

# **IBSEN Eighth Quarterly Newsletter**

*January 2026*





|                                                                                                                                                                                           |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Executive summary .....</b>                                                                                                                                                            | <b>1</b>  |
| <b>1. Note from Professor Lijun Shang, Director of the Biological Security Research Centre at the London Metropolitan University .....</b>                                                | <b>4</b>  |
| <b>2. Special topic: Efforts to establish a formal International Biological Security Education Network and ways forward for biological security education and awareness-raising .....</b> | <b>6</b>  |
| 2.1 Introduction .....                                                                                                                                                                    | 6         |
| 2.2 Discussions of an IBSEN under the Biological and Toxin Weapons Framework .....                                                                                                        | 6         |
| 2.3 Biosecurity Education in 2025: consolidation, innovation and institutional support .....                                                                                              | 15        |
| 2.4 Core elements of a robust biosecurity education programme .....                                                                                                                       | 18        |
| 2.4.1 <i>Glossary</i> .....                                                                                                                                                               | 22        |
| 2.5 Conclusion .....                                                                                                                                                                      | 23        |
| <b>3. News in Global Biosecurity Education .....</b>                                                                                                                                      | <b>24</b> |
| 3.1 News from the LMU BSRC .....                                                                                                                                                          | 24        |
| 3.1.1 Report from the Implementing Effective Biosecurity Education Workshop .....                                                                                                         | 24        |
| 3.2 Other news .....                                                                                                                                                                      | 31        |
| <b>4. Further reading .....</b>                                                                                                                                                           | <b>33</b> |
| <b>Annex 1: 2025 BTWC Texts comparison for biosecurity education, networks, awareness-raising and codes of conduct .....</b>                                                              | <b>34</b> |
| <b>Annex 2: Glossary of Common Biosecurity Education Terms .....</b>                                                                                                                      | <b>38</b> |



## Executive summary

Biosecurity education has evolved over several decades from a marginal concern associated primarily with laboratory safety and biodefence into a cross-cutting priority for life sciences governance, public health preparedness, and international security. By 2025, the convergence of global health crises, technological acceleration in biotechnology and synthetic biology, and renewed multilateral engagement under the Biological and Toxin Weapons Convention (BTWC) created conditions for a notable expansion in both the scale and sophistication of biosecurity education initiatives.

The Special Topic in this edition situates 2025 within the longer trajectory of biosecurity education with particular attention paid to the 2025 BTWC intersessional process covering discussions at the Sixth and Seventh Sessions of the Working Group and the future implications for renewed support for biosecurity education, awareness-raising and implementing the Tianjin Biosecurity Guideline for Codes of Conduct for Scientists. This edition also looks at necessary core elements of biological security education programmes and provides useful guidance on persisting critical gaps in biosecurity education as well as areas for future work, including the first draft glossary of basic biosecurity education terminology for English speakers.

This edition also reports on the successful activities of LMU's Biological Security Research Centre and the pilot International Biological Security Education Network (IBSEN) as well as our School's Project and activities at the Chemical Weapons Convention Conference of the States Parties in the Hague, the Netherlands in November as well as the LMU BSRC side event held in the margins of the Seventh Session of the Working Group on the Strengthening of the Biological Weapons Convention in Geneva, Switzerland in December. Also featured is a report on our biosecurity education workshop held in London in November.

In the section *News in Global Biosecurity Education*, we share updates on global biosecurity education activities and highlight the recent publication of the Portuguese edition of the *Essentials of Biological Security: A Global Perspective*.

The LMU BSRC encourages anyone interested in biosecurity education to contact the IBSEN team and discuss potential collaborations



## 1. Note from Professor Lijun Shang, Director of the Biological Security Research Centre at the London Metropolitan University

For some years we have been concerned with the problem of the widespread low level of awareness and education of life scientists about biosecurity and the possibility of malign (dual use) of their benignly intended work. This deficiency has been well known for over a decade and was again amply demonstrated in the World Health Organisation's 2022 publication on *Global guidance framework for the responsible use of the life sciences: mitigating biorisks and governing dual-use research*. In fact, civil society projects aimed at developing means of biosecurity education have been carried out since the issue of codes of conduct and biosecurity awareness and education was first considered in meetings of the BTWC in 2005, and a survey of numerous recent projects concluded that they had demonstrated a variety of useful approaches. However, the survey also led to the conclusion that there were many problems, particularly the lack of integration of the diverse projects carried out by different groups in various places over different times.

In this newsletter, we have a dedicated piece to summarise the development of biosecurity education with particular emphasis on exciting progress in recent discussion of the BTWC Working Group meetings in Geneva. This progress is reflected by our pilot study of building up an International Biosecurity Education Network (IBSEN) over the last 24 months. Our aim was to discover whether a small team based in London and advised by an international board could describe and discuss current security education programmes and projects in a way that would be found useful by numerous interested parties around the world. We did this by producing a series of Newsletters each of which had a main topic addressing a particular project and accompanied with information about current events relevant to the development of biosecurity awareness raising and education.

Obviously, it would be possible to extend this pilot study, for example by producing a series of country and regional studies of where biosecurity education has been taken forward and by producing the Newsletters in all six UN official languages (see, for example, the French and Spanish versions of the first two Newsletters). It would also be possible to supplement the basic biosecurity education book produced in 2024 with a second book focused on the problems of teaching biosecurity in relation to emerging technologies such as Artificial Intelligence and Mirror Life, or by carrying out projects such as producing a glossary of biosecurity education core terms in multiple languages and taking a serious international look at how the impact of biosecurity education can be evaluated more effectively.

However, we think that our work on the pilot IBSEN project provides sufficient evidence to demonstrate that we were able to produce material on a good proportion of the main ongoing efforts in biosecurity education and to draw useful lessons for future biosecurity programmes. The rapid growth of our contacts list for people receiving the Newsletter in digital form globally to over 1000 including academics, policy makers and professionals, and the interest shown in the project at meetings of the CWC and BTWC States Parties shows this pilot project was widely seen as useful and influential: for example, our first book on biosecurity education has been translated in Chinese and Portuguese, with ongoing translations in Spanish and French. Therefore, we believe that this pilot project indicates that such an international network concerned with the worldwide development of biosecurity education in support of the BTWC would be a realistic outcome of current efforts to strengthen the Convention. It is surely the



time for States Parties to act and involve the BTWC in biosecurity education by giving the Implementation Support Unit (ISU) a mandate to support an international security education network that would enable the life science community to better face the growing challenges brought about by rapid advance of science and technology.

You will see continuous civil society efforts to promote and implement biosecurity education in this newsletter. As always, please feel free to contact if you have any thoughts for collaboration.



## **2. Special topic: Efforts to establish a formal International Biological Security Education Network and ways forward for biological security education and awareness-raising**

### **2.1 Introduction**

The year 2025 represents a significant point of consolidation and expansion for biosecurity education globally with biosecurity education increasingly recognised as a foundational element of global health security and biological risk governance. It also marked the first time that the concept of an International Biological Security Education Network was formally recognised and supported at international level within the framework of the negotiations of the Biological and Toxin Weapons Convention (BTWC) as it approaches its Tenth Review Conference in 2027.

This article examines developments in biosecurity education during 2025, with a particular focus on describing the outcome of discussions at the Seventh Session of the Working Group on the Strengthening of the Biological Weapons Convention in Geneva (WG7), Switzerland in December 2025.

In light of these discussions, the article further explores possible paths forward and provides suggestions for how persisting critical gaps in global biosecurity education can be addressed.

### **2.2 Discussions of an IBSEN under the Biological and Toxin Weapons Convention**

Biosecurity education has evolved over several decades from a marginal concern associated primarily with laboratory safety and biodefence into a cross-cutting priority for life sciences governance, public health preparedness, and international security. By 2025, the convergence of global health crises, technological acceleration in biotechnology and synthetic biology, and renewed multilateral engagement under the BTWC created conditions for a notable expansion in both the scale and sophistication of biosecurity education initiatives.

#### ***2.2.1 Background***

At its Ninth Review Conference in 2022, held in the aftermath of the Conference's failure to agree a final report and take proactive decisions, the BTWC established a Working Group on the Strengthening of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (hereafter, the "Working Group" or WG). The WG was mandated to "identify, examine and develop specific and effective measures, including possible legally binding measures, and to make recommendations to strengthen and institutionalise the Convention in all its aspects," for submission to States Parties for consideration and possible further action. To fulfil this mandate, the Working Group was tasked with examining potential measures across seven thematic areas:

- (a) international cooperation and assistance under Article X;
- (b) scientific and technological developments relevant to the Convention;
- (c) confidence-building and transparency;
- (d) compliance and verification;
- (e) national implementation;
- (f) assistance, response, and preparedness under Article VII; and,
- (g) organisational, institutional, and financial arrangements.

In addition to these thematic areas, the WG was instructed to develop “appropriate recommendations” concerning two proposed institutional mechanisms: first, a mechanism open to all States Parties to facilitate and support the full implementation of international cooperation and assistance under Article X; and second, a mechanism to review and assess scientific and technological developments relevant to the Convention and to provide States Parties with relevant advice. The Ninth Review Conference explicitly encouraged the Working Group to complete its work by the end of 2025, where possible—a timeline that coincided with both the centenary of the 1925 Geneva Protocol and the fiftieth anniversary of the entry into force of the BTWC. This fortuitous convergence of anniversaries was widely viewed within the biosecurity and disarmament community as an opportunity to focus political and diplomatic attention on the Working Group’s activities and to catalyse substantive progress in strengthening the Convention.

## 2.2.2 Introduction of the concept of an IBSEN to the BTWC Working Group

In pursuit of these objectives, the Chairperson of the Working Group—acting in consultation with the Vice-Chairs (H.E. Ambassador Camille Petit of France and Mr. Irakli Jgenti of Georgia), drawing on inputs from the Friends of the Chair, and with the assistance of the BWC Implementation Support Unit (ISU)—developed a Non-paper on “Possible elements of specific and effective measures, including possible legally-binding measures, to strengthen and institutionalize the Biological Weapons Convention in all its aspects” on 6 May 2025 that provided a “rolling text” of potential recommendations to be submitted to States Parties at the Tenth Review Conference or a Special Conference for consideration and action. The rolling text was structured around the seven thematic areas and identified almost 80 potential areas for action by States drawn from proposals submitted by States Parties to the WG during its the 2023 and 2024 sessions.

It was within this evolving process that the concept of an International Biosecurity Education Network (IBSEN), first conceived by the Biological Security Research Centre (BSRC) at London Metropolitan University (LMU) in 2022, began to intersect with multilateral deliberations. Initially developed in response to enduring gaps in biosecurity and dual-use education unaddressed at the Ninth Review Conference outcome, civil society took up the urgent challenge of creating a flexible, collaborative and cost effective framework under which biosecurity education resources could be developed, adapted and shared, and to continue to raise awareness for the need for sustainable biosecurity education.<sup>1</sup> The IBSEN concept was progressively translated between 2022 and 2025 into a successful pilot project through a

---

<sup>1</sup> See LMU BSRC, *IBSEN Quarterly Newsletter 5*, July 2025, p. 6. Available at: <https://ibsen.org.uk/newsletters/>.

series of educational initiatives, workshops, and collaborative activities. In early 2025, this work gained broader visibility beyond academic and civil society circles, as IBSEN was incorporated into the rolling text as part of a package of potential recommendations for consideration by States Parties ahead of the Tenth Review Conference in 2027.

The rolling text included an explicit recommendation to establish an International Biosecurity Education Network under the oversight of the ISU and situated within the framework of international cooperation and assistance under Article X:

*“The ISU, with guidance from the [ICA Advisory Group], will cooperate with relevant stakeholders to establish an International Biosecurity Education Network to serve as a forum to further promote the harmonization of curricula and evaluation of biosecurity education.”<sup>2</sup>*

On 28th July 2025, the Chair subsequently published a second version of the non-paper in which the IBSEN featured even more prominently, further expanding upon the concept and specifying possible activities including online biosecurity courses and student and faculty exchanges:

*“The Working Group recommends that the Implementation Support Unit cooperates with relevant stakeholders to establish an International Biosecurity Education Network. This Education Network would serve as a forum to further promote the harmonization of curricula and the evaluation of biosecurity education. It would develop freely accessible teaching materials such as MOOC-style online courses and support biosecurity education at the national level which is informed by best practices. Furthermore, the Education Network would serve as a platform for student and faculty exchanges with the aim of fostering and facilitating international scientific exchange and collaboration for peaceful purposes.”<sup>3</sup>*

### 2.2.3 Discussions at the Sixth Session of the BWC Working Group

This recommendation was formally discussed by States Parties during the Sixth Session of the BWC Working Group (WG6) in August 2025, marking the first sustained multilateral consideration of an IBSEN within the Convention’s intersessional process and signalling growing recognition of biosecurity education as a foundational element of effective and future-oriented implementation of the BTWC.

Discussions demonstrated broad and generally positive support for the concept of an international biosecurity education platform, with the strongest support among Non-Aligned Movement (NAM) States, many of which emphasised education as a critical enabler of capacity building and equitable access. Several delegations highlighted the importance of

---

<sup>2</sup> See “Draft specific and effective measures, including possible legally-binding measures, to strengthen and institutionalize the Biological Weapons Convention in all its aspects: Rolling Text by the Chairperson of the Working Group on the Strengthening of the Convention”, 28 July 2025, Section A, para9, attached to correspondence from Amb. Frederico S. Duque Estrada Meyer to States Parties of the BTWC, 28 July 2025.

<sup>3</sup> BWC/WG/6/CRP.1 - Draft specific and effective measures, including possible legally-binding measures, to strengthen and institutionalize the Biological Weapons Convention in all its aspects (available at: <https://meetings.unoda.org/meeting/75240/documents>).

open, freely accessible, online educational materials, noting their relevance for less-resourced countries. Others linked IBSEN to youth engagement, fellowships, and scientific exchange as mechanisms to advance long-term implementation of the Convention.

In contrast, European Union States adopted a more cautious stance, citing the need to avoid duplication with existing initiatives and to better coordinate with previously proposed platforms. This caution appeared linked to limited awareness of the IBSEN pilot and concerns regarding financial and institutional implications rather than opposition to biosecurity education per se.

A small number of States raised additional considerations, including stakeholder composition, geographic representation, sustainability, and the resource implications for the ISU. Some delegations expressed reservations regarding civil society involvement, consistent with positions previously articulated in BWC fora.

Overall, no State Party disputed the value of biosecurity education or the need for international coordination, although the Russian Federation rejected the proposal at this stage, preferring to defer consideration until the BTWC Tenth Review Conference scheduled for 2027. Overall, the debate was characterised by constructive engagement, with most concerns focused on design, scope, and resourcing rather than principle. Collectively, the discussions suggest that the IBSEN proposal achieved early normative acceptance, providing a substantive foundation for further refinement and negotiation in subsequent BTWC processes.

#### **2.2.4 Discussions at the Seventh Session of the BWC Working Group**

In early September, as follow up to the WG6 meeting, BSRC staff Professor Lijun Shang and Professor Malcolm Dando published correspondence in the journal *Nature*, calling upon States Parties to the BTWC to take action to establish an IBSEN through a decision at the upcoming Tenth Review Conference of the Biological and Toxins Weapons Convention in 2027.<sup>4</sup>

However, despite overwhelming support for biosecurity education and to a significant extent a dedicated platform for efforts to be coordinated or supported under a network, the latest version of the draft recommendations circulated prior to the Seventh Session of the Working Group dated 1 December 2025 did not contain any reference to an international biosecurity education network. Instead, biosecurity education in any form was rolled into ANNEX B of the document as part of a recommendation for States Parties to promote and undertake awareness-raising efforts and bioethics education in all its forms:

---

<sup>4</sup> L. Shang and M. Dando, Life scientists: educate others to help strengthen biosecurity Correspondence, *Nature*, 9 September 2025, <https://www.nature.com/articles/d41586-025-02893-0>.

*“6. States Parties are encouraged to promote, develop or update awareness-raising tools (inter alia codes of conduct and bioethics education) that further the objectives of the Convention.”<sup>5</sup>*

This omission, and possible replacement paragraphs, were robustly discussed on the first day of the WG7 meeting in which it became clear that despite near universal agreement that biosecurity education was important, how this should be reflected in the recommendations was subject to divergent opinions: whether through reinstating the original paragraph, or replacing it with softer language encouraging cooperation without the creation of any new institutional architecture, funding commitments, or duplication of existing initiatives.

Peru reopened the issue by requesting that these ideas be reintroduced:

*“... two elements which were withdrawn compared to the previous version. First concerns the international network promoting education and capacity building in biological security ... we think it would be important to reintroduce them.”<sup>6</sup>*

Agreeing with Peru, China proposed compromise language (becoming a new paragraph) that avoided mentioning a network, but encouraged States Parties to promote biosecurity education and laboratory collaboration through bilateral, regional and international activities, including fellowships and training:

*“States Parties are encouraged to promote biological security education and laboratory collaboration to facilitate to foster and facilitate international scientific exchange and exchange and collaboration for peaceful purposes in accordance with Article X through various activities at bilateral, regional and international levels, inter alia, capacity building fellowship programs, laboratory training programs, training and experts, advice and etc.”*

The Chinese proposal quickly became the focal point of debate with a large number of delegations supporting the intent of the proposal and welcoming its reintroduction as recognition of education, laboratory collaboration, and exchanges under Article X. However, many of these same delegations also introduced important caveats: concerns about duplication of efforts, the need to avoid creating new institutional structures, and caution over anything that looked like a formal platform, network, or funding mechanism under the BTWC.

France went further by proposing an additional paragraph (7bis) suggesting a “dedicated platform” where stakeholders could access laws, standards, best practices and massive open online courses (MOOCs). This sharpened the political line in the room: while some supported this as high added value, others saw it as edging too close to institutionalisation:

---

<sup>5</sup> BWC/WG/7/CRP.1, Draft final report of the Working Group on the Strengthening of the Convention (Annex 1, Section B. Recommended measures on scientific and technological developments relevant to the Convention, para 6), 1 December 2025, (Available at: <https://meetings.unoda.org/meeting/75242/documents>).

<sup>6</sup> Statement of Peru to the Seventh Working Group, 8 December 2025. All WG7 discussions can be accessed at: <https://conf.unog.ch/digitalrecordings/en/clients/61.0619/sessions/278178A8-629D-4EE8-8120-02D3DB444542>.

*“A dedicated platform for biosafety and biosecurity shall be established to allow stakeholders to find relevant laws, regulations, norms and standards, codes of conduct, exchange of information, and identify best practices, access MOOC-style online courses on biosafety and biosecurity.”*

Throughout the discussion, the United States and Russia were particularly clear that they did not want the paragraph to imply the creation of any formal platform, network, or mechanism under the Convention. Both emphasised that educational exchanges already exist through other frameworks (e.g., One Health, WHO, FAO, bilateral cooperation) and that the BTWC should not duplicate these. Other States Parties such as Mexico, Algeria, Canada and others echoed this duplication concern, proposing language to explicitly state that such efforts should be complementary and not duplicative of existing initiatives.

As a result, what emerged was broad support for biosecurity education and collaboration in principle, combined with clear resistance to institutionalising it through a named network or platform.

*Table 1. States positioning on an IBSEN or a biosecurity education platform at WG7*

| Pro            | Regional Group | Strongly against a formal platform | Regional Group | Against | Regional Group |
|----------------|----------------|------------------------------------|----------------|---------|----------------|
| Algeria        | NAM            | USA                                | WG             | Russia  | Group of 1     |
| Belgium        | WG             |                                    | NAM            |         |                |
| Canada         | WG             |                                    | NAM            |         |                |
| France         | WG             |                                    | NAM            |         |                |
| Germany        | WG             |                                    | NAM            |         |                |
| Indonesia      | NAM            |                                    | WG             |         |                |
| Iran           | NAM            |                                    | WG             |         |                |
| Italy          | WG             |                                    | NAM            |         |                |
| Japan          | WG             |                                    | WG             |         |                |
| Korea          | WG             |                                    | NAM            |         |                |
| Mexico         | NAM            |                                    | NAM            |         |                |
| Nicaragua      | NAM            |                                    | WG             |         |                |
| Pakistan       | NAM            |                                    | WG             |         |                |
| Panama         | NAM            |                                    | WG             |         |                |
| Peru           | NAM            | USA                                | WG             |         |                |
| South Africa   | NAM            |                                    | WG             |         |                |
| Spain          | WG             |                                    | NAM            |         |                |
| Thailand       | WG             |                                    | WG             |         |                |
| United Kingdom | WG             |                                    | NAM            |         |                |

Overall, discussions displayed a general consensus on the importance of biosecurity education, but an equally strong consensus that this should be reflected through

encouragement of cooperation and taken on bilateral or regional terms, rather than the creation of a formal network, platform, or mechanism under the BTWC as originally proposed. In effect, States Parties endorsed the function of an IBSEN-type concept while resisting its institutional form. This shift is evident from the paragraph-by-paragraph comparison contained in **Annex 1** of this Newsletter.

Ultimately, the Seventh Session of the Working Group unfortunately came to a close on the last day without successfully adopting a final report and with negotiations completed on only 21 pages of the Chair's 29-page draft report from 1 December. Further, the Meeting of States Parties was not able to adopt its programme of work, as no consensus was reached.<sup>7,8</sup> Negotiations are set to continue at next WG meeting (Eighth) meetings agreed for mid-February 2026. It remains to be seen if States Parties can agree on a final report at the 2026 MSP that includes a concrete set of recommendations to be put to the Tenth Review Conference in 2027.

### 2.2.5 Summary of the 2025 BTWC discussions on biosecurity education

The 2025 cycle of the BWC Working Group WG and the Meeting of States Parties reflects a significant evolution in how States Parties understand the role of biosecurity education, awareness-raising and the responsible use of the life sciences within the Convention. While falling short of agreeing a recommendation to create an institutional educational capacity under the Implementation Support Unit at the MSP overall the discussions illustrate a gradual convergence around education as a core preventive pillar of the Convention that complements traditional concerns related to compliance, verification and national implementation.

The four main documents mentioned in the previous sections—the first draft rolling text circulated in May 2025, the WG6 Draft Recommendations, the WG7 draft Final Report and its amended draft Final Report—represent distinct stages of textual maturity and reflect growing recognition of the foundational importance of biosecurity education, codes of conduct and awareness-raising across multiple stakeholder groups (see **Annex 1**).

Analysis across the documents and WG negotiations reveal not simply editorial changes across drafts, but a clear evolution in how States Parties collectively reposition biosecurity education, youth engagement, and ethical responsibility within the architecture of the BTWC over the course of 2025. What began in the Rolling Text as relatively bold, innovation-oriented proposals gradually transformed, through negotiation and political caution, into language that embeds these ideas within existing implementation practice rather than creating new formal mechanisms. This progression illustrates how States Parties moved from conceptual experimentation toward normative consolidation.

#### IBSEN and a formal education network or platform

---

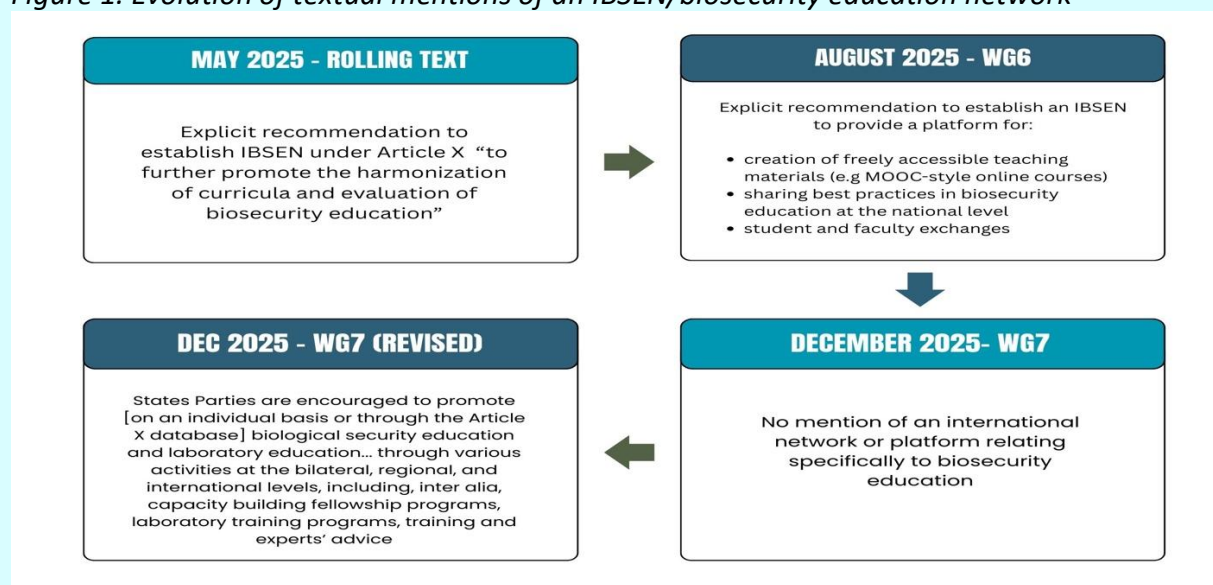
<sup>7</sup> Guthrie, R., Number 18 - Monday 15th December 2025 -- Closure of WG7, some reflections, and on to the Meeting of States Parties BWPP Daily Report No. 25-18,,

<sup>8</sup> Documents from the 2025 Meeting of States Parties are available at : <https://meetings.unoda.org/meeting/75244/documents>.

In the Rolling Text circulated for consideration in May 2025, the idea of an International Biosecurity Education Network (IBSEN) was presented as a concrete and institutionally anchored proposal. The ISU was explicitly tasked, under an Article X advisory structure, with establishing a network to harmonise curricula and evaluate biosecurity education. By WG6, the proposed recommendation becomes even more detailed and ambitious: the network is described as producing freely accessible teaching materials, supporting MOOCs, and enabling student and faculty exchanges. At this stage, the network is framed as a new implementation instrument for Article X, with tangible outputs and functions. As mentioned, this iteration received considerable support, in particular from non-aligned movement (NAM) countries, but was attractive to Western states with the caveats of avoiding of duplication efforts and minimising the financial burden on the BTWC.

However, by the WG7 drafts, explicit references to an IBSEN disappear. It is replaced by broader language encouraging States Parties to promote biosecurity education through bilateral, regional and international activities, and to avoid duplication with other institutional frameworks. A suggested text for a “dedicated platform” for biosafety and biosecurity is offered, but is not retained. In the amended text, the concept survives only indirectly through encouragement of educational cooperation and exchanges without any named structure (see Figure 1 below).

*Figure 1. Evolution of textual mentions of an IBSEN/biosecurity education network*



This trajectory shows that States Parties did not reject the idea of an education network; rather, they absorbed it into more politically acceptable language of cooperation, flexibility and voluntary engagement. The function of IBSEN is preserved, but its institutional form is softened. The evolution reflects sensitivity to concerns over mandate expansion, resource implications, and overlap with existing initiatives, while still legitimising the underlying educational aims.

As negotiations progressed, however, States Parties increasingly emphasised political caution and institutional restraint. While there was broad agreement on the value of education and training, many delegations expressed reluctance to endorse the formal creation of new

international structures or to explicitly name specific initiatives within negotiated outcomes. This reflects enduring concerns about mandate creep, resource implications, and the preservation of national discretion. The resulting compromise was a shared understanding that education networks should be encouraged and utilised in practice, while remaining informal, voluntary and adaptable to national contexts.

This dynamic is particularly evident in how States Parties approached international biosecurity education networks. Early Working Group texts explicitly contemplated such networks as innovative tools for implementation and cooperation (WG6). Over time, however, references were reframed and absorbed into broader language on cooperation, capacity-building, and ISU-supported activities (WG7). At this point, States Parties were no longer debating the legitimacy of education networks; instead, they implicitly accepted their utility by encouraging engagement with existing international and regional initiatives, without seeking to codify them as formal Convention mechanisms.

### Youth Fellowship Support

The youth dimension follows an even starker trajectory. In the May draft recommendations, explicit support is proposed for the UNODA Youth for Biosecurity Initiative through the ICA Fund, signalling recognition of youth engagement as part of Article X cooperation. This reference disappears entirely in later drafts.

This removal does not suggest opposition to youth engagement; but reinforces States Parties avoidance of duplication of efforts. Youth engagement remains politically attractive but is subsumed into broader education and capacity-building language without financial or programmatic specificity. The takeaway is that youth is accepted as a beneficiary of education efforts, but States Parties prefer not to formalise funding commitments or prejudice programmes within an institutionalised platform.

### Codes of Conduct and Awareness-Raising

The treatment of codes of conduct and the Tianjin Biosecurity Guidelines provides one of the clearest examples of progressive language refinement. The earliest text explicitly endorses the Tianjin Guidelines. By WG6, the language shifts to encouraging stakeholders to voluntarily incorporate elements of the Guidelines into practice. In the WG7 drafts, States Parties are encouraged to develop or update voluntary codes of conduct and bioethics education, drawing on the Tianjin Guidelines as a useful reference. By the MSP-stage language, even this reference is reduced to general encouragement to develop awareness-raising tools that could be used voluntarily.

Over time, the Tianjin Guidelines move from endorsed model to illustrative example to background reference. This reflects political caution about privileging any single framework, while steadily reinforcing the importance of ethics, education, and voluntary codes as part of responsible science. The underlying norm strengthens even as the explicit reference softens.

A parallel but distinct evolution occurs in Section E concerning national implementation. Initially, codes of conduct and biological risk management standards are presented alongside

legislation, export controls, and surveillance as elements of national regulatory frameworks. By later drafts, the focus shifts toward conducting awareness-raising and education activities with stakeholders and encouraging voluntary standards in facilities and institutions. As the text evolves, increasingly bracketed and negotiated language shows States Parties carefully calibrating verbs—“should be encouraged,” “are encouraged,” “may encourage”—and emphasising stakeholder participation and voluntary standards rather than regulatory requirements.

Taken together, these developments point to a broader shift in State Party thinking. Biosecurity education, awareness-raising, and ethical responsibility are increasingly treated as integral components of the Convention’s preventive architecture, rather than as ancillary or “soft” measures. At the same time, States Parties have deliberately embedded these priorities within existing structures and voluntary frameworks, preserving flexibility and avoiding the creation of new formal obligations. The outcome is a form of quiet consolidation: education and ethics are now widely accepted as essential to the BWC’s effectiveness, even as they remain governed by cooperation, encouragement, and shared norms rather than binding rules.

## **2.3 Biosecurity Education in 2025: consolidation, innovation and institutional support**

Despite the disappointment surrounding the removal of explicit reference to an IBSEN from BTWC discussions on recommendations for the Tenth Review Conference in 2027, the year 2025 represents a significant point of consolidation and expansion for biosecurity education globally. Considerable successes have been achieved by initiatives led by civil society and academia such as the International Biological Security Education Network (IBSEN), through the growth of professional and academic training programmes, innovations in educational methodology and at multilateral processes under the Biological and Toxin Weapons Convention (BTWC), leading toward a more structured, internationally supported biosecurity education ecosystem. This shift was visible not only in the number of educational initiatives that emerged in 2025, but in how education itself was framed: increasingly as a preventive tool that complements legal, technical, and regulatory approaches to managing biological risks.

### **2.3.1 Biosecurity Education and the BWC: From Awareness to Prevention**

Within the United Nations system, and particularly under the Biological Weapons Convention (BWC), biosecurity education featured prominently throughout the 2025 intersessional process. Under the chairmanship of Ambassador Frederico S. Duque Estrada Meyer of Brazil, the BWC Working Group discussions repeatedly returned to education and awareness-raising as practical, politically acceptable means of strengthening the Convention.

Rather than focusing exclusively on traditional issues such as compliance, verification, or legislative implementation, many States Parties emphasised the importance of cultivating a culture of responsibility among scientists, institutions, and regulators. This reflected a subtle but important reframing of biosecurity: from something primarily enforced through rules to something sustained through knowledge, norms, and professional practice.

A series of regional and thematic meetings in Guangzhou, Almaty, Nairobi, Brussels, and New Delhi reinforced this perspective. Across diverse contexts, participants linked biosecurity education to broader themes of preparedness, resilience, and responsible scientific development. A common conclusion emerged: sustainable biosecurity depends as much on human capacity and institutional knowledge as on legal frameworks.

### 2.3.2 Civil society and academic leadership: The role of IBSEN

Alongside multilateral discussions, civil-society and academic actors played a significant role in shaping the educational landscape. The International Biological Security Education Network (IBSEN), led by the Biological Security Research Centre at London Metropolitan University (LMU BSRC), advanced from a conceptual proposal to a set of practical pilot activities in 2025.

IBSEN was envisioned as a collaborative platform linking educators, researchers, policymakers, and practitioners engaged in biosecurity education. Through statements and side events at the Sixth and Seventh Sessions of the BWC Working Group, LMU BSRC presented IBSEN as a means of harmonising educational approaches, developing open-access teaching materials, supporting national initiatives, and fostering international exchange. Its objectives were explicitly aligned with BWC priorities, particularly Articles IV and X, framing education as a form of capacity-building and confidence-building.

Workshops in London and side events in Geneva explored how emerging technologies—such as artificial intelligence, synthetic biology, and laboratory automation—should be incorporated into biosecurity curricula. These discussions emphasised anticipatory education: preparing learners to assess risks associated with technologies that may not yet be fully governed by policy. IBSEN thus illustrated how academic institutions can act as intermediaries between scientific communities and international policy processes, translating educational practice into policy relevance.

*Table 2. Meetings and publications by LMU BSRC Staff 2025<sup>9</sup>*

|                                           |    |
|-------------------------------------------|----|
| <b>Newsletters published</b>              | 5  |
| <b>Book translations</b>                  | 1  |
| <b>Workshops hosted</b>                   | 5  |
| <b>Conference hosted</b>                  | 1  |
| <b>Conferences attended</b>               | 11 |
| <b>Publications</b>                       | 6  |
| <b>Presentations</b>                      | 4  |
| <b>Treaty Conference Side Events held</b> | 3  |

### 2.3.3 Professionalisation of Biosecurity Training

<sup>9</sup> See: [www.ibsen.org.uk](http://www.ibsen.org.uk) for more details

Professional associations continued to be an important contributor to biosecurity education in 2025. ABSA International expanded its portfolio of courses, conferences, and online modules, reinforcing biosafety and biosecurity as recognised professional domains. Courses such as the *Biosafety and Biosecurity Training Course* and *Principles and Practices of Biosafety* provided structured, competency-based learning for practitioners across laboratories, healthcare, agriculture, and government.<sup>10</sup> These programmes increasingly incorporated scenario-based learning, risk assessment exercises, and ethical discussions, reflecting a broader understanding of biosecurity beyond technical containment.

Similarly, the International Federation of Biosafety Associations (IFBA) advanced global capacity building through certification pathways, regional conferences, and workshops on dual-use research, bioethics, and governance of emerging technologies. IFBA's work demonstrated how professional networks can harmonise standards while remaining sensitive to regional capacities and contexts.

#### 2.3.4 Integration into university curricula

Universities worldwide increasingly embedded biosecurity into formal curricula in 2025. New undergraduate and postgraduate courses addressed biosecurity in agriculture, public health, and the life sciences, while existing programmes incorporated dedicated modules on dual-use research and responsible conduct. A notable example is the BSc. in Biosafety and Biosecurity this four-year degree programme spent three years in development before admitting its first cohort of 21 students in January 2024.<sup>11</sup>

This integration signalled a growing consensus that biosecurity education should begin early in scientific training rather than being reserved for specialists. By normalising biosecurity concepts within mainstream education, universities contributed to long-term cultural change in the life sciences.

#### 2.3.5 Methodological innovation and dual-use Governance

A major methodological advance in 2025 was the launch of the WHO Academy's online course on dual-use research and the responsible use of the life sciences.<sup>12</sup> Designed for a wide audience—including researchers, policymakers, and public health professionals—the course integrated ethical reasoning, governance frameworks, and practical risk-mitigation strategies. The course examines these dual-use research (DUR) issues and discusses ways to identify and mitigate potential biorisks as part of a multi-sectoral and cooperative approach across the One Health spectrum that promotes the safe, secure and responsible use of the life sciences

---

<sup>10</sup> ABSA International. Training Course and Conference Materials, 2025, see: <https://absa.org/professional-development/>

<sup>11</sup> For a detailed description of the course, see BRSC, IBSEN Fourth Quarterly Newsletter, April 2025, available at: <https://ibsen.org.uk/newsletters/>.

<sup>12</sup> World Health Organisation, Dual-use research and the responsible use of the life sciences, available at: [https://whoacademy.org/coursewares/course-v1:WHOAcademy-Hosted+H0126EN+2025\\_Q2](https://whoacademy.org/coursewares/course-v1:WHOAcademy-Hosted+H0126EN+2025_Q2).

(RULS) to prevent accidents, unanticipated and deliberate misuse of biological materials, knowledge and emerging technologies.

This initiative illustrates how international organisations can scale biosecurity education globally through digital platforms. It also reflects broader pedagogical trends visible across the field in 2025:

- Blended learning combining online and in-person formats;
- Scenario-based and experiential learning for professionals;
- Interdisciplinary curricula linking science, policy, ethics, and law;
- Targeted training tailored to specific roles and sectors.

These approaches drew on lessons from pandemic preparedness and adult education research, emphasising relevance, engagement, and adaptability.

### 2.3.6 Fellowships, Youth Engagement, and Leadership Development

Leadership and youth engagement programmes also expanded in 2025. Initiatives such as the NTI | bio Next Generation for Biosecurity Competition, youth programmes supported by the BWC ISU, and mid-career fellowships provided structured pathways into biosecurity policy and practice.<sup>13</sup> These programmes served not only educational purposes but also normative ones, socialising participants into international biosecurity norms while equipping them with analytical and leadership skills.

## 2.4 Core elements of a robust biosecurity education programme

Biosecurity education has emerged as a critical pillar of global efforts to prevent the misuse of the life sciences while maximising their benefits for health, development, and sustainability. As scientific capabilities expand rapidly—particularly in synthetic biology, gene editing, and data-driven biotechnology—education and awareness-raising are no longer optional or peripheral activities. Rather, they are essential requirements for a robust and future-proof biosecurity architecture, as reflected in recent discussions under the BTWC.

A first core element is comprehensive awareness-raising across audiences. Effective biosecurity education must extend to all relevant stakeholders including students, regulators, researchers, laboratory personnel, policymakers, industry, and journal editors as well as the wider public. Awareness-raising at upper-secondary school level helps establish early norms of responsibility, while undergraduate and postgraduate education embeds biosecurity thinking within day-to-day professional scientific work. Engagement with media and the public is equally important to foster informed societal debate, reduce misinformation, and sustain political support for biosecurity governance. A future-proof programme therefore recognises education as a lifelong, society-wide process rather than individual, *ad hoc* interventions solely at targeted sectors.

---

<sup>13</sup> See LMU BSRC, IBSEN Fifth Quarterly Newsletter, July 2025, available at: <https://ibsen.org.uk/newsletters/>.

A second essential element is integration of ethics, responsibility, and codes of conduct, consistent with the Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists.<sup>14</sup> Biosecurity education must go beyond technical risk management to address values, norms, and professional responsibilities in order to create a culture of responsibility. This includes teaching scientists how to recognise dual-use potential, understand legal and normative obligations under the BWC, and apply ethical reasoning to real-world dilemmas. Embedding codes of conduct within curricula, professional development, and institutional practices reinforces a culture of responsibility and complements and underpins regulatory approaches. Importantly, such education should be practical and scenario-based, enabling learners to translate abstract principles into daily decision-making.<sup>15</sup>

Third, diversity of educational formats and methodologies is vital for resilience and inclusivity. Traditional textbooks and lectures remain important, but they must be complemented by active-learning techniques encompassing interactive teaching methods, case studies, simulations, online courses, and blended learning models. Fellowships, exchanges, and mentorship programmes provide experiential learning and help build transnational networks of good practice. Course evaluation systems are also critical, allowing programmes to adapt over time, incorporate feedback, and remain responsive to emerging risks and technologies as well as new teaching methods. A future-proof approach emphasises continuous improvement rather than static curricula.<sup>16</sup>

Fourth, accessibility and equity are central requirements. Educational materials should be freely accessible wherever possible, available in multiple languages, and adapted to different regional and institutional contexts. Translation into UN and other widely spoken languages reduces barriers for low- and middle-income countries and supports more equitable participation in global biosecurity governance. Addressing gaps in resources and capacity through open educational materials and targeted support aligns directly with Article X of the BWC and strengthens international cooperation.

Finally, a robust biosecurity education programme requires coherence and coordination. Common terminology and shared conceptual frameworks help harmonise understanding across disciplines and regions. Mapping existing initiatives, identifying gaps, and avoiding duplication of effort are essential to ensure efficient use of limited resources. International networks—such as an International Biosecurity Education Network—can play a key role in linking educators, sharing best practices, and aligning education and awareness-raising with evolving international norms. Taken together, these elements form the foundation of a future-proof biosecurity education programme capable of adapting to scientific innovation, geopolitical change, and new global health and security challenges.

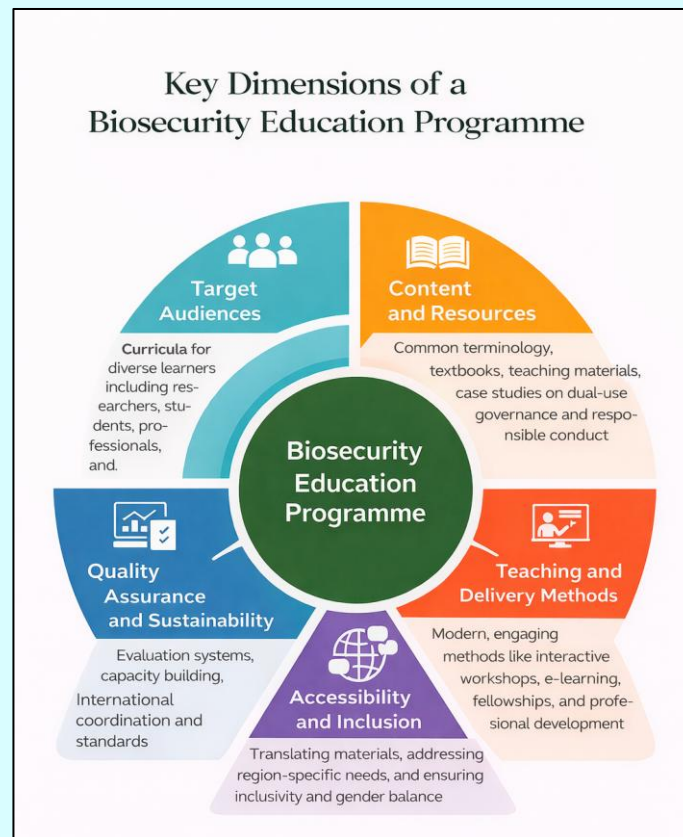
---

<sup>14</sup> Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists. Available at: <https://www.interacademies.org/sites/default/files/2021-07/Tianjin-Biosecurity-Guidelines-Codes-Conduct.pdf>.

<sup>15</sup> See Special Topic in LMU BSRC, *Seventh IBSEN Quarterly Newsletter*, November 2025, available at: <https://ibsen.org.uk/newsletters/>.

<sup>16</sup> For further discussion, see BSRC, *IBSEN Seventh Quarterly Newsletter*, November 2025, available at: <https://ibsen.org.uk/newsletters/>.

*Figure. 2. Key Dimensions of a Biosecurity Education Programme*



Building on the discussion of the core elements of future-proof biosecurity education, it is essential to translate these conceptual requirements into a clear, practical overview that illustrates where strengths exist and where gaps persist. While the above highlights the importance of shared terminology, accessible learning materials, appropriate pedagogical methods, evaluation mechanisms, and inclusive access across different communities, these needs are unevenly met across audiences. The graphic below (see **Figure 3**) provides a visual synthesis of these dynamics, mapping key educational elements—such as common glossaries, basic and advanced textbooks, teaching and evaluation methods, translations, and fellowship opportunities—against distinct target groups ranging from upper-school students to professionals, universities, and the public and media. By presenting these relationships at a glance, the diagram helps identify critical gaps and partial coverage, and underscores where focused investment and coordination are required to ensure that biosecurity education is coherent, scalable, and responsive to the diverse audiences essential for promoting the responsible use of the life sciences.

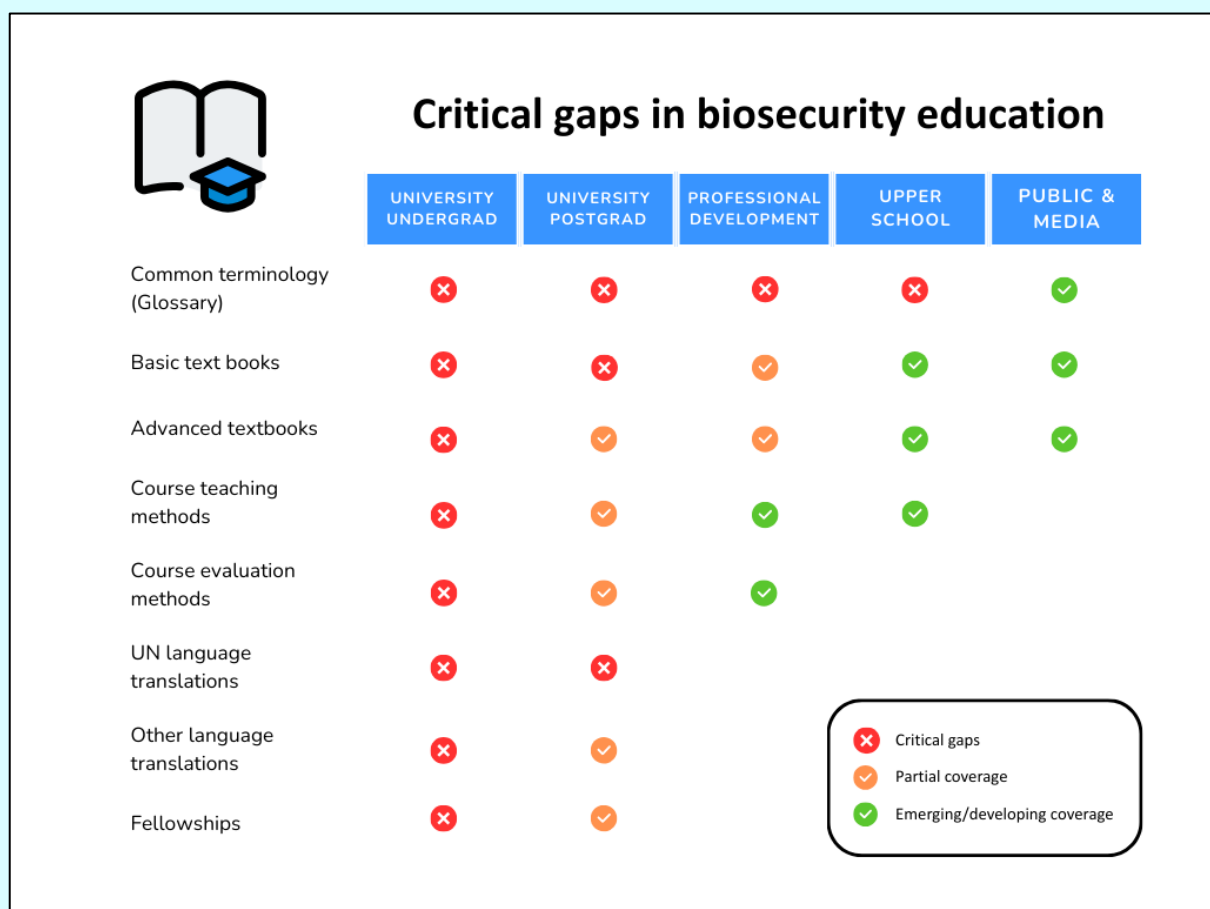
The graphic provides a snapshot of where biosecurity education is currently strongest and where critical gaps remain across different audiences and core educational elements. It shows that coverage is uneven: public and media audiences tend to have greater access to basic materials and awareness-raising resources, while university undergraduate students consistently face the most significant gaps, particularly in access to common terminology, foundational textbooks, structured teaching methods, evaluation tools, translations, and

fellowship opportunities. Postgraduate and professional audiences show partial or emerging coverage in several areas, but still lack consistent access to shared glossaries, multilingual resources, and standardized evaluation frameworks.

Overall, the graphic highlights that while some components of biosecurity education are developing, no audience group benefits from comprehensive, end-to-end provision across all essential elements. Core enabling resources—such as a shared glossary, accessible textbooks, translated materials, and structured fellowships—remain fragmented or absent for many learners. The visualization reinforces the need for a more coordinated, audience-specific approach to biosecurity education that systematically addresses these gaps and supports the development of sustainable, inclusive, and future-oriented educational pathways.

Importantly, this graphic is intended as a starting point rather than a definitive assessment. It charts what the LMU BSRC currently knows is terms of the work being done and is designed to help those planning, designing, or evaluating biosecurity education programmes quickly identify priority areas, compare needs across audiences, and reflect on where targeted interventions may have the greatest impact. By making gaps and partial coverage visible at a glance, the graphic supports strategic thinking and coordination, and provides a practical reference from which educators, policymakers, and programme designers can begin to develop more coherent, inclusive, and future-oriented biosecurity education initiatives.

*Figure 3. Critical gaps in biosecurity education*



### 2.4.1 *Glossary*

As mentioned above, one of the persistent challenges in biosecurity education is the lack of a common vocabulary among key stakeholders—including scientists, educators, policymakers, diplomats, regulators, industry actors, and civil society—which can hinder effective communication, awareness-raising, and implementation. To answer this need, the IBSEN has developed a preliminary glossary to support basic biosecurity education by identifying and bringing together a shared set of terms that frequently appear across biosecurity, biosafety, health security, arms control, and the life sciences (see **Annex 2**). By assembling commonly used terms drawn from international agreements, policy frameworks, scientific practice, and educational initiatives, the glossary responds to the need for a foundational linguistic baseline upon which more advanced learning and dialogue can be built.

The glossary is intended as a first, pragmatic step toward improving familiarity with core biosecurity terminology rather than as a comprehensive or authoritative definition guide. It does not seek to explain, interpret, or adjudicate meanings in detail. Instead, it highlights the breadth of concepts that routinely intersect in discussions of responsible life sciences, including risk and governance, dual-use issues, ethics and norms, international cooperation, and emerging technologies. Presenting these terms together helps illustrate the interdisciplinary and cross-sectoral nature of biosecurity, reinforcing that it extends beyond laboratory safety to encompass policy, education, ethics, and international security considerations

As such, the glossary is designed to function as a starting point for awareness-raising and education, particularly for audiences new to biosecurity or engaging with it from different professional or regional contexts. By increasing exposure to commonly used terminology, it supports broader understanding, reduces barriers to engagement, and allows stakeholders to better navigate international discussions, training materials, and policy documents. Over time, this shared familiarity with language can contribute to strengthening a culture of responsibility and promoting the safe, secure, and responsible use of the life sciences in line with international norms and obligations.

This glossary is not meant to be exhaustive. It was compiled through a literature search on biosafety, biosecurity, public health governance, the life sciences and related technologies and international biosecurity-related multilateral processes. It is anticipated that, with further refinement and development, this glossary can serve as a practical learning tool for both newcomers and established professionals and students working in the life sciences and related technologies. By drawing attention to key concepts and commonly used terminology, it aims to support awareness-raising and shared understanding, and, over time, to be translated into additional languages to broaden familiarity, accessibility, and engagement at the global level.

Such a glossary is particularly important for international audiences. Across BWC discussions and biosecurity education efforts, confusions can arise from crucial differences in languages. Key terms such as biosafety, biosecurity, dual use, biorisk, codes of conduct and awareness-raising do not translate cleanly across languages or professional cultures. For example, the French biosûreté corresponds to biosafety, while biosécurité refers to biosecurity—a

distinction that is often blurred in practice; in Spanish, bioseguridad is commonly used for both. Likewise, “dual use” is frequently translated as “double use,” losing its ethical and security connotations, and “codes of conduct” can be interpreted as binding regulations rather than voluntary norms. These semantic mismatches can lead audiences to believe they are discussing the same concept when, in fact, they are not. Developing a shared glossary of terms for biosecurity education would therefore help reduce misunderstanding, support clearer communication, and promote more consistent implementation across linguistic and national contexts.

## 2.5 Conclusion

Biosecurity education is at a pivotal stage. The progress of biosecurity education in 2025 reflects a broader recognition that biological risk governance cannot rely solely on regulation, surveillance, or compliance measures. Education is essential to fostering responsibility, resilience, and foresight within the life sciences and related sectors.

Taken together, developments in 2025 show that biosecurity education has entered a phase of consolidation and institutionalisation. Specifically, the concept of an International Biological Security Education Network is now widely known and has continued to garner broad support across academic, scientific and political communities. Support for education became visible across multilateral diplomacy, professional standards, academic curricula, and civil-society initiatives. Education was no longer treated simply as awareness-raising, but as a methodological question: how biosecurity should be taught, to whom, and for what purpose. Future efforts would be well placed to continue to work in areas where there remain critical gaps for which the matrix presented in this Newsletter could provide a useful guideline for future work.

Moving forward, there are a number of lessons to be implemented that would help ensure that biosecurity education continues to be a priority and able to reach broad audiences. Firstly, while a body of resources that already exist this must updated to keep pace with the challenges posed by the rapid pace of advances in the life sciences and associated technologies, with particular focus on the challenges presented by the increasing ubiquity of the use of artificial intelligence. Materials are should be as accessible across regions and sectors, supplemented by materials such as glossaries to better help both new and professional audiences understand common terms. Strengthening connections between educators, policymakers, and practitioners through shared platforms and collaborative networks can help prevent duplication of effort and accelerate the spread of effective practice.

At the same time, expanding the reach of biosecurity education requires integrating it into mainstream learning pathways rather than confining it to specialist communities. Introducing biosecurity concepts earlier in scientific education, adapting content for schools and vocational training, and tailoring approaches to different professional roles will be essential for broadening impact. This shift calls for renewed attention to pedagogy, employing interactive, scenario-based, and culturally responsive methods that resonate with diverse audiences and translate abstract risks into tangible understanding.

Long-term progress will also require sustained institutional support. Many promising initiatives remain dependent on individual commitment and short-term funding. Embedding biosecurity education within existing structures for professional training, ethical oversight, and national implementation of the BWC can provide the stability needed for lasting impact. Recognising education as a standing component of laboratory standards, professional competencies, and regulatory practice will help consolidate recent gains. Sustaining this momentum will require continued coordination, equitable access to resources, and ongoing adaptation to rapid scientific and technological change.

Ultimately, biosecurity education must remain forward-looking. As advances in synthetic biology, artificial intelligence, and automation reshape the life sciences, education must equip learners not only to understand current risks but to anticipate those still emerging. By fostering a culture of responsible foresight, biosecurity education can continue to serve as a foundational pillar of biological risk governance and contribute to a more resilient and ethically aware global life science community.

### 3. News in Global Biosecurity Education

#### 3.1 News from the LMU BSRC

##### 3.1.1 Report from the Implementing Effective Biosecurity Education Workshop

On 14 November 2025, the London Metropolitan University Biological Security Research Centre (LMU BSRC) held a hybrid workshop under Chatham House Rules titled “*Implementing Effective Biosecurity Education*” to explore the practical implementation of biosecurity education, including strategic planning, innovative delivery methods, and sustainable development models. Professor Lijun Shang, founding director of the BSRC, chaired the event.

This Workshop followed up from the LMU BSRC Workshop that took place in London in early October 2025 on “*The Impact of Emerging and Converging Technologies on Biosecurity and its Education*” in which developments in key technologies—including synthetic biology, artificial intelligence, neurobiology, mirror biology, and related scientific innovations—were discussed to identify how these technologies reshape the risk landscape and affect the future of biosecurity education with a view to exploring how best to create biosecurity educational materials that are timely and future-proof.<sup>17</sup>

The November workshop focused specifically on teaching methodologies, curriculum design, and evaluation frameworks, culminating in a discussion on the development of a comprehensive up-to-date textbook on biosecurity education in terms of advances in emerging technologies and best practices in teaching methodologies. In addition, the workshop explored the means of developing a framework for long-term development and sustainability over the coming decades in order to embed biosecurity education globally and ensure resilience for the future. It was noted that while methods like lectures and seminars are well-represented, innovative methods such as interactive online courses and on-the-job training are less evident, requiring more effort to engage larger numbers of people.

---

<sup>17</sup> For the full workshop report, see: LMU BSRC, IBSEN Seventh Quarterly Newsletter, November 2025, pp. 25-26. Available at: <https://ibsen.org.uk/wp-content/uploads/2025/12/IBSEN-Seventh-Quarterly-Newsletter.pdf>.

Set over six sessions, speakers were given three fundamental questions to consider in their presentations and as the underlying basis for discussions:

1. What are the central themes of current biosecurity education in your practice and what is the best approach?
2. What are the main methodologies you have used in your practice and any innovation is needed?
3. What needs to be done in biosecurity education to better inform scientists and technologists effectively, globally and sustainably?

Following introductory and welcome sessions including an introduction to the second phase of the IBSEN project focusing on implementation, the workshop featured 3 further substantive sessions that explored the best formats, methodologies and approaches for addressing various stakeholders when implementing biosecurity education, drew lessons from initiatives worldwide, including Japan, Pakistan, the Philippines and Uganda and questioned methods of evaluation.

The workshop brought together a diverse set of pedagogical, policy, and practical perspectives on biosecurity education, illustrating how biosecurity education, awareness-raising and training can be operationalised across disciplines, educational levels, and national contexts. Collectively, the presentations underscored a central premise: effective biosecurity education must move beyond information transmission toward approaches that are experiential, context-sensitive, ethically grounded, and sustained over time. Rather than advocating a single model, contributors highlighted a complementary ecosystem of methods capable of fostering durable understanding, professional responsibility, and adaptive capacity in the life sciences.

A recurring theme was the value of experiential and simulation-based learning in enabling learners to grapple with the complexity and ambiguity inherent in biosecurity challenges. One presentation demonstrated how simulations grounded in Kolb's experiential learning cycle can translate abstract governance concepts into lived decision-making experiences. Whether through semester-long arms control simulations or shorter scenario-based exercises, participants are required to reflect, conceptualise and experiment in ways that mirror real-world policy and institutional processes. Crucially, the distinction between preventive and reactive scenarios emerged as an important design choice. Preventive simulations (such as institutional responses to proposed dual-use research) emphasize foresight, governance and risk mitigation, while reactive scenarios (such as managing ambiguous outbreaks) test coordination, communication and crisis response under pressure. Together, these approaches reinforce the preventive logic of biosecurity while acknowledging the realities of emergency response.

Effective education, however, depends not only on pedagogy but also on communication. It was highlighted that biosecurity education is inherently intercultural and interdisciplinary, requiring careful attention to how messages are framed, conveyed and received. Efficient communication was presented as both a pedagogical tool and a trust-building mechanism, enabling collaboration across scientific, policy, and regional divides. Poorly designed

communication can undermine even well-intentioned programmes which require accessibility, credibility, clarity and actionability. Case studies illustrate that sustained success depends on grounding initiatives in local contexts, aligning objectives with partner needs, and designing for long-term ownership rather than short-term intervention.

The challenge of shifting scientific and technological culture was further explored through presentations describing on awareness gaps and appreciative systems. Many life scientists operate within professional cultures that assume inherent beneficence, rendering the concept of misuse unfamiliar or even uncomfortable. Addressing this requires more than rules or codes; it demands educational approaches capable of transforming underlying assumptions. Active learning methodologies, particularly Team-Based Learning (TBL), were presented as effective tools for fostering reflection, peer dialogue and ethical reasoning. When combined with threshold concepts—ideas that are troublesome yet transformative—such approaches can lead to lasting changes in how learners perceive responsibility and risk. Evaluation data presented during the workshop reinforced this point, demonstrating measurable shifts in participant thinking around dual-use dilemmas and ethical integration.

Complementing these approaches, several presentations emphasised the importance of visual media and popular culture in making biosecurity concepts accessible to wider audiences. One speaker discussed how illustrations, speculative design, picture books, and manga can stimulate dialogue on dual-use issues without sacrificing scientific integrity. Creative narrative and imagery can engage not only specialists but also students and the public, creating entry points into discussions about ethics, risks, and societal impact. These approaches challenge the assumption that biosecurity education must be technical or formal, instead demonstrating the value of creativity in broadening awareness.

The workshop also highlighted the importance of early and pre-university engagement. A pilot biosecurity school workshop project by the BSRC undertaken at a London high school demonstrated that younger audiences are both capable of grasping biosecurity concepts and eager to engage with them. Using a “sandwich” methodology that blended active learning, pop culture and lecture-style content, the programme achieved significant gains in understanding and enthusiasm. The findings suggest that early exposure not only builds foundational awareness but also enables horizontal and vertical knowledge transfer, extending impact beyond the classroom. At the same time, the reliance on goodwill rather than institutional support underscored a persistent structural challenge: without sustained funding and policy backing, such initiatives remain fragile.

Digital education formed another core pillar of discussion. Online biosecurity courses have a currently unmatched capacity to extend reach, enhance accessibility, and support global dialogue. Online platforms were shown to be particularly effective for introducing foundational concepts, supporting self-paced learning, and creating safe environments for scenario-based exploration. At the same time, limitations were acknowledged, including learner fatigue, uneven uptake, and challenges in replicating high-intensity experiential learning online. The key takeaway was that online education is most effective when integrated into blended learning models and supported by sustained investment to ensure relevance in a rapidly evolving risk landscape.

Finally, national case studies from Pakistan and the Philippines illustrated how biosecurity education can be embedded within broader capacity-building strategies. In both contexts, education was framed as a first line of defence, closely linked to institutional reform, professional training and governance mechanisms. These experiences demonstrated that sustained progress is possible even from low initial awareness levels, particularly when education is supported by national committees, institutional review mechanisms and international partnerships. At the same time, both cases highlighted ongoing challenges, including coordination, standardisation, and sustainability—reinforcing the need for long-term planning and international cooperation.

Overall, the workshop underscored several key takeaways:

- There remains a widespread lack of awareness amongst life scientists of the dangers of dual use changes the way they see the potential implications of their work
- Biosecurity education is most effective when it is active, experiential, and reflective, rather than purely didactic
- Context matters: programmes must be culturally informed, audience-specific, and designed for sustainability
- Ethics and responsibility are not add-ons but foundational elements that require deliberate pedagogical strategies
- A plurality of approaches spanning simulations, communication strategies, visual media, early education, online learning, and national capacity-building is essential for building resilient and future-proof biosecurity education ecosystems, and
- The implementation of codes of conduct, such as Tianjin Guidelines for Codes of Conduct for Life Scientists, can help boost the overall long-term impact of biosecurity education and awareness-raising and help equip stakeholders to better assess the dual-use and ethical impact of their work.

### Conclusion

The workshop underscored that effective governance of emerging technologies depends on integrating technical vigilance with human-centred responsibility. While technological progress will continue to reshape the risk landscape, the participants emphasised that cultivating ethical awareness, adaptive education, and behavioural understanding will be critical for maintaining biosecurity and the norm against the use of CBW. Biosecurity education should evolve in tandem with scientific and technological change, ensuring that researchers, educators, and policymakers remain attuned to new forms of risk and responsibility.

#### **3.1.2 Further activities undertaken by the LMU BSRC**

*“Implementing Biosecurity Education: The development of a pilot IBSEN up to 2027 Review Conference”: LMU side event at the 7<sup>th</sup> Session of the BTWC Working Group, Geneva, Switzerland*

On 9 December, by the Biological Security Research Centre (BSRC) at LMU held a side event at the Seventh Session of the BWC Working Group on biosecurity education at the United

Nations in Geneva, Switzerland entitled “Implementing Biosecurity Education: The development of a pilot IBSEN up to 2027 Review Conference”. The side event built upon our previous side event in August 2025 at the 6<sup>th</sup> Session of the BTWC Working Group that explored “*Biosecurity education: from concept to implementation*” focusing on best practices in biosecurity education and efforts to progress from broad concepts into a dynamic and diverse field of practice.

The side event focused on the development of a pilot International Biological Security Education Network (IBSEN) project and its potential contribution to strengthening the Convention in advance of the next Review Conference in 2027. The event highlighted how biosecurity education has evolved from abstract normative discussions into a dynamic field encompassing curriculum development, training resources, and innovative modes of delivery across regions and disciplines.

The side event was opened and moderated by Ms Kathryn Millett (LMU BSRC, UK), who also conducted the final Q&A session. Expert panellists then showcased case studies illustrating activities undertaken at different stages of the IBSEN pilot project:

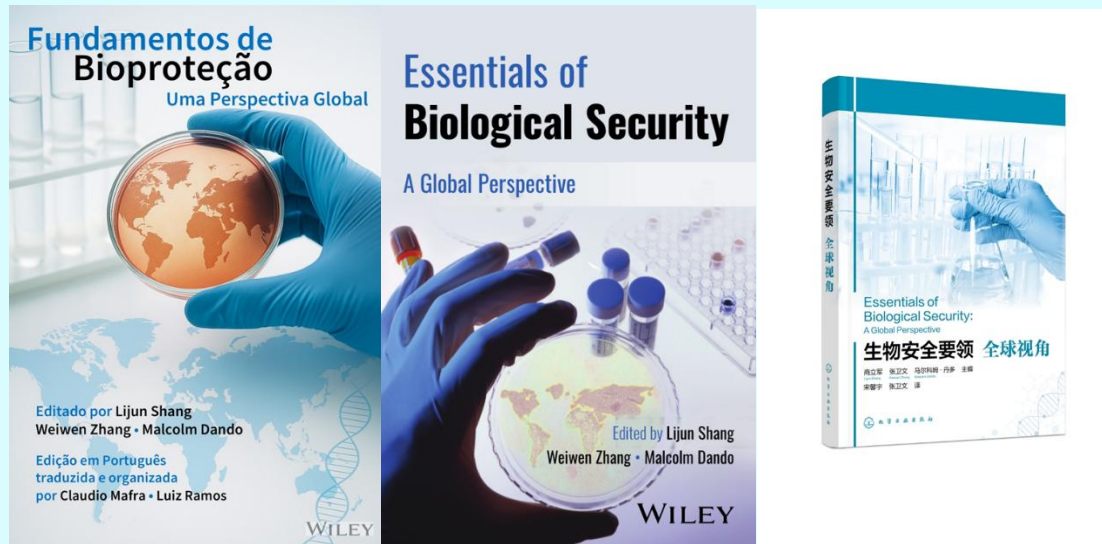
- Professor Lijun Shang, Director of Biological Security Research Center, London Metropolitan University, United Kingdom
- Professor Claudio Mafra, President of the Brazilian Society for Biosafety and Bioprotection, Brazil
- Professor Jusaku Minari, Center for iPS Cell Research and Application (CiRA), Kyoto University, Japan
- Professor Nariyoshi Shinomiya, National Institute of Infectious Diseases and Japan Institute for Health Security, Japan
- Ms Olivia Ibbotson, PhD student and Research Assistant, Biological Security Research Center, London Metropolitan University, United Kingdom

Speakers emphasized how the network could support BWC implementation by enhancing education, awareness-raising, and capacity building, particularly through international collaboration and knowledge exchange. Professor Lijun Shang (LMU BSRC, UK) presented the wide-ranging work of the IBSEN pilot project, with Professor Claudio Mafra (Brazil) showcasing the Brazilian translation of the edited textbook *Essentials of Biosecurity: A Global Perspective*, and Professors Minari and Shinomiya presented their manga graphic novel on biosecurity issues demonstrating the power of illustrations and comics as impactful means of engaging the younger generation. Ms Olivia Ibbotson wrapped up the presentation section with a presentation on an IBSEN pilot study to engage High School students in dual-use of the life sciences issues.

The side event was well attended with over 30 participants and concluded with a moderated meaningful question-and-answer session, encouraging stakeholder input on future directions and informing discussions on the potential establishment of a formal IBSEN under the BTWC framework.

Translation project of textbook of the Essentials of Biological Security: A Global Perspective

We are delighted that the Portuguese edition of the Essentials of Biological Security: A Global Perspective is officially published. This is the 2<sup>nd</sup> translation after Chinese. The book is translated by Claudio Mafra and Luiza Ramos. We are expecting further translation in Spanish and French in 2026.



Biosecurity school project has the UK's first ever Biosecurity School Conference

London Metropolitan University (LMU) Biological Security Research Centre (BSRC) recently carried out the first ever UK Biosecurity school project which introduce biosecurity education to the younger generation.

The project started in the spring this year and LMU BSRC paired with Debden Park High School to delivered 6 months project of biosecurity education. Under the centre director Professor Lijun Shang, the centre's PhD student Olivia Ibbotson and the School's chief technician Gill Moore delivered the project by providing a project launching event, dedicated workshops with novel methodologies suiting to the school student, and a final mini biosecurity school conference on 17 Oct 2025 after their busy preparation during the summer.

Eight of the School's Sixth Form presented their summer Research Projects at the conference which is as far as we know the UK's first ever Biosecurity School Conference. Students presented research of a diverse subject range; biosecurity in videos games, history and policy of Anthrax, level 4 pathogens, antibiotic resistance, biosafety in medicine, a mathematical model on the economic impacts of biosecurity incidents, and even a Frankenstein-like parable on mirror life!

The conference was very successful, with students enthusiastic, engaged and proud of their hard work. Even students who did not present voluntarily attended to support, asked questions and discussions. Students feedbacked that the biosecurity school project, especially the conference have provided a window into how students visualise the biosecurity and illustrate what biosecurity means to them in the most relevant, exciting and timely.

The Director of Sixth Form, Mr Joseph Simm highly praised the project and was very much impressed by the conference showing students not only learning knowledge but also building up

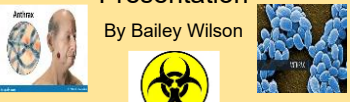
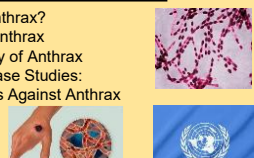
their transferable skills. He thanked LMU BSRC for introducing this important topic in his school and look forward to the next year.

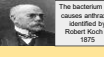
Professor Lijun Shang comments “Raising awareness and carrying out biosecurity education should address to all stake holders, particularly to the younger generation from the very beginning of the education. Fast developed science and technology put great challenges for us to think about how to deliver the biosecurity education”.



Photo: Biosecurity School Conference (17/10/2025), led by Olivia Ibbotson, Gillian Moore and Professor Lijun Shang

## Debden Park Sixth Form student Bailey Wilson wins 2<sup>nd</sup> place at the UK's first ever Biosecurity school conference!

|                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <h3>Anthrax and Biosecurity Presentation</h3> <p>By Bailey Wilson</p>  | <h3>Order Of Presentation:</h3> <ol style="list-style-type: none"> <li>1. What Is Anthrax?</li> <li>2. Types of Anthrax</li> <li>3. The History of Anthrax</li> <li>4. Anthrax Case Studies:</li> <li>5. Protections Against Anthrax</li> <li>6. Questions</li> </ol>  | <h3>What is Anthrax?</h3> <p>Anthrax is a zoonotic disease caused by the gram-positive <i>Bacillus anthracis</i> bacteria. This disease is spread through anthrax spores that are carried by infected animals, such as cows, sheep, and deer, and from these animals products, like wool or hides, after ingesting or inhaling anthrax spores while grazing.</p> <p>In humans, anthrax is a rare disease with only about 2000 recorded cases each year. Most anthrax cases occur in Africa and central and southern Asia. The disease is rarely spread directly through people.</p> <p>Anthrax has been used by countries, organisations, and individuals as a bioweapon in both bio warfare and bioterrorism.</p>  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <h3>Types of Anthrax:</h3> <p>Cutaneous Anthrax is the most common and least dangerous form of the disease with only a 23% mortality rate without treatment. It is caused when anthrax spores enter the body through a wound in the skin. It has symptoms of black sores on the face, neck, arms or hands, swelling around these sores, and itchy blisters and bumps.</p> <p>Injection Anthrax is similar to Cutaneous Anthrax, but it is one of the rarest forms of the disease as it has only been identified in a group of heroin users in Northern Europe. This form is spread by injecting contaminated substances into the body. The disease creates an infection under the skin and in the muscle at the point of entry.</p>  | <h3>Types of Anthrax:</h3> <p>Inhalation Anthrax is the form of the disease with the highest mortality rate, with it currently at 45% even with treatment. The disease enters the body through the inhalation of anthrax spores. The main symptoms are fever, chest pain and shortness of breath, confusion, nausea, headaches, and extreme tiredness.</p> <p>Gastrointestinal Anthrax is a rarer form of the disease, which is caused by eating undercooked or raw meat that is infected with spores. It causes a range of symptoms, such as fever, swelling of the neck, nausea, diarrhea, headaches, stomach pain, and fainting. It has a mortality rate of between 25% and 60% depending on the time of treatment.</p>  | <h3>History of Anthrax:</h3> <p>The bacterium that causes anthrax is identified by "Woodworth's Disease" and Anthrax in 1878 were the same condition.</p> <p>John Henry Bell discovered that "Woodworth's Disease" and Anthrax in 1878 were the same condition.</p> <p>Louis Pasteur creates the first anthrax vaccine for animals in 1881. It is successful in France, but not in Australia.</p> <p>Beginning in 1932, Japan infects prisoners in Manchuria with Anthrax as part of Operation Cherry Blossoms at Night. This continues where the Japanese army sprays Chinese cities with anthrax through the use of aircraft.</p> <p>The Anthrax Prevention Act (1919) is passed.</p> <p>During WWI, the German army uses anthrax to infect livestock in Allied Nation.</p> <p>Max Stern develops an attenuated live animal vaccine in 1935, that it still used to this day.</p> <p>During WWII, the US, Canada, and the UK begin biological weapons programmes in response to possible attacks by Germany.</p>  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>As part of these bioweapon programmes, bombs containing anthrax spores are dropped over Gruinard Island, all 80 sheep on the island died as a result.</p> <p>The Aum Shinrikyo cult released anthrax spores from the roof of a building in Tokyo in 1995.</p> <p>Gruinard Island is decontaminated in 1986 with formaldehyde and seawater and later re-sold to the original owners.</p> <p>In 1975, an anthrax outbreak occurred in Sverdlovsk, Russia, which caused a number of deaths between 64 and 300.</p> <p>In September 2001, a number of letters containing anthrax spores were mailed to senators and media outlets in the US.</p> <p>In 1995, UNSCOM found Iraq had a biological warfare, that produced anthrax, which violated an agreement ending the Gulf War.</p> <p>A number of anthrax outbreaks have taken place in India, Russia, and France in 2014, 2015, and 2019 respectively due to animals infected with the disease.</p>  | <h3>Gruinard Island:</h3> <p>Gruinard Island, which is sometimes colloquially referred to as Anthrax Island, is an uninhabited island, located in the Scottish Highlands was used as a test-site for developing biological weapons as part of Operation Vegetarian, out of fears that Nazi Germany had developed their own biological bombs.</p> <p>The island was the ideal location for testing as it was far enough from the mainland to prevent the spread of infection, but near enough for easy access by scientists.</p> <p>As part of the experiments, a small detonation took place near some caged sheep in order to see the effects. After inhaling the anthrax spores, all of the 80 sheep on the island died.</p>  | <h3>Gruinard Island:</h3> <p>Operation Vegetarian, which partly took place in the island, looked into the possibility of damaging the German food supply by dropping linseed cakes containing anthrax-spores into cow fields, which would cause the cows to become infected. If the infected cows were eaten, the humans would become infected with Gastrointestinal Anthrax and die, which would harm the German War Effort. Although these linseed cakes were created, they were never used and were ultimately destroyed.</p> <p>After the experiments, the island remained contaminated. In 1981, a group called Dark Harvest Commando placed soil containing anthrax spores from Gruinard Island at Porton Down in Wiltshire and at a Conservative Party Conference in Blackpool. This led to the decontamination efforts by spraying the island with formaldehyde and seawater mixture. The island was declared anthrax-free in 1990.</p>  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Sverdlovsk Anthrax Leak:</b></p> <p>In April 1979, an accident at a Biological Warfare Laboratory in Sverdlovsk, which was referred to as Compound 19, led to an outbreak of anthrax in the city. An official report stated that this led to a total of 64 deaths, however the actual total may be as high as 300, with numerous farm animals also dying of anthrax. After the first couple of months, other villages nearby the outbreak also reported to be affected by anthrax and the authorities agreed.</p> <p>Initially the Boris Yeltsin, the local Communist Party chief claimed the outbreak was the result of tainted meat due to animal feed infected with anthrax spores. By 1986, the response was expanded to state that the outbreak was caused by anthrax-infected cattle being turned to bone-meat at a slaughterhouse.</p>               | <p><b>Sverdlovsk Anthrax Leak:</b></p> <p>Despite the claims that the outbreak was the result of infected meat by the Soviet Union, the Carter Administration remained suspicious that the USSR was violating the 1972 Biological Weapons Convention. Instead, US authorities argued that anthrax spores were accidentally released from an illegal research facility. By 1991, the US still held this view and further investigations showed that the outbreak was the result of an airborne release of spores. In 1992, Yeltsin admitted that the outbreak had been the result of an accidental leak at an illegal facility that was producing anthrax. This confirmed the USSR had broken the 1972 Convention.</p>  | <p><b>Aum Shinrikyo and Anthrax:</b></p> <p>In July 1993, members of the Aum Shinrikyo cult sprayed liquids that contained anthrax spores from a cooling tower at headquarters of the group. Aum Shinrikyo is a doomsday cult founded by Shoko Asahara, that were responsible for the Tokyo subway sarin attack in 1995.</p> <p>The attempted terrorist attack, which was the first to use anthrax as a weapon, was fortunately unsuccessful as the group used the Sterne Strain of the pathogen, which was the attenuated form of the bacteria that is used in live-animal vaccines. This meant that the group's plan to cause an epidemic in Tokyo was unsuccessful.</p>   |
| <p><b>2001 Anthrax Letters:</b></p> <p>Beginning on the 18th of September 2001 and ending just under a month later, a number of letters containing anthrax spores were mailed to News Offices and Senators in the US. The attack resulted in five deaths. The anthrax spores found in the letters mostly caused cutaneous anthrax, although some cases of inhalation anthrax were reported.</p> <p>After a lengthy investigation by the FBI, no-one was ultimately found guilty for the attacks. Al-Qaeda was initially thought to be responsible by White House officials, but this was dismissed. Another theory is that Bruce Ivins, a researcher carrying out research into anthrax vaccines, carried out the attacks in an effort to restore funding to his research.</p>   | <p><b>Protections Against Anthrax:</b></p> <p>Following the 2001 Anthrax Attacks, a number of new safety measures were introduced to prevent similar attacks in the future. For example, the US Postal Service installed biohazard detection systems at major distribution centres in order to scan for anthrax that is being transported through mail. Furthermore, the Postal Service sterilised some letters with gamma radiation to kill anthrax spores that could be sent through the postal system.</p>                                                                                                                                                                                                          | <p><b>Protections Against Anthrax:</b></p> <p>Throughout the 20th Century, a number of international agreements were made that limited or banned the use or development of biological weapons, including anthrax. Two of these key agreements were the 1925 Geneva Protocol, which banned Gas or Bacterial Methods of Warfare, and the 1972 Biological Weapons Convention, which banned the development and production of these weapons. It is important to mention that these agreements have broken, notably by the USSR and Iraq as previously stated.</p>                                                                                                               |

### 3.2 Other news

#### New webpage “Experts view” initiated on the LMU BRSC website

Further to the news of a new webpage in the IBSEN Quarterly Newsletter 7, we have continued to update our new “Experts view” webpage featuring the views and reflections of CBRN experts on their careers and unique experiences. This page is available at (<https://ibsen.org.uk/experts-view/>) with the commentaries available for download and use according to the Creative Commons licence. We welcome all contributions and invite those who would like to publish their articles to contact us.

#### Second Regional Workshop on Implementing the Biological Weapons Convention and Promoting Biosafety and Biosecurity in Guangzhou, China

The governments of China and Malaysia co-hosted the “Second Regional Workshop on Implementing the Biological Weapons Convention and Promoting Biosafety and Biosecurity in Southeast Asia” from 18 to 20 November 2025 in Guangzhou, Guangdong Province, China. The BWC Implementation Support Unit (BWC ISU), the United Nations Regional Centre for Peace and Disarmament in Asia and the Pacific (UNRCPD) and Sun Yat-Sen University provided meeting support.

Addressed by UN Under-Secretary-General and High Representative for Disarmament Affairs Izumi Nakamitsu, the three-day interactive workshop brought together over 70 participants from ASEAN member states, Chinese institutions, and international organisations, including Ambassador Frederico Meyer of Brazil, Chair of the BWC Working Group, and two Friends of the Chair on National Implementation.

The workshop provided opportunities for in-depth exchange on national implementation, with representatives from eleven States Parties presenting legal, regulatory, biosafety, and biosecurity frameworks. Participants also shared experiences on Confidence-Building

Measures (CBMs) and identified concrete opportunities for international cooperation and assistance under Article X. In addition, a dedicated session on the BWC Working Group addressed ongoing negotiations, including proposals for an International Cooperation and Assistance Mechanism, a Scientific and Technological Advisory Mechanism, and an Open-Ended Working Group on Compliance and Verification.

Contributions from WHO, WOA, and FAO highlighted global biorisk trends and available support tools, with particular attention to the dual-use implications of advances in synthetic biology, gene editing, and AI-enabled biotechnology. The workshop concluded with a scenario-based emergency preparedness exercise, simulating a disease outbreak in a conflict-affected state, reinforcing the practical relevance of preparedness and response capacities.<sup>18</sup>

A summary of the Workshop is available at: <https://unodaweb-meetings.unoda.org/public/2025-12/co-chairs%20summary-final-1120.pdf>.

#### Seventh Session of the Biological and Toxin Weapons Convention Working Group (8-12 December 2025)

The Seventh Session of the Working Group (WG) on the strengthening of the 1972 Biological and Toxin Weapons Convention convened in Geneva from 8-12 December 2025 Chaired by Ambassador Frederico S Duque Estrada Meyer (Brazil). While the WG mandate marked a significant step forward in the potential to strengthen the Convention where previous processes had floundered, and much headway was made, States parties were unable to complete the work to adopt a final report with approximately half the text agreed by the meetings close. A revised version of the draft final report was circulated as BWC/WG/7/CRP.1/Rev.1, dated 12 December. Negotiations will continue on the text at the forthcoming Eighth Session of the Working Group scheduled for February 2026. Documents from the Seventh Session of the WG are available at <https://meetings.unoda.org/meeting/75242>.

#### 2025 Meeting of States Parties to the Biological and Toxin Weapons Convention (15 December 2025)

The 2025 Meeting of States Parties (MSP) to the BTWC took place at the United Nations in Geneva, Switzerland 15 December 2025 chaired by H.E. Ms Clare Walsh (Australia). The MSP was scheduled to take place from 15-17 December, but was closed early due to procedural objections by Russia. Dates were agreed for future BWC WG meetings for three sessions: 9-13 February (Eighth), 17-21 August (Ninth), and 7-11 December (Tenth). The next Meeting of States Parties is scheduled for 14-16 December 2026.<sup>19</sup> Documents from the 2025 BWC MSP are available here: <https://meetings.unoda.org/meeting/75244/>.

---

<sup>18</sup> United Nations, China and Malaysia co-hosted the Second Regional Workshop on Implementing the Biological Weapons Convention and Promoting Biosafety and Biosecurity in Southeast Asia <https://disarmament.unoda.org/en/updates/china-and-malaysia-co-hosted-second-regional-workshop-implementing-biological-weapons-convention-and-promoting-biosafety-and-biosecurity-southeast-asia>.

<sup>19</sup> BWC, BWC/MSP/2025/CRP.1, Draft report of the 2025 Meeting of States Parties, 15 December 2025, available at: <https://meetings.unoda.org/meeting/75244/documents>.

### Forthcoming Eighth Session of the BTWC Working Group and 2026 meetings of the BTWC

As agreed at the Meeting of States Parties to the Biological and Toxin Weapons Convention (BTWC), the Eighth Working Group session is scheduled to reconvene in 2026 in Geneva, Switzerland from 9-13 February 2026.

*We encourage and welcome all members from IBSEN to send us news relevant to this Quarterly Newsletter. Please note that it would be your responsibility to ensure the reliability of the information and therefore that the edited news section is from open accessed sources and does not represent the LMU BSCR's views.*

## **4. Further reading**

BWC/WG/6/CRP.1 - Draft specific and effective measures, including possible legally-binding measures, to strengthen and institutionalize the Biological Weapons Convention in all its aspects (available at: <https://meetings.unoda.org/meeting/75240/documents>).

BWC/WG/7/CRP.1, Draft final report of the Working Group on the Strengthening of the Convention, 1 December 2025, (Available at: <https://meetings.unoda.org/meeting/75242/documents>).

BWC/WG/7/CRP.1/Rev.1, Revised draft final report of the Working Group on the Strengthening of the Convention, 12 December 2025 (Available at: <https://meetings.unoda.org/meeting/75242/documents>).

BWC, BWC/MSP/2025/CRP.1, Draft report of the 2025 Meeting of States Parties, 15 December 2025, available at: <https://meetings.unoda.org/meeting/75244/documents>

*All the photos and images used in this Newsletter are copyright free. All links in the Newsletter were accessible as of 20 January 2026.*



## Annex 1: 2025 BTWC Texts comparison for biosecurity education, networks, awareness-raising and codes of conduct

| TOPIC                     | May 2025 Rolling text                                                                                                                                                                                                                                                                                                                                 | Working Group 6 <sup>th</sup> Session (7 August 2025) <sup>20</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Working Group 7 <sup>th</sup> Session (Draft text - 1 Dec) <sup>21</sup> | Working Group 7 <sup>th</sup> Session (Amended text - 12 Dec) <sup>22</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IBSEN/educational network | The ISU, with guidance from the [ICA Advisory Group], will cooperate with relevant stakeholders to establish an International Biosecurity Education Network to serve as a forum to further promote the harmonization of curricula and evaluation of biosecurity education. (Section A Measures on Cooperation and Assistance under Article X, Para 9) | The Working Group recommends that the Implementation Support Unit cooperates with relevant stakeholders to establish an International Biosecurity Education Network. This Education Network would serve as a forum to further promote the harmonization of curricula and the evaluation of biosecurity education. It would develop freely accessible teaching materials such as MOOC-style online courses and support biosecurity education at the national level which is informed by best practices. Furthermore, the Education | None                                                                     | [States Parties are encouraged to promote [on an individual basis or through the Article X database] biological security education and laboratory education to foster and facilitate international scientific exchange and collaboration for peaceful purposes [in accordance] [consistent] with Article X through various activities at the bilateral, regional, and international levels, including, inter alia, capacity building fellowship programs, laboratory training programs, training and experts' advice, [etc.] [In order to avoid duplication of efforts] [Efforts in this regard |

<sup>20</sup> BWC/WG/6/CRP.1 - Draft specific and effective measures, including possible legally-binding measures, to strengthen and institutionalize the Biological Weapons Convention in all its aspects (available at: <https://meetings.unoda.org/meeting/75240/documents>).

<sup>21</sup> BWC/WG/7/CRP.1, Draft final report of the Working Group on the Strengthening of the Convention, 1 December 2025, (Available at: <https://meetings.unoda.org/meeting/75242/documents>).

<sup>22</sup> BWC/WG/7/CRP.1/Rev.1, Revised draft final report of the Working Group on the Strengthening of the Convention, 12 December 2025 (Available at: <https://meetings.unoda.org/meeting/75242/documents>).



|       |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                      |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |                                                                                                                                                                                                                                         | Network would serve as a platform for student and faculty exchanges with the aim of fostering and facilitating international scientific exchange and collaboration for peaceful purposes. (Section A. Measures on international cooperation and assistance under Article X, para 3.) |      | should be complementary and not duplicative of initiatives in other institutional frameworks.] [[States Parties] encourage efforts for a cooperative interaction between the BWC and other institutional frameworks, as to avoid duplication with regard to these measures]]" (Section A Measures on Cooperation and Assistance under Article X, para 7 )<br><br>Suggested text, but not retained:<br>"7bis [A dedicated platform for biosafety and biosecurity shall be established to allow stakeholders to find relevant laws, regulations, norms and standards, [codes of conduct,] exchange of information, and identify best practices, access MOOC-style online courses on biosafety and biosecurity.]" (Section A Measures on Cooperation and Assistance under Article X, para 7bis) |
| Youth | The existing Youth for Biosecurity Initiative conducted by the United Nations Office for Disarmament Affairs will also be supported through the [ICA Fund]. (Section A Measures on Cooperation and Assistance under Article X, Para 14) | None                                                                                                                                                                                                                                                                                 | None | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



|                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Codes of conduct, awareness-raising (Section B)</b> | <p>Endorse the Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists. (<a href="#">Section B Measures on scientific and technological developments relevant to the Convention, para 2</a>)</p> <p>Encourage all stakeholders to voluntarily incorporate elements from the Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists in their practices, protocols, and regulations at the regional, national and institutional levels. (<a href="#">Section B. Measures on scientific and technological developments relevant to the Convention, para 3</a>)</p> | <p>The Working Group recommends that States Parties be encouraged to promote responsible innovation and scientific integrity by developing or updating voluntary codes of conduct, bioethics education and awareness-raising tools that further the objectives of the Convention. In doing so, States Parties are encouraged to draw on existing models, including the ‘Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists’, as a useful reference for such efforts. (<a href="#">Section B. Measures on scientific and technological developments relevant to the Convention, para 6.</a>)</p> | <p>States Parties are encouraged to promote, develop or update awareness-raising tools (inter alia codes of conduct and bioethics education) that further the objectives of the Convention. (<a href="#">Section B Measures on scientific and technological developments relevant to the Convention, para 6</a>)</p>                                                                                                                                                 | <p>Agreed: States Parties are encouraged to promote, develop or update awareness-raising tools that could be used on a voluntary basis by States Parties for the relevant national stakeholders, in order to further the objectives of the Convention (<a href="#">Section B Measures on scientific and technological developments relevant to the Convention, para 8</a>)</p>                                                                                                 |
| <b>Codes of conduct, awareness-raising (Section E)</b> | <p>At the national level: Strengthen States Parties’ implementing and related legislation, policies and regulations, including by reviewing and updating existing legislation, policies and regulation, on overseeing activities related to dual-use materials, technologies and sciences surveillance of diseases, and enhancing effective export controls; develop codes of conduct and biological risk management standards for facilities; and ensure regular</p>                                                                                                                  | <p>The Working Group recommends States Parties to conduct activities on awareness-raising, education and engagement with different stakeholders, as well as encourage relevant actors, including private laboratories and research institutions, to uphold the highest possible biosafety and biosecurity standards in their operations. (<a href="#">Section E. Measures on national implementation of the Convention, para 35</a>)</p>                                                                                                                                                                        | <p>States Parties are encouraged to endorse the “Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists,” which they welcome as one of the useful models that they can BWC/WG/7/CRP.1 6 draw from for voluntary use by stakeholders in practices, protocols and regulations at the national, regional and international levels. (<a href="#">Section B Measures on scientific and technological developments relevant to the Convention, para 7</a>)</p> | <p>[States Parties [should be] [are] encouraged to conduct activities at the national level on awareness-raising, [and] education [and] [with the engagement and participation of] [with] different [national] stakeholders[.] [, [States Parties may also encourage relevant actors to implement voluntary management standards on biosafety and biosecurity in their operations.] [as well as encourage relevant actors to uphold the highest [biosafety and] biological</p> |



|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>submission of the CBM forms.<br/>(Section E. Measures on national implementation of the Convention, para 1)</p> <p>Conduct activities on awareness-raising, education and engagement with different stakeholders, as well as encourage relevant actors, including private laboratories and research institutions, to uphold the highest possible biosafety and biosecurity standards in their operations<br/>(Section E. Measures on national implementation of the Convention, para 4)</p> |  | <p>States Parties should be encouraged to conduct activities on awareness-raising, education and engagement with different stakeholders, as well as encourage relevant actors to uphold the highest biological security standards in their operations (Section E. Measures on national implementation of the Convention, para 28)</p> <p>States Parties should be encouraged to conduct activities on awareness-raising, education and engagement with different stakeholders, as well as encourage relevant actors to uphold the highest biological security standards in their operations. (Section E. Measures on national implementation of the Convention, para 28)</p> | <p>security standards in their operations.]] (Section E. Measures on national implementation of the Convention, para 33)</p> <p>[States Parties [should be] [are] encouraged to conduct activities at the national level on awareness-raising and education with the engagement and participation of different [national] stakeholders [in their national implementation measures], [as well as encourage actors [on a voluntary basis] to uphold the highest [biosafety and biosecurity][relevant] [voluntary] standards[.] [in their implementation of the Convention.]]<br/>(Section E. Measures on national implementation of the Convention, 33bis)</p> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## Annex 2: Glossary of Common Biosecurity Education Terms

|                                                                                            |                                                                      |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 1925 Geneva Protocol                                                                       | Containment                                                          |
| Acceptable Risk                                                                            | Controlled Materials                                                 |
| Access Control                                                                             | Convergence                                                          |
| Accident                                                                                   | Converging Technologies                                              |
| Accountability                                                                             | Cooperation and Assistance                                           |
| Active Learning                                                                            | Countermeasures                                                      |
| Advisory Code of Conduct                                                                   | COVID-19 Pandemic                                                    |
| Aerosolisation                                                                             | Decontamination                                                      |
| Agro-Biosecurity                                                                           | Delivery Systems (Biological weapons)                                |
| Animal Health                                                                              | Disease Notification                                                 |
| Antibacterial resistance                                                                   | Disease Surveillance                                                 |
| Arms Control                                                                               | Dissemination Methods                                                |
| Artificial Intelligence (AI)                                                               | Dual Use Quick Scan (Experimental Assessment)                        |
| Assurance                                                                                  | Dual-Use                                                             |
| Awareness-raising                                                                          | Dual-Use Research                                                    |
| Bacteria                                                                                   | Dual-Use Research of Concern (DURC)                                  |
| Bacterial Agents                                                                           | Early Warning Systems                                                |
| Biocontainment                                                                             | Emergency Preparedness                                               |
| Biodefence                                                                                 | Emerging Infectious Diseases                                         |
| Bioethics                                                                                  | Emerging Technologies                                                |
| Biohazard                                                                                  | Epidemic                                                             |
| Biological Agents                                                                          | <i>Essential Biological Security: A Global Perspective</i><br>(Book) |
| Biological and Toxin Weapons Convention<br>(BTWC)/Biological Weapons Convention (BWC)      | Ethical Review                                                       |
| Biological Risk Assessment                                                                 | Evaluation Methodologies                                             |
| Biological Risk Management                                                                 | Export Controls                                                      |
| <i>Biological Security Education Handbook: The Power<br/>of Team-Based Learning</i> (Book) | Facility                                                             |
| Biological Warfare                                                                         | Fink Committee Report                                                |
| Biological Weapon                                                                          | Fungal Agents                                                        |
| Biorisk                                                                                    | Gain-of-Function Research                                            |
| Biosafety                                                                                  | General Purpose Criterion                                            |
| Biosafety Levels (BSL-1 to BSL-4)                                                          | Genetic Engineering                                                  |
| Biosecurity                                                                                | Genomics                                                             |
| Biosecurity Education                                                                      | Global Health Security                                               |
| Biosecurity Governance                                                                     | Governance (of the Life Sciences)                                    |
| Capacity-Building/strengthening/development                                                | Hague Ethical Guidelines                                             |
| Chemical Weapons Convention (CWC)                                                          | Harm                                                                 |
| Codes of Conduct                                                                           | Hazard                                                               |
| Compliance                                                                                 | Hippocratic Oath                                                     |
| Compliance mechanisms                                                                      | Implementation                                                       |
| Compliance mechanisms                                                                      | Incapacitating Agents                                                |
| Confidence and Transparency Measures                                                       | Incident Reporting                                                   |



## International Biological Security Education Network (IBSEN)

### Confidence-Building Measures (CBMs)

Interactive Gaming Teaching method  
International Biological Security Education Network  
(IBSEN)

International Committee of the Red Cross (ICRC)

International Cooperation (BWC Article X)

International Health Regulations (IHR)

International Human Rights Law

International Humanitarian Law

International Norms

Inventory Management

Laboratory Accreditation

Laboratory Biosafety

Laboratory Biosecurity

Laboratory Safety Management

Legally Enforceable Code of Conduct

Lemon-Relman Report

Lethal Agents

Life Sciences Research

Loss, Theft or Diversion

Machine Learning (ML)

Material Accountability

Means of Delivery

Microorganism

Mid-Spectrum Agents

Misuse

Monitoring

Mousepox Experiment

Multilateralism

National Focal Points

National implementation (Measures)

Neurobiology

Non-Proliferation

Norm

Norms of Responsible Science

One Health

Outbreak Response

Oversight Mechanisms

Pandemic

Pandemic Preparedness

Passive Learning

Pathogen with Enhanced Pandemic Potential

Pathogen with Pandemic Potential

Peaceful Purposes

Personal Protective Equipment (PPE)

Personnel Reliability

Physical Security

Preparedness and Response

*Preventing Biological Threats: What You Can Do*  
(Book)

Prevention

Prohibited Activities

Proliferation

Institutional Biosafety Committee (IBC)

Prevention of misuse

Public Health Emergency

Public Health Security

Recreation of Spanish Flu

Regulations

Regulatory oversight

Resilience

Responsible Conduct of Research

Responsible Innovation

Responsible Life Sciences

Risk

Risk Assessment

Risk Communication

Risk Mitigation

Safety Equipment

Sample Transport

Sanitary Measures

Science Advice

Science Diplomacy

Science policy

Secure Information Handling

Security

Security Culture

Select Agents and Toxins

Sensitive Biological Materials

Simulation

Stakeholder

Stakeholder Engagement

Standard Operating Procedures (SOPs)

Surveillance (Public Health)

Sustainable Development

Synthetic Biology

Synthetic Polio Experiment

Teaching Methodologies

Team-Based Learning

Technology Transfer

Threat Assessment

Tianjin Biosecurity Guidelines for Codes of Conduct  
for Scientists

Toxin

Toxin Weapons

Train-the-Trainer

Training

Transparency Measures

Treaty

Treaty Implementation

Trust and Confidence

United Nations

United Nations Drug Control Conventions

Vaccine

Verification

8<sup>th</sup> Quarterly Newsletter

January 2026



Viral Agents  
Viruses  
Voluntary Measures  
Waste Management  
Weapon  
Weaponisation  
Web of prevention/biosecurity  
World Health Organisation (WHO)  
Zoonotic Diseases



**Editors: Ms Kathryn Millett, Ms Olivia Ibbotson**  
**Senior Editors: Prof Lijun Shang,**  
**Prof Malcolm Dando**

