Strengthening the Biological Weapons Convention

Review Conference Paper No 27

The Provision of Scientific and Technological Advice to the Biological and Toxin Weapons Convention

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Series Editors

Graham S Pearson and Malcolm R Dando

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THE PROVISION OF SCIENTIFICAND TECHNOLOGICAL ADVICE TO THE BIOLOGICAL AND TOXIN WEAPONS CONVENTION

by Malcolm R. Dando[*] and Graham S. Pearson[†]

Introduction

1. The Biological and Toxin Weapons Convention states in Article XII that:

> *Five years after the entry into force of this Convention...a conference of States Parties to the Convention shall be held at Geneva, Switzerland, to review the operation of the Convention, with a view to assuring that the purposes of the preamble and the provisions of the Convention...are being realised.* ***Such review shall take into account any new scientific and technological developments relevant to the Convention****.* [emphasis added]

2. For the first five Review Conferences – in 1980, 1986, 1991, 1996, 2001 – the Preparatory Committee agreed in regard to background documentation for the Review Conference that – as prior to the Fourth Review Conference in 1996[1]:

> *The Committee also decided to invite States Parties that wished to do so, including the Depositary Governments, to submit to the Secretariat information on new scientific and technological developments relevant to the Convention. This information should cover the applications being made of such developments and their relevance to various aspects of the Convention.*

3. At the Sixth Review Conference in 2006, the Preparatory Committee[2] modified its request for background documentation so as to request the Secretariat to prepare;

> *(c) A background information document on new scientific and technological developments relevant to the Convention, to be compiled from information submitted by States Parties* ***as well as from information provided by relevant international organisations****;* [emphasis added]

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[1] United Nations, Preparatory Committee for the Fourth Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *Report of the Preparatory Committee*, BWC/CONF.IV/PC/2, 12 April 1996. Available at http://www.opbw.org

[2] United Nations, Preparatory Committee for the Sixth Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *Report of the Preparatory Committee*, BWC/CONF.VI/PC/2, 3 May 2006. Available at http://www.opbw.org

The background document[3] created for the Sixth Review Conference was different from those produced for the previous Review Conferences which had been compiled by **reproducing** the material submitted by the States Parties who had submitted such information. The background document for the Sixth Review Conference was prepared by the Secretariat using the information from the States Parties but **not** reproducing this information. Although the information submitted by States Parties was made available on the unog.ch/bwc website (at http://www.unog.ch/unog/website/disarmament.nsf/(httpPages)/23958FD3E9A0A67BC12571F10032D47B?OpenDocument&unid=3496CA1347FBF664C125718600364331) it was **not** reproduced in the background document for the Review Conference.

4. It is also to be noted whilst for the background documents prepared for the first five Review Conferences, the Preparatory Committee request had specifically stated that *This information should cover the applications being made of such developments and their relevance to various aspects of the Convention* .,. any such mention was omitted from the Preparatory Committee request in 2006 for the Sixth Review Conference background paper. The 2006 background document prepared by the Secretariat includes the following paragraph:

> *5. An inclusive approach has been taken in determining which developments may be of relevance to the Convention. Although the advances discussed in this document have obvious applications for prophylactic, protective or other peaceful purposes, they may also have the potential to be applied in contravention of the objectives and provisions of the Convention. Inclusion of a development in this document does not imply any assessment by the Secretariat of its permissibility or otherwise under the Convention.*

This appears to suggest that the focus in 2006 is different from that for previous Review Conferences and, in 2006, is looking somewhat more at advances that *may also have the potential to be applied in contravention of the objectives and provisions of the Convention.*

5. It is understood that, following a direct request from a State Party, the intention in 2011 for the Seventh Review Conference is to return to a situation in which the submissions made by States Parties will be reproduced in the background document and that States Parties as for the earlier Review Conferences will be asked to provide information in response to the wording that *This information should cover the applications being made of such developments and their relevance to various aspects of the Convention.*

6. Subsequent to the Sixth Review Conference in 2006, the Implementation Support Unit has provided background information documents on scientific and technological developments that may be of relevance to the Convention for MSP 2008, MSP 2009 and MSP 2010. The document[4] in 2008 is shown as being relevant to Agenda Item 7 and in its

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[3] United Nations, Sixth Review Conference 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, *Background Information Document on New Scientific and Technological Developments Relevant to the Convention*, 28 September 2006, BWC/CONF.VI/INF.4.

[4] United Nations, 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, *Background Information on Scientific and Technological Developments that may be Relevant to the Convention*, BWC/MSP/2008/INF.1, 28 November 2008.

summary is described as *This document summarises scientific and technological developments potentially relevant to the Convention that have come to the attention of the Implementation Support Unit in the course of its research on the oversight of science, in preparation for the 2008 Meeting of Experts and Meeting of States Parties.* The document[5] in 2009 is shown as being relevant to Agenda Item 6 and in its summary is described as *This document summarises scientific and technological developments potentially relevant to the Convention that have come to the attention of the Implementation Support Unit in the course of its research in the fields of disease surveillance, detection, diagnosis, and containment of infectious diseases in preparation for the 2009 Meeting of Experts and Meeting of States Parties.* The document[6] in 2010 is shown as being relevant to Agenda Item 6 and in its summary is described as *From 31 October to 3 November 2010, the InterAcademy Panel (IAP), the International Union of Biochemistry and Molecular Biology (IUBMB), the International Union of Microbiological societies (IUMS), the Chinese Academy of Sciences (CAS), and the U.S. National Academies jointly hosted the international workshop "Trends in Science and Technology Relevant to the Biological and Toxic Weapons Convention", in Beijing, China. Government agencies, academic and research institutions, private sector companies, and non-profit organizations participated in this workshop. The workshop focused on two broad themes: advances in biology which might be misused to increase the biological weapons threat; and advances in detection and countermeasures that could improve efforts to address the threat.* It is thus evident that the background documents provided by the ISU in 2008, 2009 and 2010 were all of advances in science and technology that might be relevant to the topics being considered by the respective Meetings of States Parties.

7. This Review Conference Paper examines the information provided in the background paper for the Sixth Review Conference in 2006, including that submitted by the States Parties, and notes the significance of the increasing pace of these advances in several areas of the life sciences of relevance to the Convention. This analysis leads to the conclusion that there is a need to provide scientific and technological advice more frequently to the States Parties of the BTWC than the present five year Review Conference arrangements. Various ways in which this could be done are examined and it is concluded that the Seventh Review Conference should agree that a Meeting of Scientific and Technical Experts should be tasked by a future Annual Meeting[7] of States Parties to consider the implications for all aspects of the Convention of the current and likely developments of a particular topic assigned by the Annual Meeting.

Scientific and Technological Advances relevant to the Convention

[5] United Nations, 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, *Background Information on Scientific and Technological Developments that may be Relevant to the Convention,* BWC/MSP/2009/INF.1, 2 December 2009.

[6] United Nations, 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, *Background Information on Scientific and Technological Developments that may be Relevant to the Convention,* BWC/MSP/2010/INF.1, 6 December 2010.

[7] Nicholas A. Sims, *An Annual Meeting for the BTWC,* Review Conference Paper No. 22, Division of Peace Studies, University of Bradford, June 2010. Available at http://www.brad.ac.uk/acad/sbtwc/briefing/RCPapers.htm

8. At the Sixth Review Conference in 2006, as already noted above the information submitted by ten States Parties was not reproduced in the background document[8] on the advances of science and technology prepared by the Secretariat. However, the material in the background document made it evident that information had been sought by the Secretariat in relation to a number of different areas relevant to the Convention:

- National criminal and anti-terrorism legislation, regulations and measures
- Safety and security of biological agents and toxins (in laboratories, etc)
- Safe and secure transport of biological agents and toxins
- Ethics and codes of conduct
- Disease surveillance and early warning
- Assistance, protection and response in the case of use of biological weapons
- Promotion of peaceful uses of biological science and technology, including capacity-building and free trade

In other words, the information had been sought because of its relevance for various Articles of the Convention as well as in regard to the potential for misuse under Article I.

9. As is usual at the Review Conferences, there was little discussion about the information included in the background document on the advances in science and technology, and the advances in science and technology were reflected in the language adopted for the Article by Article Final Declaration. Thus, for example, paragraph 2 in the section on Article I stated:

> *2. The Conference reaffirms that Article I applies to all scientific and technological developments in the life sciences and in other fields of science relevant to the Convention.*

Although there are some mentions of science and technology in regard to further Articles in the Final Declaration, it is evident that none of these mentions are responding to recent advances in science and technology.

10. A further point that has become increasingly evident is that the advances in the various areas of the life sciences are taking place at an ever-increasing pace. Indeed, these advances are said to be increasing exponentially thus making it more important that the States Parties take these considerations into account more frequently than at the current five year cycles. Indeed, the UN Secretary-General in his statement to the States Parties of the BTWC at the 2010 Meeting of States Parties said in looking ahead to the Seventh Review Conference in 2011 that:

> *Indeed, that meeting offers the best chance in a decade or more to reach significant agreements on the future of the Convention. With the pace of advances in biological science and technology growing ever quicker, there is a pressing need for a structured and regular means of monitoring developments and assessing their implications.*

[8] United Nations, Sixth Review Conference 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, *Background Information Document on New Scientific and Technological Developments Relevant to the Convention*, 28 September 2006, BWC/CONF.VI/INF.4.

11. It has also become evident at some of the recent workshops[9] held in preparing for the Seventh Review Conference in 2011 that the advances in science and technology are of much wider relevance than simply Article I of the Convention. States Parties need to be aware of the advances of science and technology relevant to the Convention not only because of the potential for misuse but also because such advances have implications for the national implementation of Articles III and IV of the Convention as well as other Articles such as VII and X. They have wider implications as States Parties need to be prepared to use such advances in their preparedness to counter outbreaks of disease whether natural, accidental or deliberate and in ensuring that national biosecurity and biosafety arrangements are up to date and effective. Furthermore, such advances may enhance national capabilities to determine the source of any outbreaks and thereby reduce the attractiveness of misuse to States or non-state actors. And such enhancements of national capabilities can also lead to international cooperation to assist capacity building.

12. It is thus timely to consider how the advances in science and technology relevant to **all** Articles of the Convention might be provided to the States Parties in a more effective way that enables the significance of the advances to be discussed and their implications for **all** Articles of the Convention identified and appropriate decisions taken by the States Parties.

Provision of Advice on Scientific and Technological Advances

13. There are a variety of different arrangements for the provision of scientific and technological advice to international treaties. Two examples are examined here:

a. Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) established under the Convention of Biological Diversity (which entered into force in December 1993).

b. Scientific Advisory Board (SAB) established under the Chemical Weapons Convention (which entered into force in April 1997).

14, **Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA).** Article 25 of the Convention on Biological Diversity[10] established an open-ended intergovernmental scientific advisory body:

Article 25. Subsidiary Body on Scientific, Technical and Technological Advice

1. A subsidiary body for the provision of scientific, technical and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely advice relating to the implementation of this Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

[9] Such as the workshops held in Beijing in November 2010. See Graham S. Pearson, HSP Special Report from Beijing, *Preparing for the Seventh Review Conference in 2011*, December 2010. Available at Reports from Geneva, http://www.sussex.ac.uk/Units/spru/hsp/Reports%20from%20Geneva.html

[10] Text of the Convention on Biological Diversity. Available at http://www.cbd.int/convention/text/

2. Under the authority of and in accordance with guidelines laid down by the Conference of the Parties, and upon its request, this body shall:

(a) Provide scientific and technical assessments of the status of biological diversity;

(b) Prepare scientific and technical assessments of the effects of types of measures taken in accordance with the provisions of this Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how relating to the conservation and sustainable use of biological diversity and advise on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes and international cooperation in research and development related to conservation and sustainable use of biological diversity; and

(e) Respond to scientific, technical, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions, terms of reference, organization and operation of this body may be further elaborated by the Conference of the Parties.

It is thus evident that the SBSTTA is made up of government representatives and is open to participation by all States Parties. Its activities are to provide the Conference of the Parties *with timely advice relating to the implementation of this Convention* and that its functions may be further elaborated by the Conference of the Parties. The Conference of Parties initially met annually and currently meets biannually. The SBSTTA has met annually or at slightly longer intervals. By the end of 2010, the SBSTTA has met 14 times and produced a total of 136 recommendations to the Conference of the Parties, some of which have been endorsed in full by the latter. Such endorsement makes these recommendations de facto decisions of the Conference of the Parties. Parts of other recommendations have also been endorsed, and many others have been taken up in modified form.

15. In a detailed *Modus operandi*[11] for the SBSTTA it is made clear that

19. The scientific and technical contribution of non-governmental organizations to the fulfilment of the mandate of the Subsidiary Body will be strongly encouraged in accordance with the relevant provisions of the Convention and the rules of procedure for meetings of the Conference of the Parties.

and the Rules of Procedure[12] of the Conference of the Parties make it clear that qualified experts, governmental or non-governmental, are able to participate as observers:

[11] Consolidated *Modus Operandi* of the Subsidiary Body on Scientific, Technical and Technological Advice. Available at http://www.cbd.int/convention/sbstta-modus.shtml

[12] Rules of Procedure, Conference of Parties. Available at http://www.cbd.int/convention/rules.shtml

1. The Secretariat shall notify any body or agency, whether governmental or non-governmental, qualified in fields relating to the conservation and sustainable use of biological diversity, which has informed the Secretariat of its wish to be represented, of meetings of the Conference of the Parties so that they may be represented as observers unless at least one third of the Parties present at the meeting object.

2. Such observers may, upon invitation of the President, participate without the right to vote in the proceedings of any meeting in matters of direct concern to the body or agency they represent unless at least one third of the Parties present at the meeting object.

16. **Scientific Advisory Board (SAB).** Article VIII of the Chemical Weapons Convention[13] addressed the Organization for the Prohibition of Chemical Weapons. This Article includes a section establishing the *Conference of States Parties* which has under its Powers and Functions a paragraph stating that:

21. The Conference shall:

(h) Review scientific and technological developments that could affect the operation of this Convention and, in this context, direct the Director-General to establish a Scientific Advisory Board to enable him, in the performance of his functions, to render specialized advice in areas of science and technology relevant to this Convention, to the Conference, the Executive Council or States Parties. The Scientific Advisory Board shall be composed of independent experts appointed in accordance with terms of reference adopted by the Conference;

17. The Terms of Reference[14] of the Scientific Advisory Board (SAB) makes it clear that the role and functions of the SAB are:

The role of the Board shall be to enable the Director-General, in the performance of his functions, to render specialised advice to the Conference, Executive Council or States Parties in areas of science and technology relevant to the Convention. Consistent with the provisions of the Convention, the functions of the Board include the following:

** assess and report to the Director-General developments in scientific and technological fields relevant to the Convention;*
** as necessary, provide advice on proposed changes to the Annex on Chemicals originated by States Parties in accordance with Article XV of the Convention;*
** co-ordinate the efforts of the working groups temporarily established in accordance with paragraph 9 below;*

[13] Text of the Chemical Weapons Convention. Available at http://www.opcw.org/chemical-weapons-convention/articles/

[14] Terms of Reference of the Scientific Advisory Board. Available at http://www.opcw.org/about-opcw/subsidiary-bodies/scientific-advisory-board/

** as necessary, provide scientific and technological advice relevant to the Convention, including advice on technical matters related to co-operation and assistance, to the Technical Secretariat upon request;*
** upon the request of the Director-General, assess the scientific and technological merit of a present, or proposed, methodology for use by the Technical Secretariat in verification under the Convention;*
** when directed by the Conference acting in accordance with paragraph 22 of Article VIII, provide advice and make recommendations taking into account any relevant scientific and technological developments for the purpose of assisting the Conference in its review of the operation of the Convention;*
** assess and report on emerging technologies and new equipment which could be used on verification activities.*

It is also stated that the Board shall be made up of 25 persons appointed by the Director-General in consultation with the States Parties from a list of nominees put forward by States Parties. Furthermore, *the members of the Board shall be appointed from eminent persons active at such institutions as research institutions, universities, chemical industry companies, defence and military organisations, on the basis of their expertise in the particular scientific fields relevant to the implementation of the Convention.* It is thus evident that the membership of the SAB is not open to all States Parties and, furthermore, that the individuals appointed to the Board are not necessarily from government organisations. It is also evident that the function of the SAB is primarily to report to the Director-General rather than to the Conference of Parties.

18. **Analysis.** The two examples are thus very different in nature and serve to illustrate the range of options that exist for the provision of advice to an international treaty. In regard to the provision of advice to the States Parties to the Biological and Toxin Weapons Convention, it will be appropriate to devise a mechanism that suits the BTWC as it has developed by the time of the Seventh Review Conference in 2011.

19. In considering the BTWC, it is evident that what has worked particularly well over the past decade has been the Meetings of Experts which has considered the specific topics of the intersessional programme. The Meetings of Experts have been open for all States Parties to participate and whilst they have largely consisted of governmental experts, who have formed the delegations of States Parties, participation has been widened to 'guests of the chair' who have been invited by the Chairman of the Meeting of Experts to participate because of the particular expertise that the 'guests of the chair' are able to bring to the topic of the meeting. Another development that has become apparent[15] in the BTWC context is the desirability of establishing a situation in which closer links are built and communications improved between the delegations of States Parties and their scientific academies and associations. There would be benefits from steps being taken by all States Parties to institutionalise such links, as this would make it easier for national policy makers to be aware of the implications that advances in science and technology may have with regard to the various Articles of the Convention. There would equally be benefits in the reverse direction, as those engaged in the life sciences would become better aware of the obligations of the Convention and of SCR 1540, thereby improving implementation of the BTWC together with education and outreach as well as

[15] Graham S. Pearson, HSP Special Report from Beijing, *Preparing for the Seventh Review Conference in 2011,* December 2010. Available at Reports from Geneva, http://www.sussex.ac.uk/Units/spru/hsp/Reports%20from%20Geneva.html

biosecurity.

20. Consequently, in looking ahead for the BTWC, there would be benefit in establishing a Meeting of Scientific and Technical Experts to provide advice on scientific and technological advances relevant to the Convention that would report to the Annual Meeting of States Parties[16]. The Annual Meeting would determine the topics to be considered by this Meeting of Scientific and Technical Experts. Participation in the Meetings of Scientific and Technical Experts would be open to all States Parties. In addition, it would be advantageous for representatives from scientific academies and associations as well as other experts who have demonstrated their competence in regard to the topics being considered by the Meeting of Scientific and Technical Experts to be able to apply to participate as an observer (in a comparable way to representatives from international organisations have participated as observers at Meetings of Experts in the previous intersessional process of the BTWC). The Meeting of Scientific and Technical Experts would be required to assess the implications for all aspects of the Convention of the current and likely developments of the topic that they have been assigned by the Annual Meeting of States Parties.

21. It is helpful to consider an example of the sort of topic that the Annual Meeting might decide to assign to the Meeting of Scientific and Technical Experts. From consideration of the background information document[17] on new scientific and technological developments relevant to the Convention prepared by the ISU for the Sixth Review Conference in 2006, one topic that was highlighted was *synthetic biology*. The background paper said that:

> *This growing overlap between biology and engineering has facilitated a new approach to the life sciences, synthetic biology, which focuses on using knowledge of biological systems to begin to construct them from scratch. Key to synthetic biology is a requirement for biological components which can be combined to produce a biological system in a manner reminiscent of the way in which a circuit board is compiled from pre-packaged electronic components.*

and also noted that:

> *Synthetic biology has attracted both biologists and engineers, who tend to view it in very different lights. Engineers see synthetic biology as a way to fabricate biological devices to do what no current technology is able to. Biologists see it as a powerful new way to learn about the principles underlying biological function. Both come together to model biological systems with desirable properties, create these systems in reality, test them for functionality and adjust them until they work properly.*

In short, this is a radically new approach that has major implications in many areas of the life sciences. For example, in the fields of microbiology and immunology, which clearly are of central relevance to the Convention, in 2010 it was possible to synthesize and assemble a modified version of an intact bacterial genome of one species and transfer it so that it

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[16] Nicholas A. Sims, *An Annual Meeting for the BTWC*, Review Conference Paper No. 22, Division of Peace Studies, University of Bradford, June 2010. Available at http://www.brad.ac.uk/acad/sbtwc/briefing/RCPapers.htm

[17] United Nations, Sixth Review Conference 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, *Background Information Document on New Scientific and Technological Developments Relevant to the Convention*, 28 September 2006, BWC/CONF.VI/INF.4.

functioned effectively in a bacterium of a different species. It was not quite creation of synthetic life, but it was certainly a large step in that direction.

22. It is therefore suggested that an example of the sort of topics that the Annual Meeting might select to ask the Meeting of Scientific and Technical Experts to consider would be "to assess the implications for all aspects of the Convention of recent and likely future developments in *synthetic biology*." The Meeting of Scientific and Technical Experts would then announce that it was going to hold a meeting on *synthetic biology* and it would invite representatives from scientific academies and associations as well as other experts who have demonstrated their competence in regard to the topic being considered by the Meeting of Scientific and Technical Experts to submit a request that they participate as an observer and be prepared to contribute to the discussion assessing in regard to the Convention of:

A. Implications for potential misuse
B. Implications for preparing for outbreaks of disease whether natural, accidental or deliberate
C. Implications for the implementation of the Convention – such as Article III, Article IV, Article V, Article VII and Article X.

23. The Meeting of Scientific and Technical Experts would then be able to benefit from the exchange of information with synthetic biologists who have already both nationally and internationally, as well as in both academia and industry sought to design and implement systems that could prevent attempts at misuse. For example, in the field of synthetic biology attempts have been made to analyse how orders for strands of DNA should be checked against known pathogenic elements through the use of information technology and expert review. But clearly such attempts are far from universally agreed and implemented, and they cannot deal with the capabilities that will arise as new desk-top synthesizers increasingly allow those engaged in synthetic biology to construct their own material.

24. The Meeting of Scientific and Technical Experts could usefully then engage in a more specific discussion of the implication of advances in synthetic biology in regard to other articles of the Convention than Article I. Consideration could be given to what amendments to national legislation and regulation under Article IV might be required to minimise the dangers that could arise from these advances, and what adjustments to export control systems under Article III might become necessary. In addition, consideration could be given to what steps might be taken to promote international cooperation and capacity building for peaceful purposes. Such considerations and recommendations, from a scientific and technical viewpoint, as to what actions should be taken to address the implication of synthetic biology would then be incorporated into a report for consideration at the subsequent Annual Meeting of States Parties.

Achieving Consensus at the Seventh Review Conference

25. It was apparent at the Meeting of States Parties in December 2010 that a number of States Parties are keen to see new arrangements for the provision of scientific and technological advice adopted at the Seventh Review Conference. As already noted earlier,

the UN Secretary-General in his opening statement[18] to the Meeting of States Parties said that:

> *With the pace of advances in biological science and technology growing ever quicker, there is a pressing need for a structured and regular means of monitoring developments and assessing their implications.*

26. Several of the States Parties also referred to scientific and technological advances in their statements to the Meeting of States Parties. Belgium on behalf of the EU said[19] that *This week's Meeting … will be an important milestone on the road to the 7th BTWC Review Conference in 2011, which we see as a great opportunity for strengthening the Convention against the background of a rapid evolution of life sciences.* Canada speaking on behalf of the JACKSNNZ group (Japan, Australia, Canada, Republic of Korea, Switzerland, Norway and New Zealand) said[20] that *The JACKSNNZ states recognize that biological science is advancing rapidly, and that the* ***bio-industry and academia*** *have an important role in the implementation of the BTWC. Recognising the useful work that has already been done, we would welcome strengthened interaction with* ***civil society.*** *We would also need to do a better job involving industry associations and representatives. …. Accordingly, the JACKSNNZ would welcome a collective assessment and discussion by the BTWC community of science and technology developments relevant to the Convention.* [Emphasis in original]

27. The Russian Federation said[21] that *The rapidly developing scientific and technological progress puts the BWC to a serious trial. Utmost efforts must be made to strengthen the Convention in order to continue effective counteracting against the emerging biological risks.* The United States said[22] that *We also need to stay abreast of developments in science and technology.* and then later in the same statement said *The question of developments in science and technology also arises here: a number of States Parties have called for the development of a mechanism to ensure that we remain abreast of and respond appropriately to developments in science and technology. This is a reasonable goal. But it seems to us important that we first consider what needs such a mechanism would fulfil, and then design a mechanism that successfully addresses those needs.*

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[18] UN Secretary-General, *Message to the Meeting of the States Parties to the Biological Weapons Convention (BWC)*, 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, 6 December 2010. Available at http://www.unog.ch/__80256ee600585943.nsf/(httpPages)/f1cd974a1fde4794c125731a0037d96d?OpenDocument&ExpandSection=6#_Section6

[19] Belgium, *Statement*, 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, 6 December 2010. Available at http://www.unog.ch/bwc

[20] Canada, *Statement*, 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, 6 December 2010. Available at http://www.unog.ch/bwc

[21] Russian Federation, *Statement*, 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, 6 December 2010. Available at http://www.unog.ch/bwc

[22] United States of America, *Statement*, 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, 6 December 2010. Available at http://www.unog.ch/bwc

28. Germany said[23] that *We somehow failed to identify and assess the benefits and misuse potential of scientific and technological developments in the life sciences as well as their impact on the Convention. From our point of view scientific and technological developments require a broader platform. Much more is needed than discussing these complex issues at the upcoming Review Conference. Germany therefore suggests to consider new scientific and technological developments to be one of the substantive agenda items in the future intersessional process.*

29. Algeria said[24] that *The rapid progress of life sciences, microbiology and their application in the various activities, their possibility of dual use, as well as the modern information and communication technologies, the permeability of borders, together with a terrorist threat, all make the threat of biological weapons an ubiquitous one.* Armenia said[25] that *Stronger interaction and correlation between the rapidly developing technologies in the life sciences and implementation efforts of the BWC provisions is another crucial concern of many States Parties to the Convention.* Bangladesh said[26] that *Rapid advancement in the field of life sciences to use microbes and toxins have made it imperative to remain alert against the threat of biological weapons even today.* And Brazil said[27] that *The rapid development in science and technology in fields of interest to the Convention must be open to all States Parties.*

30. These statements looking ahead to the Seventh Review Conference indicate that there are a number of States Parties who would welcome a mechanism whereby States Parties are kept abreast of and can respond appropriately to the advances in science and technology of relevance to the Convention. There would therefore appear to be support for the idea of a Meeting of Scientific and Technical Experts that would report to the Annual Meeting of the States Parties. Under such an arrangement, it is envisaged that the Annual Meeting of the States Parties would identify a topic such as synthetic biology and request the Meeting of Scientific and Technical Experts to examine the developments in synthetic biology of relevance to the Convention. The Meeting of Scientific and Technical Experts would then arrange to hold a meeting on synthetic biology to assess the implications for **all** aspects of the Convention of the current and likely developments of synthetic biology to which it would invite appropriate experts. The report of the meeting would set out the implications for **all** aspects of the Convention and any consequential recommendations in regard to the various Articles of the Convention. This report and its recommendations would then be considered by the next Annual Meeting of States Parties who would be able to take further action as they judged appropriate.

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[23] Germany, *Statement,* 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, 6 December 2010. Available at http://www.unog.ch/bwc

[24] Algeria, *Statement,* 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, 6 December 2010. Available at http://www.unog.ch/bwc

[25] Armenia, *Statement,* 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, 6 December 2010. Available at http://www.unog.ch/bwc

[26] Bangladesh, *Statement,* 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, 6 December 2010. Available at http://www.unog.ch/bwc

[27] Brazil, *Statement,* 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, 6 December 2010. Available at http://www.unog.ch/bwc

31. The key elements that need to be agreed in the Final Declaration of the Seventh Review Conference, probably for *Section III: Decisions and Recommendations,* are thus the following:

a. Decision to set up a Meeting of Scientific and Technical Experts to meet to address scientific and technical advances relevant to the Convention in regard to specific areas of science and technology identified by the Annual Meeting of States Parties.

b. Decision that the Meeting of Scientific and Technical Experts shall be open to representatives from all States Parties.

c. Decision that the Meeting of Scientific and Technical Experts shall be open for representatives from scientific academies and associations as well as other experts who have demonstrated their competence in regard to the topics being considered by the Meeting of Scientific and Technical Experts to apply to participate as an observer and be prepared to contribute to the discussion (in a comparable way to that in which representatives from international organisations have participated as observers at Meetings of Experts in the previous intersessional process of the BTWC).

d. Decision that the Meeting of Scientific and Technical Experts shall assess the implications for **all** aspects of the Convention of the current and likely developments of the topic that they have been assigned by the Annual Meeting of States Parties.

e. Decision that the Meeting of Scientific and Technical Experts shall submit a report on the implications for **all** aspects of the Convention of the current and likely developments of the assigned topic to the subsequent Annual Meeting of States Parties.

32. As the Meeting of Scientific and Technical Experts would only be considering particular topics assigned to it by the Annual Meeting of States Parties, there would be no change in the requirement for the Review Conferences at five year intervals to consider – as required by Article XII – *any new scientific and technological developments relevant to the Convention.*

Conclusions

33. This Review Conference Paper has examined the information on scientific and technological advances relevant to the Convention provided in the background paper for the Sixth Review Conference in 2006, including that submitted by the States Parties, and notes the significance of the increasing pace of these advances in several areas of the life sciences of relevance to the Convention. It is also noted that States Parties need to be aware of the advances of science and technology relevant to the Convention not only because of the potential for misuse but also because such advances have implications for the national implementation of Articles III and IV of the Convention as well as for the other Articles such as Articles VII and X. This analysis leads to the conclusion that there is a need to provide scientific and technological advice more frequently to the States Parties than the present five year Review Conference arrangements. Various ways in which this could be done are examined and it is recommended that the Seventh Review Conference should agree that a Meeting of Scientific and Technical Experts should be requested by an Annual Meeting of

States Parties to consider specific topics decided by the Annual Meeting. The Meeting of Scientific and Technical Experts would be required to assess the implications for **all** aspects of the Convention of the current and likely developments of the topic that they have been assigned by the Annual Meeting of States Parties and to submit a report on these implications to the Annual Meeting.