
**Meeting of the States Parties to the Convention
on the Prohibition of the Development,
Production and Stockpiling of Bacteriological
(Biological) and Toxin Weapons and on Their
Destruction**

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Items 6–9 of the provisional agenda

**Standing agenda item: cooperation and assistance,
with a particular focus on strengthening cooperation
and assistance under Article X**

**Standing agenda item: review of developments in the
field of science and technology related to the Convention**

Standing agenda item: strengthening national implementation

**Biennial item: how to enable fuller participation in the
Confidence-building Measures (CBMs)**

**Synthesis of considerations, lessons, perspectives,
recommendations, conclusions and proposals drawn from the
presentations, statements, working papers and interventions
on the topic under discussion at the Meeting of Experts**

Submitted by the Chairman

**I. Cooperation and assistance, with a particular focus on
strengthening cooperation and assistance under Article X**

A. Ways and means to target and mobilize resources

1. Recognizing the fundamental importance of enhancing international cooperation and assistance, States Parties should work together to mobilize resources to address needs for assistance and cooperation, in particular from developed to developing States Parties, and from international and regional organizations and other relevant stakeholders. In light of rapid developments in the life sciences, there is a need to strengthen cooperation among States Parties in order to bridge the ever increasing gaps in the fields of biotechnology, genetic engineering, microbiology and other related areas. This can be done through, *inter alia*:

(a) Concentrating the electronic cooperation and assistance database on the cooperation aspect with priority given to offers and requests for projects under the BWC context;

- (b) Supporting domestic legislative, regulatory and policy arrangements to allow for beneficial activities and innovation in the life sciences, including by industry and academic and research institutions;
- (c) Submitting clear, specific, and timely national reports on implementation of Article X agreed at the Seventh Review Conference;
- (d) Identifying specific gaps and areas of need at an early stage;
- (e) Collaborating and offering assistance in support of implementation measures including training programs; increasing awareness of requirements; and drafting, implementing, and enforcing laws and regulations, particularly at the regional and sub-regional levels.
- (f) Respecting the following principles for cooperation:
 - (i) Complementarity: projects and cooperation activities should support national efforts of developing countries;
 - (ii) Self-sustainability: international cooperation should contribute to the establishment of an independent development process that, together with international cooperation, may be sustained with the resources of beneficiary countries;
 - (iii) Co-financing: parties involved in cooperation projects should provide financial, human or technical support to enhance national development and encourage a sense of ownership.

B. Coordination of cooperation with relevant international and regional organizations and other relevant stakeholders

2. States Parties recognized the importance of coordination with relevant international and regional organizations and other relevant stakeholders, specifically:
- (a) Closer cooperation between the BWC and WHO, OIE, FAO and OPCW, in full conformity with their respective mandates;
 - (b) Greater interaction between the BWC and CWC scientific communities;
 - (c) Regional partnerships to enhance multi-sectoral training as well as disease surveillance and containment initiatives;
 - (d) Increased cooperation on biosafety and biosecurity at the bilateral, regional and international levels.

C. Challenges and obstacles to developing international cooperation, assistance and exchange in the biological sciences and technology

3. Recognising the importance of overcoming challenges and obstacles to international cooperation, assistance and exchange in the biological sciences and technology, States Parties should work together to:
- (a) Balance implementation of Article X and Article III of the Convention, and in this regard promote appropriate export controls in conformity with the obligations set out in the Convention;
 - (b) Coordinate key activities in order to enhance synergy and avoid duplication.

(c) Develop procedures to promote full, effective, and non-discriminatory implementation of Article X.

(d) Develop procedures for the settlement of disputes arising from concerns about the implementation of Article X;

(e) Utilize the database to facilitate requests for and offers of assistance and cooperation among States Parties.

D. Capacity-building through international cooperation

4. Recognizing the importance of capacity-building through international cooperation in biosafety and biosecurity, and for detecting, reporting, and responding to outbreaks of infectious disease or biological weapons attacks, including in the areas of emergency preparedness, response, management, and mitigation, States Parties should work to build capacity and reduce inequalities between developed and developing countries in the life sciences and related technologies, including by:

(a) Identifying and addressing the need for, and facilitating the exchange of equipment, materials, and scientific and technological information for the use of biological agents for peaceful purposes, particularly to developing countries;

(b) Supporting states in building defences against new and emerging diseases and developing national capacity for responding to biological threats through detection, containment, and decontamination;

(c) Promoting interagency coordination and multi-sectoral cooperation to prepare for, detect, and respond to infectious disease outbreaks whether natural, accidental, or deliberate in nature;

(d) Developing and implementing appropriate, sustainable, and effective laboratory safety and security measures, including guidelines, training materials and resources;

(e) Supporting the WHO's Laboratory Biorisk Management Strategic Framework for Action 2012-2016, which promotes laboratory biosafety and biosecurity solutions in developing countries;

(f) Making use of initiatives such as the 5-Year Strategic Plan for strengthening global biosafety and biosecurity developed by the International Federation of Biosafety Associations (IFBA), which identifies innovative approaches to develop capacities in areas with limited resources;

(g) Promoting sustainable commitment from funders and the consideration of whole-life costs.

II. Review of developments in the field of science and technology related to the Convention

A. Advances in enabling technologies

5. Recognizing that advances in enabling technologies are the result of a convergence of different sciences and technology and are critical for future life sciences research and development, States Parties reviewed a number of relevant, interdependent advances, including: bioinformatics; computational biology; DNA microarrays; gene synthesis

technology; high-throughput mass spectrometry; high-throughput sequencing; nanotechnology; synthetic biology; systems biology; and whole-genome directed evolution.

6. States Parties identified the following advantages and benefits of the advances:

(a) Faster, cheaper, and easier application of biological science and technology by more people in more locations;

(b) Improved identification of agents for both public health and security purposes, including by whole genome sequencing; nanobiosensors; protein and peptide analysis; and nucleic acid analysis for the detection and identification of microbes;

(c) Increased capacity to investigate the possible use of biological weapons, including by enhanced differentiation of unusual and unnatural disease events; and improved bioforensics capacities to investigate and attribute cases of the use of biological weapons;

(d) Improved understanding of disease, including the relationship between human genetic variation and pathogenesis; the evolution of toxicity and pathogenicity; and the role of the regulation of biological networks on disease;

(e) Better healthcare technologies, including: new diagnostic reagents; new ways to produce pharmaceuticals; enhanced and more accessible vaccines; new, cheaper and more accessible antibiotics and antimicrobials; synthetic delivery systems for therapeutic protein delivery; more accurate predictions of efficacy and side effects; and improved epidemiological systems;

(f) Better environmental technologies.

7. States Parties identified the following challenges and concerns related to the advances:

(a) Faster, cheaper, and easier application of biological science and technology, complicating proliferation risks and complicating biosafety and biosecurity efforts;

(b) Increasing capacity to manipulate pathogens, including their pathogenicity, host-specificity, transmissibility; and reaction to drugs.

(c) The synthesis of pathogens, including novel pathogens and those previously eradicated, creating new proliferation pathways;

(d) Novel targets for weapons, new ways to disrupt the healthy functioning of target biochemistry and neurology, and new delivery systems for biological agents and toxins;

8. Noting that advances in enabling technologies require greater awareness rather than specific action, States Parties identified a number of opportunities to respond, including:

(a) Developing best practices to ensure the unhindered flow of scientific information and technology while protecting international and national security interests;

(b) Developing novel regulatory and oversight systems for pathogenic agents, including the identification of agents in ways relevant to the conduct of contemporary biology (such as sequence-based classification), and internationally agreed databases of sequences of concern relevant to the Convention;

(c) Enhancing reference databases and improving connection of existing data sources to support identification of agents and facilitate attribution of deliberate use;

(d) Promoting the beneficial applications of gene synthesis technologies while safeguarding security, for example, through the development of screening procedures for synthetic gene orders and customers.

B. New science and technology developments that have potential for uses contrary to the provisions of the Convention

9. In addition to the advances in enabling technologies, States Parties identified a number of developments that have potential for uses contrary to the provisions of the Convention, including:

- (a) Programming cells to produce toxins, viruses or other cells which could cause harm;
- (b) Designing and building new or altered pathogenic viruses;
- (c) The ability to confer mammalian transmissibility to viruses;
- (d) The increasing ability to confer drug resistance to pathogens;
- (e) The decreasing genetic diversity amongst farm animals, reducing natural resistance to certain diseases;
- (f) The development of incapacitating weapons using recent advances in the neurosciences;
- (g) The increasing capacity to deliver biological weapons via the alimentary route using advances in understanding of enterobacteria and horizontal gene transfer;
- (h) The identification of mechanisms to overcome both vaccine-generated and natural host immunity to pathogens;
- (i) The increasing capacity to confer unusual serological responses to pathogens significantly hampering diagnosis and subsequent treatment;
- (j) The increasing capacity to target differences in genetic variation which correlate to ethnicity, geographic distribution or other factors.

C. New science and technology developments that have potential benefits for the Convention

10. In addition to the advances in enabling technologies, States Parties identified a number of developments that have potential benefits for the Convention, including:

- (a) New silk-based stabilizers for vaccines and antibiotics which could eliminate cold chain refrigeration requirements thus improving access and decreasing associated costs;
- (b) Biodegradable microneedles that can simplify delivery, reduce cold chain refrigeration requirements, and help stretch limited supplies of vaccines or other treatments;
- (c) Progress towards point-of-care diagnostic systems suitable for use in resource-limited settings;
- (d) Increasing capacity to diagnose and treat neurological diseases;
- (e) Improved health care, more efficient food production, more renewable energy resources and better pollution management resulting from increasing convergence of biology and chemistry.

D. Science- and technology-related developments relevant to the activities of multilateral organizations

11. Recognising the increasing convergence of biology and chemistry, including: the increasing use of biologically-mediated processes for the production of chemicals; the chemical synthesis of viruses; and the chemical synthesis of generic material to be used in bacterial chassis, States Parties identified a number of possible challenges and opportunities for the implementation of the Convention, including:

(a) Building and sustaining links between the Convention and the Chemical Weapons Convention, including the possibility of facilitating joint consideration of relevant developments in science and technology;

(b) Improved coordination between the Implementation Support Unit and the Organisation for the Prohibition of Chemical Weapons.

E. Possible measures for strengthening national biological risk management, as appropriate, in research and development involving new science and technology developments of relevance to the Convention

12. Recognising that the dual-use nature of some life sciences research requires thoughtful approaches to maximize benefits and minimize risks of accident or misuse, States Parties should work to develop measures to mitigate biological risks. Such measures should be proportional to the assessed risk, take into account national circumstances, and not hamper activities necessary for prophylactic, protective or other peaceful purposes. They could include:

(a) Strengthening national implementation measures and international monitoring and cooperation, including national biorisk assessments, global management tools and innovative scientific and technical system designs;

(b) Strengthening capacity-building and education on biosafety and biosecurity while countering the provision of overly restrictive or elaborate solutions;

(c) Formulating best practices to address the dual-use implications of bioscience and technology and the identification and mitigation of risks at the earliest possible stage in the research cycle;

(d) Strengthening self-regulation, education and management practices to prevent intentional or inadvertent involvement in activities inconsistent with the Convention;

(e) Developing national approaches of how best to balance scientific freedom and progress with legitimate security concerns;

(f) Measures covering the publication of relevant scientific articles, without hampering the free flow of scientific and technological information for peaceful purposes.

F. Voluntary codes of conduct and other measures to encourage responsible conduct by scientists, academia and industry

13. Recalling the relevant common understandings identified in 2005¹ and 2008², States Parties identified a number of additional opportunities to further their work in this area, including:

(a) Making use of the characteristics of different types of codes, including those covering ethics, behaviour and practice as well as the different layers of codes, such as a universal code, codes developed by scientific societies, and codes developed by individual workplaces;

(b) Developing general guidelines and approaches that are of use to individuals and organizations when faced with novel situations and unexpected scenarios;

(c) Implementing ethical guidelines to ensure that all research activities only involve microbial or other biological agents of types or in quantities that have justification for prophylactic, protective or other peaceful purposes;

(d) Facilitating the engagement of the general public by the scientific community on issues relevant to the Convention;

(e) Regularly reviewing relevant measures with all relevant stakeholders.

G. Education and awareness-raising about risks and benefits of life sciences and biotechnology

14. Recalling the relevant common understandings identified in 2008³, States Parties identified a number of additional opportunities to further their work in this area, including:

(a) Additional measures to increase awareness among scientists, academia and industry, such as: outreach by law enforcement agencies; insertion of relevant materials in core texts for science courses; workplace codes; and better linkages with biosafety and biosecurity training;

(b) Working with relevant professional and scientific bodies, such as national academies of science, to generate a renewed effort to inculcate awareness of the dual-use challenge at an early stage of professional training;

(c) Assimilating efforts relevant to the Convention into broader professional training for scientists in university curricula;

(d) The production of education material in more languages, suitable for use in a broader set of national circumstances;

(e) Inviting the scientific community to share its views on how States Parties can better support scientists in efforts relevant to the Convention.

¹ BWC/MSP/2005/3

² BWC/MSP/2008/5

³ BWC/MSP/2008/5

III. Strengthening national implementation

15. States Parties recalled the common understandings identified at the Meetings of States Parties in 2003⁴ on “necessary national measures to implement the prohibitions set forth in the Convention” and 2007⁵ on “ways and means to enhance national implementation” and “regional and sub-regional cooperation on implementation of the Convention”.

A. Ways and means to enhance national implementation

16. Recognising the importance of enhancing national implementation, sharing best practices and experiences, enforcement of national legislation, strengthening of national institutions and coordination among national law enforcement institutions, States Parties should work towards:

(a) Continuously updating national implementation legislation, regulations and other measures to meet the new challenges raised by recent developments in science and technology;

(b) Sharing best practices and lessons learned among States Parties, especially in the areas of biosafety and biosecurity;

(c) Managing, coordinating, enforcing and regularly reviewing measures to ensure their effectiveness;

(d) Addressing variations in levels of implementation among States Parties, due to different national circumstances and legal and constitutional processes;

(e) Building capacity through international cooperation and assistance to enhance capabilities for the full implementation of the Convention;

(f) A legally-binding instrument to strengthen the comprehensive implementation of the Convention.

B. Specific measures

17. States Parties identified a range of specific measures for the full and comprehensive implementation of the Convention, especially Articles III and IV, including:

(a) Comprehensive control systems, consistent with the highest international standards and best practice, to control the sampling, collection, transport, import and export of pathogens and toxins;

(b) Making more use of experts outside of government, including specialized actors from civil society;

(c) Enhancing coordination and international cooperation between national regulators and scientific institutions to ensure greater compatibility of biosafety and biosecurity regimes;

⁴ BWC/MSP2003/4

⁵ BWC/MSP/2007/5

- (d) Increasing awareness of biosecurity issues, conducting relevant training to prevent biosecurity incidents and raising barriers to prevent the theft of relevant materials from laboratories;
- (e) Ensuring active outreach and engagement between scientific and security communities to mitigate and diminish biosecurity risks;
- (f) Promoting biosafety and biosecurity as a part of Corporate Social Responsibility for private institutions and companies;
- (g) Conducting different types of national inspections at laboratories and containment facilities to determine specific biosafety and biosecurity risks.

C. Regional and sub-regional cooperation

18. Recognising the importance of regional and sub-regional cooperation that can assist national implementation of the Convention, States Parties should work together to:
- (a) Promote awareness about the implementation of the Convention;
 - (b) Strengthen regional discussions on the intersessional topics and their application;
 - (c) Support key regional actors in defining needs and requirements for national implementation.

IV. How to enable fuller participation in the Confidence-building Measures (CBMs)

19. Recognising the importance of the exchange of information among States Parties through the CBMs, noting that this provides transparency and builds trust among States Parties, States Parties should:
- (a) Reach a common understanding of the relevance and appropriateness of the information to be submitted in order to enhance transparency, build confidence and improve implementation of the Convention;
 - (b) Reach a common understanding of how to handle and process the information received, including on the questions of translation, public access, and analysis of content.
20. Recognising the need to enable fuller participation in the CBMs and the technical difficulties experienced by some States Parties in completing full and timely CBM submissions, States Parties should work to find ways to improve participation, make the CBMs more user-friendly, and to provide technical assistance and support to States Parties requesting it, including by:
- (a) Continuing to examine and develop options for electronic means of submission of CBMs;
 - (b) Providing necessary support and assistance, possibly through the establishment of a CBM assistance network coordinated by the ISU, to provide expert advice in an accessible manner and update and harmonize CBM guidance material.
21. Recognising the need to enhance participation of States Parties in the CBMs and for designation of national points of contact responsible preparing the submission of CBMs, States Parties should:

- (a) Continue to urge all States Parties to acknowledge, and reiterate to others, the importance of participation in the CBM process;
 - (b) Encourage the Chairman to write each year to all States Parties urging them to submit their CBMs without delay and stressing that the ISU and various States Parties stand ready to provide assistance;
 - (c) Call on all States Parties to designate National Points of Contact, as agreed at the Sixth Review Conference and reiterated at the Seventh Review Conference, and encourage the Chairman to contact all States Parties which have not yet designated a National Point of Contact and ask them to do so.
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