2002). *Bioterrorism: Guidelines for Medical and Public Health Management*. Chicago, Ill.: American Medical Association.
31. Rotz, L. D., Khan, A. S., Lillibridge, S. R., Ostroff, S. M., Hughes, J. M. (2002). Public health assessment of potential biological terrorism agents. *Emerging Infectious Diseases*, *8*(2), 225–230.
32. Richards, C. F., Burstein, J. L., Waeckerle, J. F. & Hutson, H. R. (1999). Emergency physicians and biological terrorism. *Annals of emergency medicine, 34*(2), 183–190.
33. Mobley, J. A. (1995). Biological warfare in the twentieth century: lessons from the past, challenges for the future. *Military Medicine, 160*(11), 547–53.
34. Fitt, M. (2020). Chinese scientists reveal true cause of coronavirus outbreak in Wuhan. Retrieved from https://londonlovesbusiness.com/chinese-scientists-reveal-true-cause-of-coronavirus-outbreak-in-wuhan/.
35. Russo, M. (2020). Ot kogo koronavirus? (Who is coronavirus from?) Retrieved from https://polit.ru/article/2020/02/28/ps_pangolin/ [in Russian].
36. Meselson, M, Guillemin, J, Hugh-Jones, M, Langmuir, A, Popova, I, Shelokov, A, Yampolskaya, O. (1994). The Sverdlovsk Anthrax Outbreak of 1979. *Science, 266*(5188), 1202–1208.
37. Supotnickij, M. V. & Petrov, S. V. (2001). Biologicheskaja diversija na Urale (Biological diversion in the Urals). Retrieved from http://supotnitskiy.ru/stat/stat17.htm [in Russian].
38. Kolobaev, A. (2016). Otec bakteriologicheskogo oruzhija (Father of bacteriological weapons). *Sovershenno sekretno – Top secret, 10*(386). Retrieved from https://www.sovsekretno.ru/articles/otets-bakteriologicheskogo-oruzhiya/ [in Russian].

Требин Михаил Петрович, доктор философских наук, профессор, заведующий кафедрой социологии и политологии Национального юридического университета имени Ярослава Мудрого, г. Харьков, Украина

БИОЛОГИЧЕСКИЙ ТЕРРОРИЗМ: ПРОНИКНОВЕНИЕ В СУЩНОСТЬ

Биологический терроризм – реальность сегодняшнего дня. Под ним понимается умышленное применение отдельными лицами, террористическими группами или организациями, отдельными структурами государственных органов биологических средств поражения людей, животных и растений с целью уничтожения или вывода из строя людей, нанесения больших экономических, социальных, политических, демографических и экологических потерь стране и мировому сообществу, навязывания определенной линии поведения международным организациям, государствам, органам местного самоуправления в решении внешних и внутренних проблем. Раскрыты негативные последствия биотерроризма, проанализированы три класса биологических агентов, основные способы боевого применения биологического оружия.

Ключевые слова: *биологический терроризм, биологическое оружие, национальная безопасность, эпидемия, пандемия.*

Требін Михайло Петрович, доктор філософських наук, професор, завідувач кафедри соціології та політології Національного юридичного університету імені Ярослава Мудрого, м. Харків, Україна

БІОЛОГІЧНИЙ ТЕРОРИЗМ: ПРОНИКНЕННЯ В СУТНІСТЬ

Постановка проблеми. *Сучасний тероризм цинічний і багатоликий. Якщо на етапі зародження цього явища метою більшості терористичних актів, як правило, було знищення окремих індивідів, то сьогодні це масове знищення людей, підрив матеріального добробуту, руйнування культурних цінностей. Через зростання матеріальної оснащеності і технічних можливостей терористи прагнуть використовувати у своїй злочинній діяльності сучасні інформаційні та кібертехнології, заволодіти зброєю масового ураження. Біологічна зброя з огляду на низку притаманних їй бойових і функціональних характеристик є дуже зручною для здійснення масштабного терористичного акту. Революція в галузі біотехнологій дозволяє створити біологічну зброю, що за вражаючими параметрами не поступається ядерній зброї та має при цьому гнучкість у застосуванні.*

Аналіз останніх досліджень та публікацій. *Проблеми застосування терористами зброї масового ураження, і перш за все біологічної зброї, постійно перебували в центрі уваги як західних (М. Армстронг, М. Варго, М. Вілкінсон, В. Гаррет, Л. Грей,*

К. Джонсон, Д. Донес, С. Енемарк, Л. Ідзіковський, В. Карус, М. Керріган, А. Коллінз, М. Кортепетер, Ф. Лентзос, П. Нолан, К. Ньюбі, М. Олшакер, М. Остерхолм, В. Пінто, Е. Райс, Т. Рендерс, А. Ту та ін.), так і українських дослідників (М. Андрейчин, О. Бардін, М. Величко, М. Горлач, О. Глінська, В. Копча, А. Лапутіна, В. Радченко, А. Сердюк, Ю. Скалецький, К. Чередниченко та ін.). Але разом з тим події навколо пандемії COVID-19 говорять про те, що проблема боротьби з біологічним тероризмом – проблема нашого майбутнього.

Формулювання цілей. *Мета статті – розкрити сутність біологічного тероризму, його основні риси й наслідки.*

Виклад основного матеріалу. *Історія людства багата на приклади використання людьми миш'яку, цикути, сулеми та інших отруйних речовин проти собі подібних. Події осені 2001 р. у США, пов'язані з поширенням спор сибірської виразки за допомогою поштових відправлень, свідчать про те, що біотероризм з гіпотетичної загрози поступово в XXI ст. перетворюється в небезпеку реальну. Тому сьогодні необхідно мати досить чітке уявлення про таке явище, як біологічний тероризм, під яким слід розуміти умисне застосування окремими особами, терористичними групами чи організаціями, окремими структурами державних органів біологічних засобів ураження людей, тварин і рослин з метою знищення або виведення з ладу людей, нанесення значних економічних, соціальних, політичних, демографічних та екологічних втрат країні і світовій спільноті, нав'язування певної поведінки міжнародним організаціям, державам, органам місцевого самоврядування у вирішенні зовнішніх і внутрішніх проблем.*

Біологічний тероризм має цілу низку негативних наслідків: соціальні – масові захворювання людей з важким перебігом хвороби та високим ступенем летальних випадків, паніка, страх, нервово-психічні розлади, інвалідність, параліч волі, виснаження медичних ресурсів, висока смертність серед медичного персоналу, порушення роботи лікувальних установ, падіння життєвого рівня громадян; економічні – колапс економіки країни, захворювання і падіж продуктивних сільськогосподарських тварин, знищення врожаю культурних рослин, які є основним джерелом харчування населення, масовий голод, зростання числа біженців, розруха, дискредитація країни на світовому ринку як торгового партнера, надмірні матеріальні і фінансові витрати на проведення протиепідемічних, карантинних та інших заходів з ліквідації епідемії (пандемії), самопаралич транспортної системи; політичні – усунення або шантаж небажаних політичних лідерів, створення обстановки недовіри до керівництва країни, активізація діяльності політичної опозиції; демографічні – істотне скорочення чисельності населення; військові – приховане виведення з лав збройних сил військовослужбовців евентуального або реального супротивника без вступу в контакт з його збройними силами.

Перелік потенційних агентів біологічної зброї, які можуть бути використані терористами, відповідно до різних джерел, коливається від 10 до 50 найменувань. Як критерій їх пріоритетності використовують вірулентність, стійкість у зовнішньому середовищі, можливість промислового виробництва із застосуванням відносно простих і дешевих технологій, відсутність засобів специфічної профілак-

тики і лікування. Проаналізовано три класи біологічних агентів, основні способи бойового застосування біологічної зброї: розпорошення біологічних рецептур для зараження приземного шару повітря частинками аерозолю – аерозольний спосіб; розсіювання в районі цілі штучно заражених біологічними засобами кровоносних переносників – трансмісивний спосіб; зараження біологічними засобами повітря і води в замкнутих просторах.

Основними ознаками епідемії, зумовленої навмисним поширенням інфекційного агента, є: раптове виникнення масових випадків рідкісної або спорадичної інфекції; виявлення групових захворювань за межами ендемічного осередку; виникнення епідемії в нехарактерний для цієї інфекції сезон; надзвичайно швидке поширення інфекції серед осіб, які зазнали на собі вплив біологічного агента; нетипова вікова характеристика хворих; масові зараження відомою інфекцією незвичайним для неї шляхом; короткий і приблизно однаковий інкубаційний період у більшості хворих; виділення у хворих і з об'єктів зовнішнього середовища штамів збудника зі зміненими антигенними і біохімічними характеристиками, з незвично високою вірулентністю і резистентних до антибіотиків; наявність у хворих людей клінічних ознак, які невластиві цій нозологічній формі; велика питома вагу важких випадків і летальних наслідків; неефективність лікування відомими препаратами.

Висновки. *Потенційна загроза біологічного тероризму в сучасних умовах має глобальний характер. Очевидно, що на чолі ефективних спільних заходів протидії цій загрозі повинна бути нормативно-правова база міжнародного рівня, що відповідає вимогам сучасності. Відзначаючи провідну роль Конвенції про заборону розробки, виробництва та накопичення запасів бактеріологічної (біологічної) і токсинної зброї та про їх знищення (1972) в розвитку її основних принципів і положень, нові міжнародні правові акти повинні забезпечувати прозорі і паритетні механізми взаємного інформування та контролю в галузі технологій подвійного призначення, генно-інженерних розробок з використанням патогенних біологічних агентів, біологічної безпеки харчових продуктів і сільськогосподарського виробництва, природно, з урахуванням конкретних питань економічної і національної безпеки держав. Без об'єднання зусиль усіх країн в боротьбі з біотероризмом досягти успіху неможливо.*

Ключові слова: *біологічний тероризм, біологічна зброя, національна безпека, епідемія, пандемія.*