



Biological and Chemical Security After COVID-19:  
Options for Strengthening the Chemical and Biological Weapons  
Disarmament and Non-Proliferation Regimes<sup>1</sup>

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January 2021

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<sup>1</sup>This report was selected by London Metropolitan University for funding via the UK Research and Innovation (UKRI) Strategic Priorities Fund. It was produced as part of a wider project on *Strengthening the Chemical and Biological Weapons Conventions*. The opinions are entirely those of the authors. © Copyright London Metropolitan University 2021. This publication may be reproduced under the terms of the London Metropolitan University License, which is published at [www.Londonmet.ac.uk/copyright](http://www.Londonmet.ac.uk/copyright). All correspondence should be addressed to Professor Lijun Shang, School of Human Sciences, London Metropolitan University, London, N7 8DB, UK. The telephone number for general enquiries is +44-2071134805; the email address is [l.shang@londonmet.ac.uk](mailto:l.shang@londonmet.ac.uk).

## **Executive summary**

The international chemical and biological weapons disarmament and non-proliferation regimes centred on the Biological and Toxin Weapons Convention (BTWC) and the Chemical Weapons Convention (CWC) face multi-faceted challenges in a period of significant international discord. In this report we examine the scope of possibilities for strengthening these regimes and identify specific proposals that should be at the forefront of the considerations of the BTWC and CWC States Parties.

### **In regard to the BTWC States Parties should:**

- Promote the peaceful uses of life sciences through cooperation and assistance under the Convention. States Parties should further develop and enhance the implementation of the BTWC Cooperation Database.
- Ensure that the security implications of life sciences research are effectively assessed and managed in an agreed review process. The development of a biological security code of conduct for life scientists can strengthen the review process of relevant scientific and technological advances.
- Promote the full and effective national implementation of the BTWC by improving the system of Confidence Building Measures, enhancing stakeholder engagement with the Convention, and strengthening the utility of Peer Review Exercises.
- Promote the implementation of an integrated approach to countering the threat of deliberate disease. Strengthening international coordination, cooperation, and capacity building under the BTWC can advance global health security and prevent the hostile misuse of life sciences.
- Consider possible approaches and measures for the institutional strengthening of the Convention. It is essential that an Intersessional Programme of Work is agreed at the Ninth Review Conference in 2021 and that the mandate and resources of the Implementation Support Unit are expanded.

### **In regard to the CWC**

- There is no single pathway to justice in regard to the use of chemical weapons in Syria. There remains a need for sustained plurilateral State support for a wide range of investigatory, archival and criminal mechanisms which will ensure that those who have breached the global chemical weapon prohibition are identified and held accountable.
- States must support intelligence sharing, international investigative and criminal procedures in relation to recent uses of Novichoks and support OPCW expert review and updating of CWC verification schedules and declaration processes to address challenges posed by this group of agents.
- Until the OPCW collectively determines the applicability of the CWC with regard to the use of CNS-acting chemicals for law enforcement purposes, CWC States Parties should introduce national moratoria on development, manufacture, promotion, transfer, acquisition, stockpiling and use of all weapons employing such agents.
- All CWC State Parties must uphold the prohibition on use of riot control agents as a "method of warfare". They must further ensure that RCA use for law enforcement purposes is consistent both with international human rights law and the Chemical Weapons Convention cognisant of the increased health risks due to COVID-19.
- All CWC State Parties should collectively establish an OPCW process to determine those RCA delivery mechanisms that are prohibited under the Chemical Weapons Convention and develop guidance on appropriate use of permitted RCA delivery mechanisms.

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## 1 Introduction

1. The First Report of the Joint Committee on National Security Strategy for the Session 2019-21 on *Biosecurity and national security*<sup>1</sup> focussed on the challenges of integrating the various means of biological security governance **within** the United Kingdom but noted that: “Future biological risks to the UK will evolve rapidly, originating within or beyond its borders. These prospects encompass other serious disease outbreaks, but also the ‘slow burn’ risk of anti-microbial resistance and reducing barriers to the (accidental or deliberate) spread of harmful biological substances.” The following report considers the challenges faced and opportunities for integrating and strengthening the various means of biological and chemical security governance **external** to the UK in relation to the chemical and biological weapons disarmament and non-proliferation regimes. The COVID-19 global pandemic and recent cases of chemical weapon use (e.g., in Syria and against the Skripals in the UK and Alexey Navalny in Russia) have demonstrated the reality and multifaceted nature of biological and chemical threats that all States face in the twenty-first century. These threats have also underscored the importance of strengthening the international norms against the hostile misuse of chemical and biological sciences enshrined in the 1975 Biological and Toxin Weapons Convention (BTWC) and the 1997 Chemical Weapons Convention (CWC). The purpose of this report is to review the ‘health’ of the BTWC and CWC and identify practical opportunities to strengthen these critical Conventions and guarantee their relevance against the backdrop of rapid scientific and technological advancement and growing international instability.

## 2 The Biological and Toxin Weapons Convention (BTWC)

2. The 1975 BTWC is the first multilateral agreement that outlaws an entire class of weapons of mass destruction (WMD).<sup>2</sup> States Parties to the Convention undertake to adopt appropriate measures for ensuring that advances, materials, and knowledge in the life sciences are used only for peaceful, prophylactic, and protective purposes. The 2018 *UK Biological Security Strategy* contributes to strengthening the norm against deliberate disease, not least because it advances an all-hazards approach to countering natural, accidental, and deliberate risks for human, animal, and plant health.<sup>3</sup> The need for a multifaceted and multi-layered, internationally coordinated set of measures for managing the risk that life sciences may be accidentally or deliberately misused is at the forefront of the considerations of BTWC States Parties. Every five years, States Parties hold a Review Conference during which key decisions on the operation of the Convention are made. Since 2002, each Review Conference has been preceded by an Intersessional Programme (ISP) of work comprising biannual meetings: Meeting of Experts and Meeting of States Parties. The current ISP 2017-2021 is focused on five thematic areas, including cooperation and assistance for promoting the peaceful use of the life sciences; review of scientific and technological advances; national implementation; preparedness and assistance in case of an alleged use of biological weapons; and institutional strengthening. The Ninth Review Conference of the BTWC is to take place in 2021. The following sections review key proposals that are being considered by States Parties under each of the five topics addressed as part of the current BTWC ISP and outline practical recommendations on strengthening the Convention. The 2020 meetings were delayed because of the pandemic, but a series of informal

webinars was held during November and December that reviewed current thinking on these topics amongst States Parties.

### ***Cooperation and Assistance (MX1)***

3. Under Article X of the BTWC, States Parties have the right to enjoy, the “fullest possible exchange of equipment, materials and scientific and technological information”<sup>4</sup> of biological agents and toxins for peaceful purposes. States Parties have reached additional understandings and agreements relating to Article X during previous Review Conferences.<sup>5</sup> At the Eighth Review Conference, member countries of the Global Partnership<sup>6</sup> gave a detailed account of such projects, and the UK<sup>7</sup> has given an overview of its contributions. At the Seventh Review Conference States Parties agreed to create a database system, established and administered by the Implementation Support Unit (ISU) of the BWC, to facilitate requests for and offers of exchange of assistance and cooperation among States Parties.<sup>8</sup> In the current Intersessional Process 2017-2021, approaches and concepts for strengthening Article X of the Convention are considered under the topic Cooperation and Assistance, with a Particular Focus on Strengthening Cooperation and Assistance under Article X (MX1). At the last discussion on this topic, convened online in December 2020, a wide range of activities were discussed. Additionally, the US set out a strategy<sup>9</sup> for better implementation of the database including a 3-step process to increase the number of annual reports regarding cooperation and assistance obligations, turning the database into a more comprehensive and useful tool, and via an initiative supported by both the US and India, the creation of a position within the ISU to support cooperation.

### ***Review of Science and Technology under the BTWC (MX2)***

4. Article I of the BTWC bans “microbial or other biological agents, or toxins, whatever their origin or method of production” that “have no justification for prophylactic, protective or other peaceful purposes”.<sup>10</sup> This is known as the General Purpose Criterion and seeks to promote the legitimate uses of life sciences. The rapid progress of life sciences and related fields over the past few decades raises multifaceted security challenges to the operation of the Convention, not least because the same advances (e.g., genome editing) that contribute to combatting disease might also facilitate the development of sophisticated biological and toxin weapons. In the current Intersessional Programme 2017-2021, approaches for reconciling the benefits and biological security risks of novel life sciences advances are considered by the annual Meeting of Experts on Review of Developments in the Field of Science and Technology Related to the Convention (MX2). The joint impact of several factors such as technological convergence, growing interest in citizen science, and the increased availability and accessibility of scientific information has been identified as an area of particular concern to the BTWC.<sup>11</sup> Proposals for strengthening the review process of science and technology within the Convention include the establishment of a designated review body and the development of a model code of conduct for biological scientists.<sup>12</sup> To ensure effective management of the security implications of novel technologies, the UK has underscored the value of fostering sustained dialogue and engagement between scientific and security communities.<sup>13</sup> In 2019, the World Organisation for Animal Health (OIE) published standardised guidance on the development of a model governance

framework for biological security risk mitigation which stresses the importance of multi-stakeholder interaction and biological security awareness within the life sciences.<sup>14</sup> Its implementation requires the development of tailored practical approaches and tools.

### ***National Implementation of the BTWC (MX3)***

5. Article IV of the BTWC requires that States Parties “take any necessary measures”, in accordance with their national context and circumstances, to ensure the full and effective national implementation of all provisions of the Convention.<sup>15</sup> States Parties should also designate a National Contact Point responsible for coordinating national implementation activities and international exchange and cooperation within the BTWC. To promote transparency and reduce doubts and ambiguities under the Convention, States Parties have agreed on the exchange of Confidence Building Measures (CBMs).<sup>16</sup> The CBMs are submitted annually and cover six thematic areas, including current biodefence activities, disease outbreaks, key life sciences publications, national biosecurity legislation and other measures, past offensive activities, and vaccine production facilities. In the current Intersessional Process 2017-2021, approaches and measures for promoting national implementation and transparency are considered by the annual Meetings of Experts on Strengthening National Implementation (MX3). Health security, relevant export and import controls, and management of the security implications of life sciences advances are core elements of the effective national implementation of the BTWC. Integrated national approaches for strengthening biological security provide an essential framework for the development, implementation, and refinement of policies, measures, and actions designed to enhance prevention, detection, preparedness, and response capacities.<sup>17</sup> Fostering biological security and awareness among life science stakeholders is vital to promoting common understanding and cross-sectorial cooperation.<sup>18</sup> It is important that the CBMs are regularly updated to keep pace with ongoing developments. Together with several other States Parties, the UK has drawn attention to the need for declaring vaccine production facilities in a State Party’s territory irrespective of whether such facilities are licensed by their Government or by that of another State.<sup>19</sup> Voluntary peer-review exercises that complement the BTWC CBMs process can facilitate national implementation through experience sharing.<sup>20</sup>

### ***Assistance, Response and Preparedness under the BTWC (MX4)***

6. Disease outbreaks can have significant consequences and put a serious strain on States’ capacity to adequately respond to biological threats, as evidenced by the ongoing COVID-19 pandemic. Article VII of the BTWC provides a mechanism for States Parties to request and receive assistance in case they have been exposed to a biological weapon use.<sup>21</sup> The effective operationalisation of this Article constitutes an essential element of the process of countering biological threats regardless of their origins and ensuring the integrity of the international norm against the misuse of life sciences. In the current Intersessional Process 2017-2021, approaches and concepts for strengthening Article VII are considered by the annual Meetings of Experts on Assistance, Response and Preparedness (MX4). States Parties acknowledge that the absence of a designated international lead authority on issues related to deliberate biological releases raises multiple practical, legal and other complex logistical and operational challenges to the

implementation of Article VII.<sup>22</sup> Proposals to address these include the development of standardised procedures for requesting assistance, the setting up of an emergency response and assistance roster (e.g., as part of the existing BTWC Cooperation and Assistance Database), and the establishment of nationally-operated rapid response biomedical teams that could be delegated to a BTWC-maintained roster and deployed in the event of a public health emergency.<sup>23</sup> Underscoring the need for an international coordinating body, the UK has recommended the development of a generic international plan that outlines a structure for coordinated response by Member States, the UN and the wider UN system (e.g. WHO, OIE, UN FAO, INTERPOL).<sup>24</sup> In developing the envisaged structure and setting clear requirements for coordination, expertise, and decision-making, the experience of previous international health emergency response operations could be leveraged, taking into account national and international existing capabilities.

### ***Institutional Strengthening of the Convention (MX5)***

7. Since the failure of the Protocol negotiations in 2001-2002, division has persisted between States Parties on the contested subject of the institutional strengthening of the Convention with discussion<sup>25</sup> focusing on the ‘benefits and challenges’ of two types of approaches, namely a comprehensive approach and one relying on incremental steps based on the adoption of individual measures. Thus, the issue of verification continues to lack consensus amongst States Parties. A December 2020 online meeting on institutional strengthening (MX 5) reflected previous discussions on this topic and noted the highly dynamic environment in which the Convention exists, and the range of stakeholders involved. Proposals have included the creation of a multilateral coordination body based upon the BTWC, enhancing the role and capacity of the BWC Implementation Support Unit, and strengthening the Intersessional Programme of Work after the Ninth Review Conference.<sup>26</sup> A range of possible mechanisms for strengthening different aspects of the BTWC are also considered within the other Meetings of Experts. These include the establishment of a standing body for the review of science and technology, the development of a BTWC code of conduct for life scientists, and the provision of practical mechanisms for experience sharing, such as the creation of searchable databases and a platform for peer-review exercises and experience exchange.

### **3 The Chemical Weapons Convention (CWC)**

8. The Chemical Weapons Convention (CWC), which entered into force in 1997, currently has 193 States Parties committed to fully abiding by its obligations. The Convention, under Article 1, allows for the controlled peaceful use of toxic chemicals and prohibits the development, production, stockpiling, transfer and use of chemical weapons “under any circumstances.” States Parties are also prohibited from engaging in any “military preparations to use chemical weapons” or to “assist, encourage or induce, in any way, anyone to engage in any activity prohibited...under this Convention”. In addition, Article 1 also requires that all existing stocks of chemical weapons and relevant production facilities be destroyed.<sup>27</sup> The primary focus of the Organisation for the Prohibition of Chemical Weapons (OPCW), the CWC’s implementing body, has been the identification and destruction of all existing chemical weapons arsenals and production facilities around the world.<sup>28</sup> With the anticipated elimination of all declared

chemical weapons stockpiles in the near future, the OPCW has been giving increasing attention and resources to a broader array of activities aimed at preventing the re-emergence of chemical weapons. The Conference of the States Parties (CSP) is the principal decision-making organ of the OPCW and oversees the implementation of the Convention. It meets annually and holds a Review Conference every five years to comprehensively examine the operations of the Convention and determine the strategic direction of the work of the OPCW. Unfortunately, for certain issues – notably, establishing a mechanism to identify the perpetrators of chemical weapons attacks in Syria and elsewhere - States Parties at the Fourth CWC Review Conference in 2018 and in subsequent CSP meetings were unable to reach consensus and so employed OPCW voting decision making processes. Despite the significant difficulties, it is vital that all States Parties work constructively to address the multi-faceted issues discussed below, at the current CSP and thereafter. Due to the COVID-19 pandemic, in 2020 the CSP held a two-day instead of a regular five-day session and is expected to resume its work in Spring 2021.

### *Syria*

9. In 2013, a limited multilateral consensus was reached on the Syrian chemical weapon issue. This resulted in the accession of Syria to the CWC and the destruction of most of its chemical weapons capability. Subsequently, two key issues have emerged. First, there are accusations that Syria has retained an aspect of its chemical weapon capability – and this comes in the context of gaps, inconsistencies and discrepancies in Syria’s declarations to the OPCW.<sup>29</sup> The second issue concerns the continued systematic use of chemical weapons by the Syrian government – including the use of chemical warfare agents as well industrial toxic chemicals such as chlorine. These attacks are well-documented by the OPCW Fact-finding Mission in Syria, which has confirmed several chlorine attacks which took place between 2014 - 2018, the presence of nerve agent at an undeclared government facility, as well as the use of nerve agent in Khan Skaykhun (2017).<sup>30</sup> Further investigations by the OPCW-UN Joint Investigation Mechanism and the OPCW Investigation and Identification Team have attributed responsibility for specific attacks - identifying the air bases<sup>31</sup> and specific units involved therein.<sup>32</sup> There have been a number of unilateral and multilateral actions against Syria including sanctions and air-strikes against CW-linked facilities. Russia and Syria continue to deny that Syria has ever used chemical weapons or retains a capability. The UK has made it clear that it will continue to place pressure on Syria through the UN Security Council and OPCW<sup>33</sup> - similar statements and actions have been undertaken by a large number of States in this regard. There is a need for sustained plurilateral State support for a wide range of investigatory, archival and criminal mechanisms to ensure those responsible for the Syrian chemical attacks and other violations of the chemical weapons prohibition regime are identified and held accountable.

### *Novichoks*

10. The use of Novichok chemical agents in the poisoning in the UK of Sergei and Yulia Skripal (2018) and in Russia of Alexei Navalny (2020) has led to allegations that Russia maintains a chemical weapon programme. These incidents have motivated actions against Russia as well as attempts to strengthen the global chemical weapon prohibition regime. During the Cold War the Soviet Union developed a new family of chemical weapon agents referred to in the west as



‘Novichoks’ (Russian for ‘newcomer’). With the coming into force of the CWC in 1997, the development, production, transfer, stockpiling and use of chemical weapons, was comprehensively prohibited by the CWC. However, while these Novichoks were clearly covered by the scope of the prohibition they were not listed in the Schedules of restricted chemicals which possessor States should declare.<sup>34</sup> This omission reflected a desire to prevent this issue becoming a sticking point during the negotiation of the emerging Convention - this ambiguity would remain a politically sensitive albeit marginal issue.<sup>35</sup> The Novichok poisoning of the Skripals in Salisbury reasserted the need to address this ambiguity. And in June 2020, following a protracted negotiation the CWC schedules were amended to include Novichoks.<sup>36</sup> Later that year, the OPCW Technical Secretariat confirmed that a Novichok agent had also been used in the poisoning of Alexei Navalny.<sup>37</sup> This has led to a joint statement by 56 CWC States Parties re-asserting their confidence in OPCW findings, the seriousness of this incident, and reiterating the need for Russian cooperation and transparency.<sup>38</sup> In addition, the UK asserted that there was “no plausible explanation for Mr Navalny’s poisoning other than Russian involvement and responsibility” and called on Russia to fully declare its Novichok programme to the OPCW.<sup>39</sup> A view echoed by several other States - and reflected in recent EU sanctions against Russian individuals implicated in the attack.<sup>40</sup> These incidents have reiterated the importance of intelligence sharing, international investigative and criminal procedures as well as OPCW routine declaration and verification processes.<sup>41</sup>

### *Central Nervous System-Acting Chemicals*

11. The development and use of weapons employing central nervous system (CNS)-acting chemicals for armed conflict is prohibited under the CWC.<sup>42</sup> However certain States have explored development, purportedly for law enforcement purposes, of weapons employing such chemicals, for use against individuals and, in aerosolised form, against groups. In October 2002, Russia used CNS-acting chemicals against armed Chechen separatists holding 900 hostages in a Moscow theatre. Although the bulk of the hostages were freed, more than 120 were killed by the still undisclosed chemical agents.<sup>43</sup> State interest in these weapons has continued despite the grave dangers to health, and risks of their use in human rights violations and armed conflict.<sup>44</sup> And there is growing disquiet that rapid advances in relevant chemical and life sciences will be harnessed to their development. The Royal Society has warned of “active interest in performance degradation applications of neuroscience for both military and law enforcement purposes” and highlighted “indications of interest among a number of States in the development and use of incapacitating chemical agents.”<sup>45</sup> A 2014 survey by Bradford University documented research potentially applicable to the study or development of these weapons, notably Russian computer modelling of “calmative” employment against groups of individuals in enclosed spaces and exploration of potential CNS-acting chemical agent interaction with human receptor sites; as well as Chinese manufacture and promotion of CNS-acting weapons targeting individuals, and their possession by Chinese security forces.<sup>46</sup> In 2019 and 2020, during meetings of the UN Conference on Disarmament and the OPCW, the US raised concerns that both Iran and Russia were conducting research into CNS-acting agents that was inconsistent with the CWC and was “for offensive purposes”.<sup>47</sup> Recently there have been concerted attempts by a group of CWC States, led by Australia, Switzerland and the US, to

clarify that “under the CWC the aerosolized use of CNS-acting chemicals is inconsistent with law enforcement purposes”;<sup>48</sup> all such attempts have been opposed by Russia.

### ***Riot Control Agents (RCAs)***

12. Riot control agents (RCAs) - tear gases and pepper sprays - are defined by the CWC as “any chemical not listed” in one of three Schedules of restricted chemicals that can produce “rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure.”<sup>49</sup> Their use as a “method of warfare” is prohibited under the CWC.<sup>50</sup> The Convention, however, permits the use of such chemicals for “law enforcement including domestic riot control purposes,”<sup>51</sup> provided they are used in “types and quantities” consistent with such purposes.<sup>52</sup> RCAs are employed around the world for law enforcement purposes, notably for controlling or dispersing crowds as well as for facilitating arrest and restraint of individuals. However, they have been frequently misused for serious human rights violations, most commonly in non-custodial settings to restrict, intimidate, or punish those participating in public protest the world over; and also in the prisons, detention centres or police stations of certain countries to ill-treat individuals.<sup>53</sup> A recurring medical concern has been their use in excessive quantities in the open air or in confined spaces, including hospitals, prisons, homes, and even automobiles, where the targeted individuals cannot disperse. In such situations, serious injury or death can result from the toxic properties of the chemical agents or from asphyxiation. This is particularly true for the old, young, or sick.<sup>54</sup> These longstanding concerns have been exacerbated during the COVID-19 pandemic. Medical professionals have highlighted the danger that RCAs could raise COVID-19 risk to individuals by increasing respiratory tract susceptibility to infection.<sup>55</sup> Furthermore, RCA-induced sneezing, coughing and increased mask removal exacerbate the threat of contagion, as does the breakdown of social distancing caused by RCA-induced disorientation and crowd panic. Such effects, clearly relevant to the policing of public assemblies, are exacerbated further if RCAs are used in confined spaces, notably prisons and other places of detention.<sup>56</sup>

### ***RCA Means of Delivery***

13. The current situation could dramatically worsen as a result of contemporary development, marketing, and subsequent deployment of systems capable of delivering significant amounts of RCA over wide areas or extended distances. In addition to potential misuse for collective ill-treatment or punishment of crowds, such ‘wide-area’ RCA delivery mechanisms could be employed as ‘force multipliers’ in conjunction with firearms, making lethal force more deadly on a large scale. Although nominally developed for law enforcement, they may also be incorporated into military arsenals, and subsequently used in armed conflict in contravention of the CWC. In 2018, the OPCW Scientific Advisory Board warned that availability of certain systems “opens up the possibility that they could be filled intentionally with alternate types of chemicals including CWAs [chemical warfare agents] or CNS [central nervous system]-acting compounds.”<sup>57</sup> These concerns are exacerbated by current weak trade controls that could result in acquisition and misuse by nonstate actors, including terrorist organizations. Bradford University and the Omega Research Foundation have documented development and promotion of ‘wide area’ RCA delivery mechanisms, including indoor dispersion devices, external area

denial devices, multiple projectile launchers, large calibre projectiles, and delivery mechanisms mounted on remote weapons systems, unmanned ground vehicles, and drones.<sup>58</sup> To date, widespread employment has not been documented. But we may now be at a tipping point – where proliferation, use and misuse may be beginning – as witnessed by the Israeli security force use of commercially available drones against mass Palestinian protests along the Israeli-Gaza strip border in April and May 2018. These drones were documented flying above the crowds dropping tear gas projectiles onto people below, in some cases against peaceful protestors, bystanders, journalists and field medical facilities.<sup>59</sup>

#### **4 Conclusions and Recommendations**

14. It is evident that the international chemical and biological disarmament and non-proliferation regimes need to be strengthened, so that they function as a wide-ranging integrated system of governance measures. There could be an opportunity to make progress in strengthening the regimes if sufficient political attention can be maintained on the issue in the run up to the Ninth Review Conference of the BTWC in 2021 and the Fifth Review Conference of the CWC in 2023. Specifically, in regard to the BTWC, it is essential that States Parties promote the full and effective implementation of the Convention by enhancing its institutional capacity, developing compliance mechanisms, and establishing a systematic process for assessing the security risks and benefits of life science advances. With regard to the CWC, every effort should continue to be made to ensure the stability, unity and effective functioning of the OPCW, and consequently to achieve solutions reached by consensus, wherever possible. However, where consensus is not possible, the UK, in conjunction with like-minded States, must continue to employ the OPCW's decision making mechanisms to ensure progress is made in directly addressing all instances of development and use of chemical weapons, wherever and in whatever form they take. Failure to do so risks weakening international confidence in the OPCW and undermining the absolute global prohibition on chemical weapons of all kinds. In regard to the particular issues that have been discussed in this report, it is recommended that the following proposals are considered by the UK and other States Parties to the BTWC and CWC.

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- Consider possible approaches and measures for the institutional strengthening of the Convention. It is essential that an Intersessional Programme of Work is agreed at the Ninth Review Conference in 2021 and that the mandate and resources of the Implementation Support Unit are expanded.

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