

Bio-Terrorism and International Law: Revisiting the Biological Weapons Convention Post-COVID.

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Abstract: The COVID-19 pandemic brought out several global vulnerabilities in various areas of biosecurity and brought out major concerns in the area of biological warfare and bioterrorism. This article will re-examine various Biological Weapons Conventions (BWCs) from the perspective of COVID-19 and present arguments that the current legal architecture lacks the necessary enforcement and verification mechanisms, which are crucial to address the emergence of other bio-threats. With the help of international legal instruments, policy analyses, and case studies, this article will further analyze the key structural weaknesses in the BWC and provide appropriate solutions in the form of policy-oriented reforms and proposals. Thus, this article concludes that without urgent modernization, the BWC may become ineffective in addressing the increasing complexity of biosecurity, risk-amplified synthetic biology, and geopolitical tensions.

Key Words: Biological Weapons Convention, bioterrorism, international law, COVID-19, biosecurity, verification protocol, synthetic biology

1. INTRODUCTION

The concept of biological warfare has existed for a long time, posing a significant threat to global security. Similarly, the pandemic (COVID-19) brought about various systemic fragilities in the areas of international preparedness and, on a larger scale, other biological events that can either take place naturally or be human-induced.

The studies suggested that the pandemic was not a weaponized pathogen, but still, in the longer run, it functions as a heavy burden for the global biosecurity framework, which further revealed major legal, institutional, and scientific coordination gaps.

Therefore, there is a growing concern that bioterrorism involves the intentional release of various viruses,

bacteria, or other agents capable of causing serious harm and re-emerging with new urgency.

The main focus of global governance against all biological weapons is the Biological Weapons Convention (BWC), which was signed in 1972.

The BWC convention prohibits the development, production, and acquisition of biological and other toxic weapons.

Even though this near-universal ratification is brought about, the BWC does not have a verified protocol formally and lacks a robust enforcement mechanism, making it vulnerable in an age where there is rapid growth in biotechnological advancement and geopolitical instability. This article examines the BWC through the lens of post-pandemic international law. The article also explains how COVID-19 initiated a discourse on biological threats and examines whether the current international legal framework can adequately address new challenges, including dual-use research, synthetic biology, and threats from non-state actors.

This article further analyzes that BWC might be historically significant, but in reality, it is outdated structurally and needs a new viewpoint and reform soon.

2. LITERATURE REVIEW

The Biological Weapons Convention (BWC) is said to be the bedrock of all the international efforts to stop and prohibit any biological warfare from occurring. This convention was originally adopted in 1972 but came into force in 1975. The BWC is said to be the first multilateral disarmament treaty that banned the development and possession of an entire category of weapons.

Despite its long-standing influence, the convention faced criticism for its limited capacity and

enforcement. Sims argued (2001) that the BWC does not have a verified mechanism or a permanent institutional body to look into compliance. Despite holding various conferences to review these structural deficiencies, they remain unresolved today.

This refers to a failed attempt to negotiate a verification protocol, as noted by Littlewood in 2005.

The writings before the pandemic mainly spoke about the symbolic values of BWC, but did not say much about the practical limitations it has. Koblentz (2010) and Lentos (2013) warned that the growth of biotechnology, which includes gene editing, synthetic biology, and dual-use research, would bring out many problems that the old customs and norms of the treaty cannot resolve. The international legal community, including United Nations Security Council Resolution 1540 (2004), has spoken and identified these problems but yet again fails in the area of binding enforcement and operational oversight.

The scholars before the pandemic predicted the problems, and thus the global response to COVID-19 made their insights true and revealed all the weaknesses in the international coordination. Legal scholars such as Burci (2021) and Enemark (2022) have put forward that the distinction between natural outbreaks and intentional biological attacks is blurring. To support this statement, the ongoing controversy surrounding the "lab leak theory" of COVID-19 is relevant. Now, such controversies weaken and complicate the international framework and dialogues on biosafety, transparency, and verification.

The BWC yet again has a drawback here, as there is an absence of proper legal tools to investigate or compel an inspection under such outspoken controversies.

At the same time, the issue of bioterrorism has spread widely across the globe. We can note that it was only associated with the state actors, but now it has gained the attention of non-state threats such as terrorist groups and lone actors who have access to synthetic biological tools. The FBI (2020) and Interpol (2021) have put forward their concerns about "garage labs" and the democratization of genetic engineering.

Therefore, this article is based on existing literature and incorporates a dual-focus conceptual framework to be viewed not only as a disarmament treaty but also as a tool for public health law. It aims to collaborate and engage concurrently with organizations such as the World Health Organization (WHO).

Last but not least, it categorizes biological threats as a continuum from pandemics, which occur naturally, to the deliberate release of pathogens. Additionally, it advocates for a legal framework that should address all relevant concerns.

In conclusion, this article provides interdisciplinary literature in the areas of international law, bioethics, and public health security. The article advocates for a reassessment of the BWC's structural work and design, ensuring it takes into account all the salient features, challenges, and concerns associated with 21st-century biological risks.

3. METHODOLOGY

The article focuses on a qualitative and doctrinal research methodology that has all the aspects of international legal analysis and policy evaluation. Proper and systematic examination of legal instruments is done. Treaty texts, official reports, scholarly articles, and interpretations are also looked at and assessed in light of the scope and limitations of the Biological Weapons Convention (BWC) in post-COVID times. In summary, legal analysis can be understood as a policy-oriented review of state practices, UN resolutions, and institutional frameworks relevant to the concept of biosecurity.

3.1 Data Source:

Legal texts, which include

- ❖ BWC
- ❖ UN Security Council Resolution 1540 (2004)
- ❖ WHO, International Health Regulations (2005)
- ❖ Review conference documents (BWC's 9th review conference held in 2022).

Legal literature includes peer-reviewed academic journals that focus on international law.

- ❖ International law
- ❖ Disarmament studies

- ❖ Public health law
- ❖ Bioethics

Institutional/policy reports

- ❖ World Health Organization (WHO)
- ❖ WMD Directorate
- ❖ Think tanks (e.g., Chatham House, SIPRI)

Case Studies—

- ❖ “Lab leak hypothesis”
- ❖ Synthetic biology developments
- ❖ The BWC Confidence Building Measure (CBMS) requires national implementation reports.

3.2 Analytical Framework:

The article’s framework is built upon a normative and functional analysis of the BWC, which evaluates the legal structures of the treaties, how the provisions are enforced, and what they are lacking.

The main point is to check how the BWC is addressing emerging technologies and non-state actors. Further, various aspects of the interplay between the BWC and other actors, like WHO and UNODA, are also looked at.

Various analogous regimes are applied in this article, and major comparisons are drawn from the Chemical Weapons Convention (CWC), which has a verification regime that is properly organized for the Prohibition of Chemical Weapons (OPCW).

Then comes the Nuclear Non-Proliferation Treaty (NPT), where the terms of compliance and its inspection mechanisms via the IAEA are used in the framework of this article.

3.3 Limitation:

Since this article focuses on policies and doctrinal concepts, it does not include quantitative or experimental data. Further, this article also acknowledges its limitations, as many countries do not submit a proper report on the policies relating to BWC or CBMs or submit an incomplete one, so absorbing the correct norms and filling the gaps became difficult in the study.

The other problem lies with the absence of legally confirmed incidents of bioterrorism post-COVID, hence making the article a perspective and precautionary writing.

4. ANALYSIS AND REVIEW

4.1 Biological Weapons Convention: Evolution and limitation

Signed in 1972, the Biological Weapons Convention (BWC) came into force in 1975. It is still the primary international legal instrument that prohibits the development, production, and stockpiling of biological and toxic weapons.

The BWC’s latest updates have garnered support from 185 States Parties, which signals widespread global support; however, despite possessing all the normative values, the BWC is still regarded as institutionally weak.

The major reasons for BWC’s limitations include its lack of a verification regime. The Chemical Weapons Convention (CWC) surpasses the BWC in significance. The CWC has further established the Organization for the Prohibition of Chemical Weapons (OPCW) to conduct various inspections and to verify compliance. Hence, we can see a notable difference between the CWC and BWC and conclude that BWC has no equivalent procedures.

Another limitation faced by the BWC was that its efforts to create a verification protocol failed in 2001 because the United States withdrew from all negotiations, citing national security and confidentiality concerns (Littlewood, 2005).

Additionally, it is important to note that the BWC lacks a permanent secretariat. The BWC has a small administrative body called the Implementation Support Unit (ISU), which does not have any authority to investigate breaches or enforce compliance.

The BWC has proven to be ineffective in its voluntary annual reports submitted by state parties, known as the Confidence-Building Measures (CBMs), and has been inconsistent in its participation due to vague disclosures (UNODA, 2022).

Going further, we can also note that the dual research program called biological research, which was created for beneficial purposes but ultimately lacked potential and was exploitable for harm, was not really a significant concern for the BWC.

The rapid growth of synthetic biology, CRISPR gene editing, and rapid pathogen synthesis creates profound regulatory challenges, which are also not properly addressed by the BWC in their original form (Lentzos, 2018).

In conclusion, the BWC has created a list of important norms for prohibition, but it still lacks the operational capacity to monitor these norms and enforce suitable compliance, making the organization vulnerable to rising technological advancements and shifting landscapes.

4.2 Bioterrorism threats and issues observed after COVID:

The COVID-19 pandemic brought about disastrous global consequences, which further brought many biological threats with it. Although reports and studies indicate that the virus was not a biological weapon, its impacts have nonetheless triggered global discussions about bioterrorism and intentional pathogen release.

The distinction between natural outbreaks and engineered incidents is becoming increasingly blurred. And various theories and concerns have been coming to light, such as the “lab leak” origin of COVID-19.

Although this theory remains unproven, it has sparked global debates about lab safety, transparency, and the urgent need for international inspection mechanisms.

Such incidents have demonstrated how opaque state practices can foster international suspicion.

This situation could potentially undermine trust in global health governance and international law (Burci, 2021).

Parallel to that, we have non-state actors who have become increasingly relevant to the democratization of various biotechnology tools (desktop gene synthesizers and open-source CRISPR platforms).

As a result, the technical barrier to misusing these tools has been lowered.

According to the FBI WMD Directorate (2020) and Interpol (2021), many terrorist groups in theory can exploit these tools and set target attacks on public health infrastructures.

There have been allegations concerning covert programs that have been carried out in countries like North Korea that have persisted for a long time, and without any conclusive evidence, this can't be proved. Therefore, we cannot dismiss the possibility of state-sponsored bioterrorism.

Without the formal inspection regime under the BWC, such violations and allegations are very difficult to verify, thus creating a legal and geopolitical vacuum.

In conclusion, COVID-19 has brought about many vulnerabilities in biosurveillance, rapid responses, and international coordination, many of which would be

even more disastrous in the context of a deliberate biological attack.

4.3 Legal Gaps and Challenges in the Enforcement:

The Biological Weapons Convention has several shortcomings in its effectiveness within the international legal landscape. Even though it has a legal prohibition on biological weapons, its capacity and ability to regulate or enforce compliance, investigate violations, or deter abuses are very limited.

The primary gap is the lack of a verification protocol, which typically facilitates inspections, evidence collection, and independent adjudication in cases of suspected treaty violations. The Biological Weapons Convention (BWC) is entirely dependent on national implementation and voluntary cooperation, while the Chemical Weapons Convention (CWC) and the Non-Proliferation Treaty (NPT) have proper oversight through the OPCW and IAEA, respectively.

Various state parties enact domestic legislation and submit annual confidence-building measures (CBMs), but their compliance is sought to be uneven and is not considered symbolic (e.g., in 2022, only 40% of BWC parties have consistently submitted their CBMs) (UNODA, 2022).

The absence of dispute resolution mechanisms and unclear procedures for addressing suspected violations also creates limitations within the BWC. Article VI of the BWC allows states to lodge complaints with the UN Security Council, but such actions are still considered rare and sensitive. The veto power held by the five permanent members creates obstacles to effective resolution, making it virtually impossible to resolve politically contentious cases. (Enemark, 2022)

The World Health Organization's International Health Regulations (2005) (IHR) give some legal basis for coordinating such biological events and their responses. But most of them are built for natural disease outbreaks and don't address any deliberate or state-sponsored bio-threats.

Furthermore, the IHR lacks adequate mechanisms for punitive enforcement, rendering it an ineffective tool against terrorism.

There have been many efforts to fill this gap by the United Nations Security Council Resolution 1540 (2004), which has given us mixed results. We can note that Resolution 1540 obligates states to prevent non-state actors from acquiring weapons of mass destruction, including biological weapons; however, it

lacks any inspection authorities to enforce the norms or override the limitations of the Biological Weapons Convention (BWC).

Their enforcement of norms lies in peer reporting and national discretion, which can give various results that vary across different jurisdictions.

In conclusion, the international legal framework for biosecurity remained underfunded, inadequate, and soiled. This era of growing biotechnological convergence and geopolitical stability needs a more structural legal framework, or else such weakness can cause havoc.

4.4 Reforms and Policy Recommendations

Verification Protocol:

Legally binding protocol modeled on the CWC includes inspections, randomized audits of high-risk labs, transparency measures for dual-use research facilities, and empowered international investigators to investigate suspicious activities in collaboration with the WHO & UN.

Permanent Secretariat:

Upgrade the implementation support unit to a permanent BWC secretariat with operational oversight powers, investigation authority rights, and long-term policy coordination roles.

Integrate Public Health Systems:

Links between BWC and global governance have to be strengthened by formalizing coordination with WHO & IHR frameworks, partnering with GAVI, CEPI & regional disease surveillance networks

Monitor dual-use research and synthetic biology: legal and ethical oversights in gene editing, synthetic genomics, automated pathogen synthesis, and open-source biohacking platforms, and also establish a global scientific board under the UN or WHO.

Enforce State Reporting and Peer Review:

Reform the CBMs by standardizing checks and introducing structured peer review processes, and these improvements can be achieved by ensuring transparency through diplomatic recognition and providing technical assistance.

5. CONCLUSION

The pandemic that occurred has reshaped the global understanding of all the biological threats and revealed the inadequacies of the legal and institutional frameworks that do not properly address natural outbreaks and intentional acts of bioterrorism.

Although the BWC is a principal treaty aimed at preventing the development and use of biological weapons, it has limitations in its structural formation and lacks verified protocols. This results in the BWC's absence of a permanent secretariat and insufficient norms and measures necessary for ensuring compliance.

Thus, this article indicates that the post-COVID scenario presents numerous biosecurity challenges, including the proliferation of dual-use technologies, the risk of lab-origin events, the rise of non-state bio-threat actors, and the blurred line between public health crises and national security emergencies.

Now, without a proper system that oversees reports and enforces, the BWC is at risk of becoming an obsolete instrument in the projection of 21st-century threats. The article suggests several recommendations to revitalize the Biological Weapons Convention (BWC), including the establishment of a verification regime, the creation of a permanent secretariat, improved coordination with public health institutions, and regulations for synthetic biology. While the issue of political and diplomatic scenarios, which affect sovereignty and national security, remains unresolved, the urgency of reforms is undeniable.

In conclusion, strengthening the legal architecture of biological weapons governance is not just a disarmament issue, but it is an issue of global health, international peace, and human security.

In the scenario of a post-pandemic world, the international community must come up with ways to modernize and bring changes to the BWC and ensure it responds effectively to the upcoming biological risks.

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