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The Threat of Bioterrorism

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This Food for Thought paper is a document that gives an initial reflection on the theme. The content is not reflecting the positions of the member states but consists of elements that can initiate and feed the discussions and analyses in the domain of the theme. All our studies are available on www.finabel.org

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ABBREVIATIONS:

AFRP (Armed Forces of the Republic of Poland)

BWC (Biological Weapons Convention)

CDC (Center for Diseases Control and Prevention)

CTITF (The United Nations Counter-Terrorism Implementation Task Force)

I.C.C. (International Criminal Court)

RKI (Robert Koch Institute)

UK (United Kingdom)

UN (United Nations)

UNSC (United Nations Security Council)

US (United States)

W.H.O (World Health Organization)

WMD (Weapon of Mass Destruction)

ZBS (Centre for Biological Threats and Special Pathogens)

INTRODUCTION

Due to technological and scientific advancements of past decades, the possibilities to produce and modify pathogenic microorganisms seem limitless. Meanwhile, the technology and materials to produce and modify these bioagents have become increasingly accessible through the internet and on the open mar-

ket. As demonstrated with the current global COVID-19 crisis, a new infectious disease can emerge unexpectedly and have the ability to wreak havoc in even the most advanced and resilient societies.

In the light of these developments, it can be envisioned that terrorist organisations and

violent extremist groups could develop the capability to produce infectious diseases and intentionally use them as weapons for terrorist purposes. Bioterrorism thus constitutes a plausible threat for global health as well as domestic and international security. This threat becomes all the more real. Due to the COVID-19 crisis of the past year, terrorist organisations have received an elaborate demonstration of the impact and the advantages of biological weapons as a means to their ends in comparison with conventional weapons. Namely, these types of weapons can be invisible, silent, odourless, and tasteless. They are relatively easy to disperse and can circulate effortlessly within the population. In this sense, biological weapons can cause long-term casualties, affect the global economy, and cause mass disorganisation. In an age defined by asymmetric warfare with technological advancement in weapon systems and tactics, the threat of bioterrorism has never been so likely. States have not left the threat of bioweapons unattended. Both on the international and the national level, states have taken measures and adopted legislation to tackle bioweapons and, by extension, bioterrorism. Nevertheless, the characteristics of biological weapons make bioterrorism a complex problem in need of a comprehensive response. In this vein, the question arises whether the contemporary international and national legal frameworks are up to the task of coping with bioterrorism and the profound challenges that come with it and what policy measures are recommended to tackle the problem. Hence, this paper will analyse the international and national frameworks in place to cope with the proliferation

and use of bioweapons and provide policy recommendations on how to tackle the threat of bioterrorism. Thus, this paper gauges whether international and national frameworks are sufficient to tackle the threat of bioterrorism and, relatedly, elaborates on what a comprehensive response to bioterrorism requires and how the legal frameworks on bioterrorism can be improved.

Given the foregoing questions and problem statement, this paper will firstly elaborate on the conceptual, historical, and societal relevance of bioterrorism to gain a thorough understanding of bioterrorism, how it has been used throughout history and which features make it so attractive for terrorist purposes. The same chapter will subsequently identify and explicate the various challenges bioterrorism poses for the international community and individual states. The second chapter will elaborate on the existing international framework governing bioweapons and identify its shortcomings. Following the international legal framework review, the third chapter will dilate on the legislation Germany, France, and Poland introduced to tackle bioterrorism and how they transposed the international framework in their domestic legislation. The fourth chapter will subsequently emphasise the essential tools and measures that ought to be taken to prevent and respond efficiently to bioterrorism. Lastly, this comprehensive analysis of the bioterrorist threat, the applicable legislative framework and the measures required to prevent and respond to this threat allow us to formulate a conclusion and several recommendations for states.

THE PHENOMENON OF BIOTERRORISM: A CONCEPTUAL, HISTORICAL AND SOCIAL OVERVIEW

Even though biological weapons have been used throughout history, thanks to the current technological and scientific advances, their utilisation for terrorist purposes is becoming an increasing concern for states and international organisations. The advantageous features of bioterrorist attacks compared to traditional terrorism, namely lower cost, relatively simple production, and massive impact, make it likely to emerge as one of the main challenges soon. However, although a common definition for this phenomenon has not yet been agreed upon, it is possible to find a common conceptualisation of it as well as a classification of the different agents that can be used as a biological weapon. In this context, the current coronavirus pandemic sets the perfect example of the impact that a biological threat can have on the globalised societies of today. Starting with only a few cases in eastern China, the virus rapidly spread all across the globe regardless of the measures taken by national governments, hence demonstrating the need for more anticipation and preparation by national and international authorities to face these kinds of threats.

Definition of bioterrorism and features of biological weapons

Within existing regulations, there is no universal definition of bioterrorism: every organisation, government, institution, and other en-

ties have elaborated their concept regarding this threat. In this context, it is appropriate to shed light on the definitions provided by INTERPOL¹, the World Health Organisation (WHO)², and the Center for Disease Control and Prevention (CDC)³, which are practically identical and consist of three basic elements. Firstly, bioterrorism requires the deliberate and intentional release of toxins or bioagents, hence excluding biological accidents and other unintentional but equally harmful events. Secondly, the definitions state the weapons that ought to be used for an attack to be considered bioterrorism. These elements can be viruses, bacteria, fungi, toxins, germs, or other harmful biological agents. Lastly, it is pointed out that the consequence of bioterrorism is the causing of disease and death on humans, animals, or plants. Therefore, an approximate definition of bioterrorism could be the intentional release of viruses, bacteria, toxins, or other harmful biological agents to cause illness or death in people, animals, or plants.

Numerous bacterial pathogens have been identified as agents that have been or could be, used as weapons of biological warfare and/or biological terrorism. These agents are relatively easily obtained, prepared, and dispersed, either as weapons of mass destruction or for more limited terrorist attacks. The different agents are classified into three categories based on their potential impact on ex-

1. INTERPOL. 'Bioterrorism'. [online] Available at: <https://www.interpol.int/Crimes/Terrorism/Bioterrorism>

2. The World Health Organisation. 'Biological weapons'. [online] Available at: https://www.who.int/health-topics/biological-weapons#tab=tab_1

3. Centers for Disease and Control Prevention, 'Anthrax as a bioterrorist weapon'. [online] Available at: <https://www.cdc.gov/anthrax/bioterrorism/index.html>

posed populations.⁴ The Center for Diseases Control and Prevention (CDC), for instance, distinguishes between categories A, B, and C.

Category A

Biological agents in this category pose a dangerous threat to security given the simplicity of their transmission or dissemination and their high mortality rate. Bioterrorism carried out with these agents can lead to grave social panic episodes and altercations, requiring special preparation by health services to face the attacks. Known agents within this category could be the ones that cause anthrax, botulism, plague, smallpox and viral haemorrhagic fevers, among others.

Category B

This category includes relatively easy-to-spread agents with moderate to low mortality rates. Agents in this category are mostly related to poisoning and food and water intoxication (Salmonella, Escherichia coli, ...).

Category C

There is no official list of agents inside this category because it includes natural pathogens against which people are not immunised and those that could be artificially created. Their transmission and mortality rates are equally high despite being the third category. The SARS-CoV-2, the virus that causes the covid-19, is included in this category.

Examples of potential agents/diseases by category which could be used as a weapon:

Category A	Category B	Category C
Anthrax	Caliciviruses	Antimicrobial Resistance
Botulism	Chikungunya	Hendra
Dengue	Cholera	Influenza (highly pathogenic strains)
Ebola	E. coli O157:H7	MERS
Hantavirus	Hepatitis A	Nipahvirus
Lassa	Ricin toxin	Prions
Marburg	Salmonella	Rabies
Plague	Typhus fever	SARS
Smallpox	Yellow fever	Tickborne encephalitis
Tularemia	Zika	Tuberculosis

4. Classification of bioterrorism agents/diseases by the Center for Diseases Control and Prevention (CDC) Available at : <https://emergency.cdc.gov/agent/agentlist-category.asp>

Historical background of bioterrorist attacks

The use of biological weapons is not a novelty. Already in ancient times, people have tried to take advantage of this kind of armament, like the Egyptians in the 4th century B.C., when they used arrows contaminated with blood or flesh of infected bodies against their enemies.⁵ It is possible to find evidence like this throughout all history. Come to the Middle Ages, it was a common war technique

to catapult rotting corpses to the enemy aiming to spread lethal viruses and bacteria that they carry among the opponent soldiers and population.⁶ These techniques also played an important role in the colonisation periods of the Americas by the European powers. Given that these civilisations had never been in contact with European diseases like smallpox or cholera, they decimated the local population. It was not until the 19th century that science broadened the knowledge of microorganisms and diseases, making the development of real and science-based biological weapons



Japan conducts CBRN training, Cpl. Antonio Rubio, November 7, 2014

5. Mohamed Saad Bentouet, "Bioterrorism, is an imminent danger?", *Ius et Scientia*, Vol. 3, no. 2 (2017): 160-189, [online]. Available at: <https://dialnet.unirioja.es/servlet/articulo?codigo=62643901> [Accessed 21 April, 2021]

6. *Ibid.*, 167.

possible.⁷ There is evidence that during the World Wars, biological weapons were used by Germany, Japan, and the United Kingdom.⁸ However, their use was not as widespread as one can think given the uncertainty of these kinds of weapons, as the lack of technological progress at the time prevented their control once the weapon was released, which posed a risk for all parties involved.⁹ Furthermore, sooner or later, all the main powers carried out research and development programmes for biological weapons, focusing mainly on anthrax-based ones. Specifically, the production of biological weapons in the US began in 1942 as a competitive response to the Soviet program.

From the national-based terrorism of the 20th century to the international terrorism led by Al-Qaeda and others during the 1990-2000s, today, the world today is still faced with the threat of terrorism. Now, large-scale attacks have given way to smaller actions, which are increasingly difficult to detect. Global terrorism, headed by jihadist terrorism, is characterised as transnational, often religiously or ideologically motivated, aiming to inflict as much damage as possible. Its most alarming aspect is, however, the radicalisation capacity that these terrorist groups have.

Nevertheless, there are only two bioterrorist attacks that have caused deaths or injuries, and both of them have taken place in the US. The first one occurred in 1984 in a village of the State of Oregon, where members of a local cult contaminated restaurants, supermarkets and water deposits with *salmonella typhimurium*,

leaving behind 751 infected people, but no deaths were reported. The second one, also known as Amerithrax, happened in September 2001, when different political and press members from Washington, New York and Florida received anthrax-containing letters to their offices, killing five people and injuring seventeen others.

More recently, Covid-19 has evidenced the lack of preparation and readiness of national health systems and political authorities to deal with biological threats.¹⁰ This pandemic has demonstrated the weakness of modern and globalised societies to cope with borderless menaces. This fact can instigate terrorist groups and other organisations to develop, produce, and release these kinds of weapons in the near future. For these reasons, and as the current pandemic has shown, more international efforts are required to face biological threats, being international cooperation an essential element for this.

The impact of bioterrorism: a weapon of a mass disorganisation

The aforementioned increasing interest of terrorist organisations in biological weapons relies on their advantageous features. First of all, they are highly profitable, meaning that with a very low cost, they are able to cause great damage and have enormous repercussions, which is equally important. According to the UN, the cost of a large-scale attack against civil society with conventional weaponry would be \$2.000 per km² and \$600 per

7. Ibid, 168.

8. Mahendra Pal, Meron Tsegaye, Fikru Girzaw, Hailegebrael Bedada, Vikram Godishala, Venkataramana Kandli, "An overview of biological weapons and bioterrorism", American Journal of Biomedical Research, Vol. 5, no. 2 (2017): 24-34, [online]. Available at: <http://article.scibiomedicalresearch.com/pdf/aibr-5-2-2.pdf> [Accessed 23 April, 2021]

9. Saad Bentouet, "Bioterrorism, is an imminent danger?", 169.

10. Alexandra Brozowski, "Has Covid-19 increased the threat of bioterrorism in Europe?", EurActiv, April 3rd, 2020, [online]. Available at <https://www.euractiv.com/section/defence-and-security/news/has-covid-19-increased-the-threat-of-bioterrorism-in-europe/> [Accessed 22 April, 2021]

km² in case of nuclear weapons, while with biological weapons, the estimated cost would be \$1 per km².¹¹ Furthermore, those societies that are victims of these kinds of attacks will need plenty of resources and a strong infrastructure to recover.

Secondly, biological weapons are progressively becoming easier to produce, as they do not require very advanced equipment or material, and information in this regard can be easily accessed through the Internet.¹² This accessibility can lead to misuse of this knowledge for the wrong purposes.

Finally, bioterrorism and biological weapons are commonly referred to as the 'invisible' or 'silent' death, given the fact that their effects cannot be perceived and can manifest within days or even weeks. This implies that by the time the consequences are noticeable, the damage has already been inflicted.¹³ This contrasts with the violence of conventional terrorist attacks, where the effects are instantaneous but limited once the attack is over; whereas biological weapons can be used in a determined area and spread without control, therefore causing a sanitary, social, and economic crisis. For this reason, bioterrorism is also referred to as an asymmetric threat, as a small number of injured people can provoke a major impact on society.¹⁴

Regardless of their motivations, terrorist groups may consider biochemical weapons as tools of mass destruction. Furthermore, as states are not prepared for such material and human damage, all concerns are naturally fo-

cused on countering the pandemic, leaving criminal organisations, such as terrorist organisation, with the possibility to strengthen their capacity and to avoid criminal liability. The current worldwide health crisis is a perfect example of the consequences of the possible use of a bioweapon. It demonstrates that new or modified pre-existing pathogens could profoundly affect national and international health and economic security and shows that the capacities of states are limited, including states' military forces.

The uncontrolled spread of Covid-19 since the first cases were detected in China illustrates how effortlessly a biological agent can disseminate in a very short amount of time. Neither national nor international authorities were able to manage the consequences of this, which led to political, social, and health crisis in most western countries. Long-time unused war-time measures such as curfews and lockdowns have been applied again, affecting an estimated third of the world's population, hence making this pandemic one of the most impactful events.

Furthermore, terrorist organisations have expressed the intent to use biological weapons for terrorist purposes.¹⁵ These developments render the international threat of a major deflagration and biological terrorism in particular increasingly likely. The threat of bioterrorism has become especially imminent due to the increased attraction of terrorist organisations to biological weapons because of their immense potential impact and the decreased

11. José Ignacio Garrote Moreno, Noelia Ureta Vasco, Antonio Orduña Domingo, "Bioterrorism: practical aspects", *Emergencies: Journal of the Spanish Society of Medicine of Urgencies and Emergencies*, no. 22 (2010): 130-139, [online]. Available at: <https://dialnet.unirioja.es/servlet/articulo?codigo=5175953> [Accessed 23 April, 2021]

12. Erik Frinkling, Tim Swejjs, Paul Sinning, Eva Bontje, Christopher F.D. Fratina, Mercedes Abdalla, *The Increasing Threat of Biological Weapons* (The Hague: The Hague Centre for Strategic Studies, 2016), 19.

13. Saad Bentouet, "Bioterrorism, is an imminent danger?", 164

14. Garrote Moreno et al., "Bioterrorism: practical aspects", 132.

15. Erik Frinkling, et al., *The Increasing Threat of Biological Weapons*, 17.

threshold to develop and use them.¹⁶ Biological weapons can have a severe economic, social, and physical impact on all parts of society due to their epidemic or pandemic capacity and high mortality potential, but also because of the lack of certain vaccines or even treatment rendering populations increasingly vulnerable.¹⁷ In other words, the use of biological weapons by terrorist groups could be as lethal in terms of casualties as nuclear weapons, if not more so, because of their particularly insidious nature. Moreover, biotechnical knowledge is increasingly freely available, and the materials and technology required for the development of biological weapons have become cheaper and more accessible in global markets.¹⁸ The pathogen agents can multiply, spread and indiscriminately affect civilian populations for an uncertain period. As such, a bioterrorist attack is likely to cause considerable panic and could lead to the partial or complete paralysis of the country concerned in several areas. Lastly, the current means of

countering terrorism are insufficient in response to biological attacks, which is an additional advantage and makes biological agents an ideal candidate to use as a weapon of mass disorganisation.

The terrorist wave the world faces today seeks to cause the most damage possible in an indiscriminate manner, a purpose for which biological weapons are suitable. However, the achievement of a biological attack depends on many factors, which are not easily controlled; terrorists must be highly skilled and able to control many variables, and it requires biological skills and a minimum of technology.¹⁹ The nature and impact of biological weapons combined with the increasing accessibility of the technology and infrastructure required to produce them and the diminishing financial costs that come with it, render the threat of bioterrorism more imminent and plausible than ever before.²⁰

INTERNATIONAL LEGAL FRAMEWORK PROHIBITING THE PRODUCTION AND PROLIFERATION OF BIOLOGICAL AND CHEMICAL WEAPONS RELATED TO TERRORISM PURPOSES.

Bioweapons are lethal weapons akin to a Weapon of Mass Destruction (WMD) that can create a massive loss of life, not only in the ranks of the military but also in civilians. Due to this, it is not surprising that states

have tried to ban its use and regulate its proliferation on the international level. However, those regimes represent a state-centric view with violence as a monopoly of the state, which accords with the workings of inter-

16. Ibid.

17. Ibid.

18. Ibid 19, 24-25 and 35.

19. Le Centre d'Études et de Recherche de l'École Militaire (CEREM), 2009. Risques et menace biologique. Available at : https://www.irsem.fr/data/files/irsem/documents/document/file/290/Cahier_du_cerem_n_12.pdf

20. Syra Madad, "Bioterrorism: An Emerging Global Health Threat," *Journal of Bioterrorism & Biodefense* 5, Issue 1 (August 2014): 1.

national law. However, such a system could come under strain. As increasingly, violence is conducted by non-state actors, namely, groups that use violence to attain their political goal. Those groups have already manifested their intentions to use bioweapons, and because of ease of access, such an outcome is plausible. Hence, the question at hand is whether international law is robust enough to ensure that the proliferation of bioweapons to non-state actors does not materialise.

Review of the International legal framework

The 1925 Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and Bacteriological Methods of Warfare (the 1925 Protocol) is the first attempt at the international level to ban the use of bioweapons. It is a one-page document addressed to states that comprehensively bans the use of the bacteriological method of warfare. Thus, the text does not encompass non-state actors or use outside of war.²¹ Furthermore, the text does not add further points except the one stated above. The production, possession, and proliferation of those weapons are not addressed and are not regulated in the view of the treaty. No provisions were put into place for a verification mechanism. Furthermore, no definition is given as to what constitutes a bioweapon. Additionally, the protocol was rather seen at the time as a prohibition of the first use of bioweapons.²² Thus, the protocol is merely a general prohibition of a certain type

of warfare that leaves many aspects of biowarfare unregulated.

The subsequent regime to regulate bioweapons is the 1972 Biological Weapons Convention (BWC). It does not aim to prohibit the use of bioweapons. As such, it refers to the 1925 protocol, but rather seeks to establish a regime of arms control. In such regimes, a state party voluntarily agrees to scrap certain types of weapons and ensure that such is not developed in the future, regardless of whether a third party adheres to the treaty obligations or not.²³ Article I of the treaty is the main obligation of the Convention and requires that states never develop, produce, stockpile or acquire, or retain microbial or other agents, whatever their origin or method of production, of types and quantities that have no justification for prophylactic, protective, or other peaceful purposes. The same obligation applies to weapons, equipment, or means of delivery designed to use such agents for hostile purposes or during armed conflict. This article, however, has some shortcomings. For instance, as regards the substances, the regime only applies to types of agents that have no justification for prophylactic, protective, or other peaceful purposes. Further definition of what constitutes those is not existent.²⁴ Hence, possession of biomaterial that could potentially be weaponised is allowed. However, the defining line is whether or not the intent is to use them as such. Furthermore, there is an obligation of non-proliferation found in Article III of the Convention. However, tension is found in the regime itself as

21. Yaksa . Elyasa, "Bioterrorism: the Development and its Regulations According to the International Law, *Lampung Journal of International Law* 3, no 1 (January 2021) 29-40.

22. The Nuclear Threat Initiative. "The 1925 Geneva Protocol, Summary and Analysis.[online] Available at: https://media.nti.org/pdfs/treaties_1.pdf

23. Jean Pascal Zanders, "International Norms Against Chemical and Biological Warfare: An Ambiguous Legacy," *Journal of Conflict & Security Law* 8 , no.2 (2003) 391-410.

24. Jack Beard, "The Shortcomings of Indeterminacy in Arms Control Regimes: the Cases of the Biological Weapons Convention," *The American Journal of International Law* 101, no.2 (April 2007) 271-321.

transfer of such technology and equipment of biological agents and toxins for peaceful purposes is encouraged in Article X. Hence, the transfer of such is not prohibited, it is rather conditional on intent.

Additionally, the definition of what constitutes peaceful purposes is lacking.²⁵ Thus, it is difficult to ascertain what should be exchanged to the fullest possible extent, and what should be restricted.²⁶ This makes the BWC a very porous non-proliferation regime, further exacerbated by its enforcement mechanism that requires in case of a reported breach of the Convention that an investigation may be launched by the United Nations Security Council (UNSC). In view of the highly political nature of the mechanism, it is very unlikely that it will ever be used, hence, states prefer to address alleged infringements of the Convention through other channels than the ones of Article 6.²⁷ Lastly, due to the absence of clear rules, governments and proliferation experts are at odds over which state to accuse of misconduct.²⁸

The UN Resolution 1540 is designed as a legally binding hard law. The UNSC Resolution is addressed to states to tackle the proliferation of WMDs, including bioweapons, to non-state actors. By doing so, the states must adopt three broad steps that would implement the Resolution in their national legislation. The first requirement is that steps should be undertaken to ensure that no support can be given to non-state actors in acquiring and

using biological weapons.²⁹ The second one is the criminalisation of proliferation-related activities. The Resolution contains a requirement for effective criminalisation of possession, manufacturing, acquisition, transportation, transfer, financing, or use of biological weapons. The third step that states must address is the illicit trafficking of bioweapons. In doing so, four types of control need to be established. They relate to accounting and securing, physical protection, border and law enforcement including illicit trafficking, and finally, export, transit, and transshipment. Thus, the Resolution 1540 promotes biosecurity by establishing domestic laws for secure handling of biological materials, protection of production- and storing facilities and finally, control of biological material; means of delivery and dual use items.³⁰

Furthermore, to ensure state compliance with the Resolution, there is a national reporting mechanism that calls for states to submit reports about their domestic measures.³¹ However, it should be noted that the reporting mechanism presents defects. The permanent committee set up to monitor compliance relies heavily on domestic reports and does not evaluate the efficacy of countries domestic measures itself.³² They merely record the absence or presence of relevant legislation reported, but no assessment is undertaken whether states satisfy specific obligations nor regarding their performance in implementing them. Additionally, the use of force to pro-

25. Ibid.

26. Ibid.

27. Jenni . Rissanen, (2003), 'The Biological Weapons Convention', NTI. [online] Available at : <https://www.nti.org/analysis/articles/biological-weapons-convention/>

28. Supra no. 21

29. Sarah . Shirazyayn, "Building a Universal Counter-Proliferation Regime: the Institutional Limits of United Nations Security Council Resolution 1540" *Journal of National Security Law and Policy* 10, no.125 (2019) 126-159

30. Ibid.

31. Supra no 26.

32. Ibid. .

vide compliance for the Resolution is subject to UNSC. No state may use force to enforce the Resolution unilaterally.³³ Thus, the application of the measures is still largely voluntary and up to the states to decide the extent of the enforcement. Finally, no onsite verification regime exists, neither does build sanction for any breaches of the Resolution. Therefore, making the Resolution porous to any breaches, and enforcement of the Resolution depending again on the UNSC, with all its political implications.

State and individual Responsibility concerning the use of Biological Weapons by non-state actors

Finally, regarding the use of bioweapons by non-state actors, repercussions in the international sphere could be possible for the state backing such actors. The application of rules of international humanitarian law could be triggered if several criteria are met. The first criterion that would need to be ascertained is whether or not an international armed conflict is taking place. If it concerns an armed conflict localised to a certain state, involving non-state actors, and accordingly does not satisfy the conditions for international armed conflict, then the doctrine of the overall control test of *Tadic* could be applicable. To establish the participation of another state in a non-international armed conflict, the overall control test requires that the state in question went beyond the financing and equipping of armed groups and was involved in the planning and supervision of the military operations. Hence, in this instance, if a non-state

actor uses bioweapons, the state that exercises overall control could incur state responsibility for violations of international law and, in particular, for breaches of international humanitarian law. If a state is responsible, it would have to cease its actions immediately and compensate for its actions. Lastly, as a final deterrent, the International Criminal Court (ICC), depending on whether or not the State in question has accepted the 2017 amendments, that extends the court jurisdiction to the use of bioweapons, could have



COVID-19 patient in severe state examination, Mstyslav Chernov, May 9, 2020

33. Gabriel H. Oosthuizen and Elizabeth Wilmshurst, (2004), *Terrorism and Weapons of Mass Destruction: United Nations Security Council Resolution 1540*, Chatham House [online] Available at: <https://www.chathamhouse.org/sites/default/files/public/Research/International%20Law/ILP0904bp.pdf>

Source: https://commons.wikimedia.org/wiki/File:COVID-19_patient_in_severe_state_examination_-_Chernovstskiy_Ukraine.jpg

jurisdiction to try individuals accused of war crimes for employing weapons that use microbial or other biological agents, or toxins, whatever their origin or method of production.³⁴ This would include individuals that are non-state actors. This, however, is contingent on whether or not the state in question has tried the individuals responsible or not. In the future this could potentially serve as a deterrent for states who back non-state actors and endorse their use of bioweapons by making that state responsible for its actions.

Final remarks

Thus, international law on the subject matter leaves major gaps for proliferation of bioweapons to non-state actors. First and foremost, research and possession by states are not prohibited by any international norm, rather the intent is key to fall within the remit of any norm. Thus, any research or possession of material that at first glance could be seen as peaceful and could potentially be devel-

oped into a weapon might remain outside of the scope of international law. Coupled with the fact that transfer of such technology and equipment is encouraged, provided it is for peaceful purposes, the proliferation of such technologies and equipment is very hard to control. Hence, equipment and know-how for peaceful purposes can potentially be transferred to any place in the world for peaceful purposes. Thus, the potentiality of bioweapons proliferation is possible. While Resolution 1540 tried to control and combat this, the mechanisms remain porous, due to the lack of verification regime, self-reporting, and lack of enforcement. The inadequacy of the regimes for proliferation is further exacerbated by the fact that bioweapons are rather simple and cheap to produce compared to other WMD. Lastly, depending on the ratification of the 2017 amendments, the ICC potentially could have jurisdiction on the matter and be a possible deterrent in the future. However, this would only be the case if a state supports non-state actors.

INTEGRATION OF INTERNATIONAL BIOTERRORISM REGULATIONS INTO THE NATIONAL JUDICIAL SYSTEM: THE CASE STUDY OF FRANCE, POLAND AND GERMANY

On 5 October 2001, the US suffered its first bioterrorism victims in the so-called anthrax attacks.³⁵ Many questions emerged about the risks and reality of what biological weapons represented and the vulnerability they creat-

ed. While there are existing conventions at the international and European level, it is interesting to look at how some states have reacted nationally. Here, the focus will be on the legislation put in place in France, Germany,

34. International Committee of the Red Cross, '1972 Convention on the Prohibition of Biological Weapons'. [Online] Available at: <https://www.icrc.org/en/document/1972-convention-prohibition-bacteriological-weapons-and-their-destruction-factsheet>

35. Commission de la Défense Nationale et des Forces Armées, Pierre Lang, Le Bioterrorisme, Assemblée Nationale (France : 2003), 5.

and Poland.

Both international conventions, the 1925 Protocol and the Biological Weapons Convention (BWC), were signed by those three countries.³⁶ The BWC states that the member states will have to take the necessary measures to “prohibit and prevent the development, production, stockpiling, acquisition or retention of the agents, toxins, weapons, and means of delivery specified in the Convention”.³⁷ Each country has implemented this convention in its national order. In France, it is the Law n°84-547 of 4 July 1984, in Germany, it’s the Law of 21 February 1983, and in Poland, it is the Law of 28 November 1975.³⁸

Bioterrorism legislation in France

Mechanisms implemented

France took time to implement the Convention in its national order because there was no verification procedure within the BWC.³⁹ To overcome this shortcoming, France adopted a decree that set up a traceability system to regulate the acquisition, trade, transport, etc. of certain pathogens and toxins.⁴⁰ The French health security agency is the institution in charge of this system. Furthermore, another decree was adopted to classify the poisonous substances the agents identified as terrorist threats.⁴¹ These include botulism, haemor-

rhagic fevers, plague, brucellosis, and especially anthrax.⁴²

France also set up the “Biotox” plan.⁴³ It aims to define the ministries’ responsibilities and provide a coordinated response in the event of a bioterrorist attack. It was part of a threefold plan, alongside the “Piratox” plan (for terrorist acts of a chemical nature) and the “Piratome” plan (for atomic threats). In 2010, those plans were assembled under the “Pirate-CBNR” plan.⁴⁴ They were deployed at the local level, which was considered the most relevant for better coordination and pooling of resources of services involved in civil defence. Indeed, it enables the rapid implementation of substantial or specialised intervention resources during large-scale crises.

In 2010, a bill was adopted to combat the proliferation of Weapons of Mass Destruction and their means of delivery. This text was adopted following Resolution 1540 adopted on 28 April 2004 by the United Nations Security Council that called on Member States to adopt legislation to prohibit and prevent the proliferation of such weapons.^{45 46}

National legislation in force

In France, there are legal provisions that directly sanction acts of bioterrorism. First, there is the Code of Defence. There is a spe-

36. ICRC, “Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare”, Treaties, States Parties and Commentaries, available at: https://ihl-databases-icrc.org/applic/ihl/ihl.nsf/States.ssp?xp_viewStatesXPPage_NORMStatesParties&xp_treatySelected=280, [Accessed April 7, 2021].

37. Art. IV, Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Distribution of 1972.

38. Resp. LOI n° 84-547 du 4 juillet 1984 autorisant l’adhésion de la République française à une convention sur l’interdiction de la mise au point, de la fabrication et du stockage des armes bactériologiques (biologiques) ou à toxines et sur leur destruction, JORF du 5 juillet 1984, p. 2111; Gesetz zu dem Übereinkommen vom 10. April 1972 über das Verbot der Entwicklung, Herstellung und Lagerung bakteriologischer (biologischer) Waffen sowie über die Vernichtung solcher Waffen vom 21. Februar 1983 – Bundesgesetzblatt, Jahrgang 1983, Teil II, p. 132, Nr. 5 – Tag der Ausgabe: Bonn, de 25 Februar 1983; Law of 28 November 1975 on the ratification by the Polish People’s Republic of the Convention on the prohibition of research, production and stockpiling of bacteriological (biological) and toxic weapons and on their destruction, Journal of Laws 1976.1.2.

39. Commission de la Défense Nationale et des Forces Armées, Pierre Lang, Le Bioterrorisme, 17.

40. Arrêté du 22 septembre 2001 (J.O. du 26 septembre 2001, p. 15201), as amended on 15 January 2004 and 30 July 2004; Commission de la Défense Nationale et des Forces Armées, Pierre Lang, Le Bioterrorisme, 20.

41. Arrêté du 22 septembre 2001 (J.O. du 26 septembre 2001, p. 15201), as amended on 15 January 2004 and 30 July 2004.

42. Commission de la Défense Nationale et des Forces Armées, Pierre Lang, Le Bioterrorisme, 28.

43. Ibid 30.

44. Gouvernement.fr, “Les autres plans pirates”, Prévention des risques majeurs, available at: <https://www.gouvernement.fr/risques/les-autres-plans-pirate> [Accessed on April 7, 2021].

45. Commission de la Défense Nationale et des Forces Armées, Pierre Lang, Le Bioterrorisme, 7-8.

46. UNSC Res. 1540 (28 April 2004), Non-proliferation of weapons of mass destruction, UN Doc S/RES/1540, adopted by the SC at its 4956th meeting.

cific provision that forbids: “the development, production, possession, stockpiling, acquisition and transfer of biological agents and toxins, whatever their origin and method of production”.⁴⁷ This offence is punishable by a twenty-year prison sentence and a fine of €3 million. In the event of conviction, the agents or toxins in question will be confiscated and destroyed.⁴⁸

The French Penal Code also contains some provisions on bioterrorism: “It is also an act of terrorism when intentionally connected with an individual or collective undertaking to seriously disturb public order by intimidation or terror, to introduce into the atmosphere, the soil, the subsoil, foodstuffs or food

components or waters, including those of the territorial sea, a substance of such a nature as to endanger human or animal health or the natural environment.”⁴⁹ When a bioterrorist act causes the death of one or more people, the penalty is life imprisonment and a fine of €750,000.⁵⁰

And finally, the Public Health Code also “criminalises violations of the conditions and authorisation regime established by article 5139 -2 of the Public Health Code relating to the production, manufacture, transport, import, export, possession, offer, disposal, acquisition and use of certain microorganisms and toxins”.⁵¹

47. Art. L2341-1, Code de la Défense



48. Art. L2341-4, Code de la Défense

7th CSC Soldiers participate in Spain disaster response exercise Daimiel, gt. 1st Class Matthew Chlosta March 11, 2015

49. Art. 421-2, Code Pénal

50. Art. 421-4, Code Pénal

51. Art. L.5439-1 to 4, Code de la Santé Publique; Report of France on the implementation of resolution 1540 (2004), National submission France, (24 April 2020, no. 2020-0182056), 11.

Bioterrorism legislation in Poland

Mechanisms implemented

In Poland, the Armed Forces of the Republic of Poland (AFRP) established guidelines and emergency response plans for a bioterrorist attack. The AFRP mainly focussed on the modernisation, safety, and maintenance of structures in the medical field.⁵² For that purpose, microbiological laboratories have been established according to Biological Safety Level (BSL-1 to 3 depending on the level of contamination) for biological threats to be handled with the utmost attention.⁵³ The Biological Threat Identification and Countermeasure Centre (equipped with a BSL-3 laboratory) is tasked with detecting and neutralising pathogens that could be used as biological weapons.⁵⁴

A decree of 2008 established a committee for the prevention of the proliferation of WMD. This committee was tasked to define the sphere of prevention of WMD, to analyse proliferation trends and challenges, and to organise seminars, workshops, conferences to strengthen the cooperation and coordination against the proliferation of WMD.⁵⁵ Additionally, in 2013, the Council of Ministers adopted a “Priority Research Policy in the Ministry of Defence for 2013-2022”, which further regulates the role of the AFRP when

faced with a bioterrorist event.⁵⁶

National legislations in force

There is no specific legal provision to penalise bioterrorism in Poland. However, by linking the existing provisions, there is a legal arsenal to prosecute and punish such acts. First, it is considered that “bioterrorism is terrorism that takes advantage of biological agents”.⁵⁷ Secondly, the Polish Criminal Code sanctions “whoever uses a means of mass destruction prohibited by international law” and “whoever, against the prohibition by international law produces, stockpiles, acquires, sells, retains, transports or sends means of mass destruction or means of combat, or conducts research aimed at the production or use of such means”.⁵⁸ As such, likely, the existing provisions on terrorism will also apply to acts of bioterrorism.⁵⁹

Finally, there is also the Law on the Customs Code of 19th March 2004 that allows explanations to be sought if there are doubts about the destination of certain products, including biological materials.⁶⁰

Bioterrorism legislation in Germany

Mechanisms implemented

In Germany, the question of bioterrorism arose even though decision-makers were

52. Gerald Epstein, “Preventing Biological Weapon Development Through the Governance of Life Science Research”, *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* no. 1, vol. 10 (January 2012): 17-37, p.26.

53. Robert Czernski et al., “Bioterrorism Preparedness and Response in Poland: Prevention, Surveillance and Mitigation Planning” in *Disaster Medicine and Public Health Preparedness*, (Poland: Pubmed, 2020), pp. 1-2.

54. Krzysztof Goniewicz, Mariusz Goniewicz, Frederick M. Burkle, The territorial defence force in disaster response in Poland: civil-military collaboration during a state of emergency (Base: Sustainability, 2019), p. 3; Jagiello Władysław “Capacities of military technical research institutes involved in operational capabilities of the polish armed forces”, *Military Institute of Armament Technology* Vol. 146 no. 2 (2018): 7-37, p. 27; UNSC Res. 1540 (28 April 2004), Non-proliferation of weapons of mass destruction. UN Doc S/RES/1540.

55. UNSC, Report of Poland on its activity related to Security Council resolution 1540 (2004), (19 January 2011), UN Doc S/AC.44/2007/26.

56. Strategy of Development of the National Security System of the Republic of Poland 2022, adopted by Resolution of the Council of Ministers of 9 April 2013; Robert Czernski et al., *Bioterrorism Preparedness and Response in Poland: Prevention, Surveillance and Mitigation Planning*, 3.

57. Art. 120, Criminal Code; Bodgan Michailuk, “Threat of the biological weapons”, *Securitologia*, no. 1 (2016), 67.

58. Art. 120, Criminal Code

59. Ministry of Foreign Affairs – Republic of Poland, IV Report on the Implementation and Dissemination of International Humanitarian Law in the Republic of Poland for 2015-2018, Legal and Treaty Department (Warsaw: 2019), 33.

60. Act of 19 March 2004 on Customs Law, *Journal of Laws*, no. 68, (2014); Ordinance of the Minister of the Environment of 29th November 2002, *Journal of Laws*, (December 2002).

never confronted with such attacks.⁶¹ Germany put the focus on medical microbiology when dealing with the threat of bioterrorism. The Robert Koch Institute (RKI) is the competent institution to prevent, detect, and respond to biological threats. The Centre for Biological Threats and Special Pathogens (ZBS) at RKI analyses unusual biological events, their health implications, and how to react if such events should occur.

In 2002, the Ministers of the Bundesländer adopted a “New Strategy for the Protection of the Population in Germany” to determine who was responsible for the prevention and the protection of the population in the event of a disaster.⁶² It was decided that The Federal Office for Civil Protection and Disaster Assistance (Bundesamt für Bevölkerungsschutz und Katastrophenhilfe – BBK) would be the competent institution if a bioterrorist issue should occur.⁶³

Germany has also decided to use the US system developed by the Centers for Disease Control and Prevention to classify the substance into categories (A, B and C).⁶⁴

National legislations in force

Germany only has few provisions regarding terrorism. In its penal code, there is no definition of a terrorist act. However, there is an existing legal arsenal to sanction acts of bioterrorism.⁶⁵

In its War Weapons Control Act, Germany prohibits the development, production, and trade of biological weapons, as well as their acquisition, import, export, and transport.⁶⁶ Anyone who “develops, produces or trades in biological or chemical weapons, acquires or transfers them, imports or exports them, transports them or exercises actual control over them”⁶⁷ shall face a prison sentence of no less than two years.

In its Soldiers’ Manual, it is provided that “the use of bacteriological means of warfare is prohibited.”⁶⁸ And their development, manufacture, acquisition and stockpiling are prohibited as well.⁶⁹ Germany’s Military Manual of 1992, now replaced by the Law of Armed Conflict Manual, also proscribes bacteriological weapons. And it goes further to include biotechnological, synthetic, genetic engineering procedures that alter micro-organism for purposes that aren’t peaceful.⁷⁰

Germany’s Law Introducing the International Crimes Code states that “Whoever, in connection with an international or non-international armed conflict uses biological or chemical weapons shall be punished by imprisonment for not less than three years.”⁷¹

Even if the public debate regarding terrorism does not revolve around bioterrorist attacks, it is clear that the three countries dis-

61. Timo Ulrichs, Jens Kuhn, Helmut Hahn, “Potential threats from bio-terrorism: the threat of deliberately released microorganisms and other agents”, Free University of Berlin, (2005) [online], available at: https://www.fh-berlin.de/press/publikationen/handleri/archiv/2005_01/05-01_ulrichs/index.html [Accessed April 8, 2021].

62. Bundesamt für Bevölkerungsschutz und Katastrophenhilfe, Neue Strategie zum Schutz der Bevölkerung in Deutschland, Wissenschaftsforum, (Bonn: 2012).

63. Ministry of Foreign Affairs, IV Report on the Implementation and Dissemination of International Humanitarian Law in the Republic of Poland for 2015-2018, 57; Robert Koch Institut, “Biological Threats”, Robert Koch Institut, (4 July 2018), available at: https://www.rki.de/EN/Content/Infections/biological/biological_node_en.html [Accessed April 8, 2021].

64. Svetlana Zunder, Die Bedrohung durch den Bioterrorismus und das Management “biologischer Gefahrenlagen” in Deutschland, (Hamburg: Hochschule für Angewandte Wissenschaften Hamburg 2004), 12.

65. Deutscher Bundestag – 10. Wahlperiode, “Antwort der Bundesregierung auf auf die Große Anfrage des Abgeordneten Schily und der Fraktion die grüne”, Drucksache 10/4445, (5 October 1983), 14.

66. Section 18, Act on the Control of War Weapons.

67. Section 20 (1), Act on the Control of War Weapons.

68. Bundesministerium der Verteidigung Abteilung Verwaltung und Recht, Humanitäres Völkerrecht in bewaffneten Konflikten, (Berlin: Zentrum Innere Führung, 1991), §438.

69. *Ibid.*, §439.

70. Bundesministerium der Verteidigung, Law of Armed Conflict Manual (Berlin: Joint Service Regulation 15/2, May 2013), §§474-476.

71. Gesetz zur Einführung des Völkerstrafgesetzbuches Vom 26. Juni 2002, Bundesgesetzblatt Jahrgang 2002 Teil I no. 42, art. 1, §12, 2, p. 2257.

cussed above have taken measures if such events were to happen. They all established emergency response plans and designated the competent authorities to respond to such attacks. And they all adopted and revised their national legislations to sanction the authors of bioterrorist attacks. Those offences are dealt with within each of these countries. Both France and Germany have specific provisions in their national legislation for sanctioning bioterrorist offences. In France, those provisions are included in the Code of Defence and the Penal Code, and in Germany, they are found in the War Weapons Control Act and the Soldier Manual for

Germany. However, the Polish legal arsenal does not contain such precise provisions. Indeed, Poland refers to international law prohibiting the use of biological weapons. Moreover, the term bioterrorism does not appear in its legislation but is comprised under the term “weapon of mass destruction”. These existing differences stem from the fact that there is no international convention or European framework that specifically penalises bioterrorist offences. In light of this, it might be interesting to wonder whether aligning and harmonising national legislation could strengthen the fight against bioterrorism.

TOWARDS INNOVATIVE LEGAL POLICY, CHALLENGES AND MUTUAL PRACTICAL EFFORTS TO COUNTER THE PROLIFERATION OF BIOTERRORISM.

Bioterrorism is a real security threat and a public health issue as the spread of a deadly virus is likely to affect the entire targeted populations, leading potentially to the paralysis of state systems, as witnessed by the current global pandemic. Consequently, this issue requires innovative measures to install and implement effective legal tools and policies and an interoperability effort to reduce the risk and provide an efficient response to bioterrorist attacks.

Proliferation of the bioterrorism threat: a requirement for a coordinated response.

The elevated risks and threats that terrorism

entails for nations are acknowledged. Terrorism, which has affected several European countries, is spreading to new regions, despite alliances and military advancements. These manifestations have accelerated, their effects have increased, their means of terror have intensified, and diversified, leading to a potential risk of weakening the international system, as these organisations act outside any governmental and regulatory framework. Nowadays, terrorist organisations behind this escalating threat do not hesitate to use new and more devastating weapons. Indeed, non-state actors have long taken advantage of the abundant availability of weapons. This phenomenon also extends to the latest generation of tactical weapons and heavy land and naval

weapons, including biological weapons.

Diverted from their original purpose, certain biological organisms used by terrorist groups can become weapons with a highly dangerous potential to cause infectious syndromes, epidemics, or even pandemics. The use of biological weapons by terrorist groups could be as lethal in terms of casualties as nuclear weapons because of their particularly insidious nature due to their capacity to multiply, spread, and indiscriminately affect civilian populations for an uncertain period. With the development of effective counter-terrorism strategies and the success of authorities in preventing certain attacks, bioterrorism could become a substitute for traditional terrorist tactics.

The scope and impact of an epidemic caused by a biological weapon would depend on the characteristics of the pathogen or toxin, the design of the weapon or delivery system, the environment in which the weapon was used, as well as the effectiveness of the response.⁷² Some biological weapons spread and circulate easily within a population, possess the capacity to cause various diseases and death, are difficult to detect and can be resistant to contemporary medical treatment.⁷³ Additionally, the modification and mutation of these agents can strengthen these characteristics and enlarge the potential impact of biological weapons.⁷⁴

The current worldwide health crisis is a perfect example of the consequences of possible

use of a bioweapon. It demonstrates that new or unfamiliar pathogens could profoundly affect national and international health and economic security and that the capacities of states are limited, including states' military forces. As such, counter-bioterrorism requires a coordinated multi-stakeholder response to be highly efficient in the view of avoiding the minimum of both human and economic loss. The different public and private actors involved in responding to bioterrorism must be prepared for a bioterrorist attack. Such preparedness requires the education of all people involved and, in particular, of first responders like emergency medical personnel and armed forces.⁷⁵

This preparation must include regular monitoring of the occurrence of natural epidemics that must be extended to detect acts of bioterrorism.⁷⁶ The response to bioterrorism must not be limited to the organisation of security and emergency. For this reason, the implementation of an epidemiological monitoring network, including bioterrorism acts, is the keystone of preventative measures. Consequently, it is necessary to have epidemiological monitoring tools that supplement the WHO's global monitoring network in pursuance to be able to identify suspicious cases as quickly as possible, with a sufficient level of knowledge to take appropriate follow-up measures.⁷⁷ In this regard, a functioning and proper communication network must be in place between all services involved.⁷⁸ The

72. Inglesby, O'Toole, and Henderson, "Preventing the Use of Biological Weapons: Improving Response Should Prevention" *Clinical Infectious Diseases* 30, no.6 (2000): 926-929 Available at: <https://academic.oup.com/cid/article/30/6/926/333565>.

73. Syra Madad, "Bioterrorism: An Emerging Global Health Threat," *Journal of Bioterrorism & BioDefense* 5, Issue 1 (August 2014): 1.

74. *Ibid.*

75. *Ibid.* 5.

76. Manfred S Green, James LeDuc, Daniel Cohen, David R Franz, "Terrorism and health 2 Confronting the threat of bioterrorism: realities, challenges, and defensive strategies." *The Lancet Infectious Diseases Journal* 19 no2 (2019) Available at: <https://www.thelancet.com/action/showPdf?pii=S1473-3099%2818%2930298-6>

77. The world health organisation, 2006. Communicable disease surveillance and response systems . Guide to monitoring and evaluating. Available at: https://www.who.int/csr/resources/publications/surveillance/WHO_CDS_EPR_LYO_2006_2.pdf

78. *Ibid.*

multiplicity and variety of the responders require the interconnection of modern communication systems and a common monitoring network based on transparency, enabling the permanent availability of relevant information. Such a communication network allows the relevant services to share their know-how and good practices. It enables a constant sharing and monitoring of information on any possible suspicious activities to increase the swiftness and coordination of responses.

Specific resources are also needed to enhance diagnostic capabilities.⁷⁹ Indeed, an early detection capability is an essential tool in cases of suspected uses of biological weapons. The sooner a bioterrorist attack is detected, the faster the military and medical personnel can

respond to prevent additional exposure and begin treatment of those who have been exposed. With this regard, it will be necessary to maintain sufficient supplies of diagnostic reagents for use in identifying rare syndromes and potential biological weapons. It is also important to develop and evaluate new diagnostics that can be operated by the armed forces, and that will improve the swiftness and accuracy of biological weapons identification in conflict zones.

Implementing such a strategy on preventing and preparing for biological attacks must be based on a transnational and interoperability effort between different agencies. It is therefore indispensable to have a common legal basis, guidelines, and a strategic approach



Steadfast Jazz, SFJZ13, November 1, 2013

79. Rickard Knutsson, "Diagnostic Bioterrorism Response Strategies." Stephen Morse ed., *Bioterrorism*, IntechOpen, 2012, 65-66.

between appropriate health professionals and law enforcement of states, enabling not only to share good practices in this field from relevant practitioners but also to exchange on any possible suspicious activities with the view to increase the swiftness and coordination response.

Establishing a specific international legal framework: a preliminary strategic approach to investigate and control the proliferation of bioweapons for terrorist purposes.

Like terrorist intentions, the deployment of a biological weapon does not comply with any existing regulations and does not consider the boundaries in its virulent effects. Due to the growing interest in this weapon of mass disorganisation and technological advances in this field, only a global approach can anticipate crises of natural, accidental, or intentional origin. Indeed, as an illustration, the conflict in Syria witnessed the normalisation of the use of chemical weapons, with numerous documented uses of mustard gas and sarin since 2013.⁸⁰ Their repeated use by Islamic State group (IS) and above all by Bashar al-Assad's regime, and the existence of stocks of precursors in Libya, demonstrate that chemical, as well as biological arsenals, are an ongoing reality.

Hence, this global approach must necessarily be based on international control agreements that are mainly based on legal and regulato-

ry tools. Thus, specific common legal instruments are the keystone of an effective counter-proliferation policy by guaranteeing both biosafety and biosecurity of nations.

Yet, existing international legal instruments on bioweapons present several gaps.⁸¹ Indeed, the aforementioned instruments leave the international legal regime of the prevention of bioterrorism with several problems, including the lack of a clear definition of what constitutes a biological weapon and what agents have prohibited in what quantities; the lack of an adequate verification and inspection regime or body; the lack of a meaningful enforcement mechanism; and the absence of an enforcement mechanism.⁸²

Additionally, like the 1925 Geneva Protocol, the BWC does not provide firm guidelines for inspections and control of disarmament and adherence to the protocol, as well as regarding violations of the Convention. In the same line of thought, despite the agreement reached in 1972, several of the signatory Nations of the BWC participated in activities outlawed by the convention. These events demonstrate the ineffectiveness of the Convention as the exclusive approach for eradicating biological weapons and preventing further proliferation: neither the BWC nor any other international instrument contains a separate enforcement mechanism for violations. Given the gaping in verification under the BWC, and its non-application to non-state actors, the BWC is also not the most effective legal agreement for preventing bioterrorism.

80. United Nations, 2017. "Chemical-Weapons Attack in Syria Was Largest Such Event Since 2013." DisarmamentAffairs ChiefTells Security Council. Available at : <https://www.un.org/press/en/2017/sc12777.doc.htm>

81. UNODC, 2017. The international legal regime for combating chemical, biological, radiological or nuclear terrorism. Available at :https://www.unodc.org/documents/terrorism/for%20web%20stories/1-WS%20CBRN%206%20modules/CBRN_module_-_F_2.pdf

82. Divashree Sharma, Ambrish Mishra, Vilas Newaskar and, Ankit Khargiwala ,Bioterrorism: Law Enforcement, Public Health & Role of Oral and Maxillofacial Surgeon in Emergency Preparedness." Journal of Maxillofacial and Oral Surgery 15, no. 2 (April-June 2016): 137-143. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4871839/pdf/12663_2015_Article_834.pdf

Furthermore, the scope of the prevention of bioterrorism, the normative framework of the international legal regime preventing the use of biological weapons, is hardly sufficient to determine how to prevent it and, more importantly, how to respond to it. The problematic lack of a specific European or international binding instrument that could thoughtfully provide a common reference basis for all state parties on bioterrorism, allowing the diverse stakeholders (military, judicial, medical) to act co-ordinately, is an essential requirement. The gradual strengthening of biosafety and biosecurity standards also necessarily involves the incorporation into the legal systems of the member states of a specific offence of terrorist attacks using biochemical weapons.⁸³ Although regulations and safeguards to secure dangerous pathogens in research laboratories exist in most countries today, such as the United Kingdom or Spain, the scope of these regulations and the extent of the safeguards vary.⁸⁴ In this respect, the development of an epidemiological investigation legal guideline is crucial to assist the law enforcement of states in treating the bioterrorist threat. Indeed, investigation measures such as arrest warrants, seizure, collection of evidence, analysis, and traceability of evidence, intelligence gathering in cases of suspicion of misuse of dangerous toxins and biological agents or any other investigative measures established in the territory of a state or any place under its jurisdiction or control, must be adapted to the

field of bioterrorism; this also concerns investigations in conflict zones.⁸⁵ These measures should further facilitate the prosecution of offences involving dangerous toxins and biological agents used as weapons by terrorist groups within the national jurisdictions of the states.⁸⁶

As long as the international regime governing the development and production of biological weapons relies solely on individual states for controlling bioweapons development and use, the world population remains at risk for biological weapons attacks. In this sense, it is necessary to strengthen an international response in favour of multidisciplinary interoperability.

The necessity to strengthen adequate international interoperability in addressing bioterrorism.

Biological weapons are unique in their invisibility and their delayed effects. These factors allow those who use them to inculcate fear and cause confusion among their victims and escape undetected. A bio attack would not only cause sickness and death in a large number of victims but also aim to create fear, panic, and paralysing uncertainty.⁸⁷ The risk and threat of bioterrorism have become a large concern and challenge for governments and society to enhance biosecurity.

Law enforcement, including military forces, as well as the medical community, plays an

83. Manfred S Green, James LeDuc, Daniel Cohen and David R Franz, "Terrorism and health 2 Confronting the threat of bioterrorism: realities, challenges, and defensive strategies." *The Lancet Infectious Diseases Journal* 19 no2 (2019) Available at: <https://www.thelancet.com/action/showPdf?pii=S1473-3099%2818%2930298-6>

84. UK Regulations, Biological Weapons Act 1974. Available at: <https://www.legislation.gov.uk/ukpga/1974/66/content>
Spain Regulations, Spanish Non-Proliferation and Disarmament Policy. Available at: <http://www.exteriores.gob.es/Portal/en/PoliticaExteriorCooperacion/Desarme/Paginas/ArmasQuimicas-BiologicasMimasAntipersonaBomasDeRacimo.aspx>

85. H. J. Jansen, F. J. Breeveld, C. Stijns, and M. P. Grobusch, *Clinical Infectious Diseases Journal* 20, no 6 (2014) Available at: [Biological warfare, bioterrorism, and biocrime \(nih.gov\)](http://www.nih.gov)

86. Eric Merriam. 2014. "The International Legal Regime Affecting Bioterrorism Prevention" *National Security Journal* 3 no.1 (2014) 1-45 Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2478444

87. Bruce Budowle, Jodi A. Beaudry, Neel G. Barnaby, Alan M. Giusti, Jason D. Bannan and Paul Keim. "Role of Law Enforcement Response and Microbial Forensics in Investigation of Bioterrorism." *Croatian Medical Journal* 48, no. 4 (August 2007): 437-449. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2080552>

important role in assessing and investigating activities involved in the event of bioterrorism or biocrime. Identifying a potential bioterrorist attack requires coordination between the public health community and law enforcement to collect and analyse medical and symptomatic surveillance information, as well as cases related to threat assessment. In other words, preparation for bioterrorist attacks against civilians takes two major forms: 1) intelligence and law enforcement activities to prevent attacks, and 2) public health activities to prepare for, respond to, and lessen the impact of attacks.

From the basis of a suspected case of a bioterrorism attack, qualified health professionals and law enforcement of the states must follow agreed guidelines to be able to act swiftly in the face of the threat while protecting themselves and the rest of the civil population. In

this context, military capabilities to detect and respond to a bioterrorism attack that uses an infectious disease as a weapon are essential to minimise adverse health effects and prevent fatalities. Concomitantly, specialised legal assistance is needed (intelligence services, specialised police units, etc.) to support extensive investigations of the potential perpetrators of deliberate attempts to produce biochemical weapons or bioterrorist attacks.

Given this strategic environment and the high operational readiness of the armed forces, it is essential to have responsive and adaptable defence tools, and therefore to improve interoperability on this issue.⁸⁸ This ambition cannot be achieved without a legal strategy and a first-rate defence, supported by a strong and efficient military, capable of acting against all threats and in all environments. In this sense, the threat of bioterrorism requires measures



Polish SOF, Lisbon, NATO Trident Juncture, Allied Joint Force Command Brunssum, October 29, 2015

88. Revue de Défense Stratégique et de Sécurité Nationale, 2017. Available at : <https://www.vie-publique.fr/sites/default/files/rapport/pdf/174000744.pdf>

to assess the military's ability to detect biological agents in light of emerging threats in the post-COVID-19 world, since they will be at the forefront of diagnosing and providing appropriate and prompt treatment in response to a bioterrorism event, especially in conflict zones. Indeed, armed conflicts always amplify factors that lead to increased incidence of infectious diseases among civilians. A mass movement of populations, overcrowding, lack of access to clean water, poor sanitation, lack of shelter, and poor nutritional status increase the population's vulnerability to disease.⁸⁹ In many conflict situations, the ongoing war has led to "chronic emergencies" affecting entire countries and involving long rehabilitation phases, as in Afghanistan, Angola, Somalia, Yemen, and the Democratic Republic of Congo.

Consequently, it is crucial to improve military biodefense capabilities to counter any attack, both on the battlefield and on national territory. Implementing these military biodefense systems must be coordinated among states to protect the population against deadly epidemics triggered by bioterrorists in the most efficient way possible. To this end, on a factual basis of several scenarios, which could not remain exhaustive, military forces must be trained to identify in which context their intervention is necessary, when such intervention can be useful, and how to intervene in a highly protected manner. Well-trained and qualified military personnel can estimate risks and potential threats, sufficiently know the means at their ultimate disposal and the

health procedures to be properly implemented to manage crises. As a key factor in conflict zones, the effectiveness of the reaction will depend on their practical ability to detect suspicious clinical symptoms and unusual circumstances of disease. It is therefore crucial that military staff maintain and develop their abilities in this area. Training European land forces in this field of defence is fundamental to implementing a comprehensive strategy to counter biological terrorist attacks. It will continue to strengthen interoperability between European military forces.

Several European countries have efficiently implemented strategic training and intervention plans, including national military forces. For instance, in France, the Biotox-Piratox network was set up between 2001 and 2004 as part of the Vigipirate plan by the Ministry of Defence and Interior.⁹⁰ It can be mobilised in a crisis and involves around one hundred hospitals, veterinary, military, and environmental analysis laboratories, which carry out exercises every year. These laboratories cover the whole country to analyse biological samples and give the alert as quickly as possible in the event of pathologies that are suspicious in number or nature. Furthermore, in Poland, the State Health Inspectorate has developed plans to counteract crises, in particular, bioterrorist attacks, and procedures to adequately deal with specific situations: e.g., specific rules for notification and cooperation in the event of a threat of a dangerous infectious disease or bioterrorism, a scheme for dealing with suspicious shipments and procedures for

89. The World Health Organisation, 2005. Bioterrorism and Military Health Risk. Available at: <https://www.who.int/dg/brundtland/speeches/2003/DAVOS/en/>
90. Report No. 332 (2004-2005) by Mr Jean-Pierre DOOR, MP and Mrs Marie-Christine BLANDIN, Senator, on behalf of the Parliamentary Office for the Evaluation of Scientific and Technological Options, submitted on 10 May 2005. Epidemic risk. CHAPTER III: THE LARGE-SCALE CRISIS LINKED TO VOLUNTARY ACTION: THE EXAMPLE OF BIOTERRORISM. Available at: <https://www.senat.fr/rap/r04-332-1/r04-332-18.html>

dealing with cases of smallpox, anthrax, and botulism.⁹¹ Along the same lines, in Germany, the Ministers of the Länder adopted in 2002 a “New Strategy for the Protection of the Population in Germany” and established the Federal Office for Civil Protection and Disaster Assistance to become the competent institution to deal with bioterrorist attacks. The Office is tasked with, among other things, the planning and preparation of emergency plans, the provision of emergency supplies and the planning of coordination between the Federation and the Länder concerning CBRN threats.⁹² At the international level, the NATO counter-terrorism reference programme provides insights into potential responses in bioterrorism attacks for state parties.⁹³ Similarly, The United Nations Counter-Terrorism Implementation Task Force (CTITF) has been established by the Secretary-General in 2005 to ensure overall coordination and coherence in the counter-terrorism efforts of the United Nations (UN) system, including bioterrorism.⁹⁴

While many examples demonstrate that the

threat is being taken both seriously and rationally at the international level, in the context of COVID-19, where human lives are more vulnerable than ever, it is necessary to implement a coordinated response with allies for enhanced effectiveness.

Final remarks

Preventing and responding to possible biological aggression requires the implementation of measures covering multiple sectors and stakeholders. Hence, the various steps necessary for biodefense capabilities to ensure sufficient protection of the civilian population must be strengthened in a joint effort. As a result, states must revitalise their counter-terrorism defence strategies by merging their cultures, fostering pragmatic partnerships with states that have the political will and military capability to assume their responsibilities in operations, while releasing the necessary resources to support interoperability in combating biological terrorism.

CONCLUSION AND RECOMMENDATIONS

Throughout this paper, it became clear that bioterrorism poses a threat to international and national security and the well-being of all citizens. Due to the rise of terrorist or-

ganisations, the increasing accessibility of biotechnology and the advantages of BW for terrorist purposes, terrorist bio attacks have become more plausible and more dangerous

91. Krzysztof Goniewicz and Witold Pawłowski, “Bioterrorism Preparedness and Response in Poland: Prevention, Surveillance, and Mitigation Planning.” *Disaster Medicine and Public Health Preparedness*. (2020) 1-6 Available at: https://www.researchgate.net/profile/Krzysztof-Goniewicz/publication/342764735_Bioterrorism_Preparedness_and_Response_in_Poland_Prevention_Surveillance_and_Mitigation_Planning/links/5f0574b6458515505094786d/Bioterrorism-Preparedness-and-Response-in-Poland-Prevention-Surveillance-and-Mitigation-Planning.pdf

92. Federal Office of Civil Protection and Disaster Assistance, available at: https://www.bkk.bund.de/EN/Home/home_node.html

93. NATO, 2020. Reference programme in countering bioterrorism. Available at: https://www.nato.int/nato_static_files/2014/assess/pf/2020/9/pf/200930-DEFP-CTRC-fr.pdf

94. United Nations, 2017. Ensuring Effective Interagency Interoperability and Coordinated Communication in Case of Chemical and/or Biological Attacks. Available at: https://www.un.org/sites/www.un.org/files/unctc_ctif_wmd_wg_project_publication_final.pdf

than ever before. Simultaneously, the ongoing global COVID-19 crisis demonstrates the magnitude of the impact that viruses and other bioagents can have on societies and global health security and the difficulty the entire globe experiences to respond to these biological threats. In this context, it has been noted that the international regime for the control of proliferation is porous. One of the shortcomings of the international regime has been identified as a poor definition of what constitutes an illegal transfer of technology.

Furthermore, this international framework is, or should have been, transposed into domestic legislation. Considering the shortcomings of the international framework, states still have a lot of discretion in devising a legal framework on bioterrorism. In this vein, the overview of Germany's, France's and Poland's domestic legal frameworks identified the similarities and differences between them. However, it has been noted that a lack of harmonisation in the response and coordination is prevalent in the regimes in places. Lastly, an overview was provided of the challenges that came with the bioterrorist threat and indicated the crucial measures that should be taken in response to this threat. Besides the practical measures required for a satisfactory response to bioterrorism, it was discussed how the international legal framework should be developed to facilitate and support these measures and remedy contemporary deficiencies. Based on comprehensive research, the following conclusion and recommendations are made. These seek to guide states and the international community in their quest to effectively respond to bioterrorism and encompass suggestions regarding the international, European, and na-

tional legal framework in which this response should be embedded.

In this sense, states should develop and implement an interoperability strategy to prevent and respond to bioterrorism. Such a strategy implies the coordination of and collaboration between the multidisciplinary stakeholders involved, both on a national and international level. To develop such an interoperability strategy, the following is suggested:

- States should develop an epidemiological monitoring network that allows for early detection of bioterrorist threats and constant monitoring of how the biological agent spreads once it has entered a population.
- States should establish an elaborate communication network between all relevant stakeholders. This communication network should not only enable epidemiological monitoring. It should also ensure that good practices, know-how, information on logistics, infrastructure, available materials, and info on the availability of medical and diagnostic capabilities are constantly shared and updated.
- States should devise strategic plans and guidelines for it. This should prepare and inform all stakeholders about their respective roles in the response and how they will cooperate and communicate with each other and shape how infrastructure and materials are shared and used optimally, including the logistic operationalisation thereof.
- States should educate and train all actors involved regarding the risks of BW and how they would have to execute the interoperable strategy. First responders, in

particular, should be trained in their capability to detect a bioterrorist attack and in the first crucial steps that ought to be taken when such an attack occurs. These first responders include hospitals, local doctors and law enforcement during peacetime, and armed forces, especially its medical component, during armed conflict.

Besides these practical recommendations, it is necessary to develop a comprehensive European and international legal framework on the use of BW for terrorist purposes. To develop such frameworks, the following is recommended:

- The international framework should have functioning monitoring and enforcement mechanisms.

- The focus of such framework should not only be on non-proliferation, arms control, and criminal prosecution but should facilitate a prepared and coordinated multinational response. It should determine how states will coordinate their actions, share their know-how, materials, infrastructure, and capabilities.
- Considering the absence of a European legal framework and the fact that the legislative approach of EU member states differs, it is recommended to develop a European legal framework on bioterrorism. This framework should include minimum harmonisation of national legislation and facilitate a European interoperable response to a bioterrorist attack.

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