

## **Reviewing science and technology in the context of the Biological Weapons Convention**

Caitriona McLeish and James Revill  
The Harvard Sussex Program  
SPRU, University of Sussex, UK

*There is evidence of the emergence of a consensus amongst a number of States Parties to the BWC and NGOs on the principle of changing the process of S&T review as part of the wider quinquennial review process of the BWC. However, there is little evidence of agreement on the details of what needs to be done, how, by whom and to what end. Wrestling with these questions will be essential if state parties wish to capitalise on the momentum that has built up around changing S&T reviews and convert this into an evolution of the practice. With the review conference less than a year away, thinking needs to begin sooner, rather than later.*

Article XII of the Biological Weapons Convention instructs States Parties to the convention to hold, five years after entry into force, a conference to review the operation of the convention to assure that the purposes of the preamble and the provisions of the convention are being realised. This review, negotiators decided, should also “take into account any new scientific and technological developments relevant to the Convention.” No further guidance is given to States Parties in the text of the Convention

Strictly speaking the legal obligation to review the operation of the convention, including taking into account any new scientific and technological developments, was fulfilled in 1980. However, in practice what has happened is that at each of the following five review conferences (1986, 1991, 1996, 2001-02 and 2006) a science and technology review has been conducted and what little additional guidance there is for States Parties has been issued in the Preparatory Committee documents which precede the review conferences.

Especially in the last few years, concerns have been raised as to the adequacy of the current reviewing process. In 2008, for example, the Chairman of the BWC Meeting of States Parties reflected the findings of that year’s Meeting of Experts in his *Synthesis Document*. Under the findings and recommendations for ‘oversight of science’, he noted the finding that States Parties should

Regularly review scientific and technological developments relevant to the Convention, and consider creating an international scientific advisory panel to independently analyze such developments.<sup>1</sup>

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<sup>1</sup> Chairman of the BWC Meeting of States Parties, *Synthesis of considerations, lessons, perspectives, recommendations, conclusions and proposals drawn from the presentations, statements working papers and interventions on the topics under discussion at the Meeting of Experts*, 31 October 2008, BWC/MSP/2008/L.1, p6

The Chairman's synthesis demonstrates two recurring themes raised in relation to the current reviewing process: the review of science and technology is not conducted regularly enough and/or the process requires the establishment of a dedicated body, which will be charged with the task of reviewing science and technology relevant to the convention.

### *Momentum building*

The 2008 *Synthesis Document* is part of a series of statements that have been made regarding the S&T review process throughout the life of the convention. In the Annex to this paper are two illustrative tables: the first is an illustrative list of statements made by States Parties in a BWC forum and the second is an illustrative list of statements from non governmental organisations or persons referring to the need to update or amend the process of S&T review.

Both these tables show increasing momentum in support for the idea that 'something' needs to be done regarding the way in which science and technology relevant to the convention is reviewed. A number of other trends are also worth highlighting. First is the wide geographical distribution of statements made by the States Parties to the BWC. These include statements by the UK, Argentina on behalf of the Latin America group, the Netherlands, Japan, the EU, Ukraine, Sweden, Canada on behalf of the JACKSNNZ, the NAM, China, India and the Russian Federation. Thus either through specific national statement or through association with a group statement, the profound majority of States Parties to the BWC have at some stage referred to the need to change the process by which the review of science and technology relevant to the convention is performed and/or to increase the frequency of such reviews.

Second, State Party statements alluding to the need to elaborate, update or reform the process by which S&T review are conducted are not a recent phenomenon. Although the frequency of State Parties statements has increased since the collapse of the Protocol negotiations in 2001<sup>2</sup>, statements have been made since at least 1979. In this earliest statement, the idea was put forward by the UK to form a small, open-ended group of experts to conduct the S&T review, supported by a Chairman and Secretary.<sup>3</sup> This idea was repeated in 1986 with the proposal to establish "a group of scientific experts to study the latest biological developments of relevance to compliance with the Convention."<sup>4</sup>

Third, comments and statements about the process of reviewing S&T made by the non governmental community have an equally long history. For example, the Pugwash Executive Council issued a statement in 1980, which drew attention to the difficulties of performing a comprehensive S&T review because of the breadth of expertise required. The statement goes on:

It would be essential, in our view, for the agenda of each successive review conference to include consideration of a report prepared by qualified experts in recent developments in pertinent areas of science and technology, including industrial microbiology and other forms of biotechnology. To be an adequate guide to policy such a report would need to draw from a wide range of expertise. Familiarity with, for example biological-warfare defence

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<sup>2</sup> During the Ad Hoc negotiations, the idea of a Science Advisory Board and ad hoc working groups of scientific experts were being explored for the proposed organisation. Early references can be found in the procedural report of the sixth session in March 1997 (BWC/AD HOC GROUP/34) with more detail being added in the procedural report of the seventh session in August 1997, (BWC/AD HOC GROUP/36).

<sup>3</sup>United Kingdom, "Preparatory Committee for the [First] Review Conference: Working Paper on Background Documentation" BWC/CONF.I/PC.3, 10th July 1979.

<sup>4</sup> Proposal by the German Democratic Republic, Hungary and the Union of Soviet Socialist Republic, in UN (1980) *Report of the Committee of the Whole*, Addendum, BWC/CONF.II/9/Add.1, 29 September 1986, p 4

problems, relevant trends in industrial innovation and advances in basic theory should be required of those charged with preparation of this report... The Pugwash movement stands ready to assist in whatever fashion it can.<sup>5</sup>

As well as offers of assistance to States Parties in their work, NGO contributions have suggested a variety of means by which relevant science and technology could be reviewed. Such suggestions include constituting a new body, such as a Science Advisory Panel, or creating a virtual network of scientific experts.<sup>6</sup> There have also been offers of expertise from the relevant scientific communities to perform the review themselves and have their findings presented to States Parties<sup>7</sup>; and, more recently, a proposal for science and technology to be made a recurrent theme on the agenda for the annual meetings.<sup>8</sup>

*From statements to proposals: the need for the 'thinkzone'*

Such a geographical spread of statements all referring to the need to look again at the process of reviewing S&T relevant to the convention suggests that there is the potential to achieve consensus around changing the current process at the Seventh Review Conference. However, achieving consensus will depend upon the development of more detailed proposals upon which States Parties can forge agreement, and currently many of the statements calling for change in the S&T review process remain just that, statements of a general nature intended to encourage activity in the future. Indeed, in the majority of cases the statements from State Parties presented in the table are devoid of any details.

With the Seventh Review Conference less than a year away, it will be important for states to enter into what has been termed 'the BWC thinkzone' and give careful consideration to first order questions such as:

- What is the purpose of reviewing science and technology relevant to the convention?
- What output from this process do states parties wish to generate?

Defining the end goal through consideration of these questions will be an essential part of ensuring success. Accordingly, time spent in the 'thinkzone' is time well spent. Of the many potential paths which might be chosen to update and change the process by which science and technology is reviewed, this paper will concentrate on those two themes highlighted in Chairman's 2008 *Synthesis Paper* both of which make a lot of sense.

The first theme – that the reviews are not performed regularly enough – recognises how much the nature and pace of science and technology has changed since the convention entered into force. The current reviewing process, tied as it is to the Review Conference cycle, reflect the

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<sup>5</sup> Executive Committee of the Pugwash Council, *Statement from the Executive Committee of the Pugwash council on the 1980 review conference on the Biological Weapons Convention*, January 1980.

<sup>6</sup> In this regard, Nicholas Sims has been a prolific writer and advocate of the some form of dedicated body to review science and technology since the early 1980s. The illustrative table in the annex only records a small selection of his papers. See also VERTIC *A new strategy: strengthening the biological weapons regime through modular mechanisms* October 2006.

<sup>7</sup> See for example, Federation of American Scientists (1991) 'Proposals for the Third Review conference of the Biological Weapons Convention', *Contemporary Security Policy*, 12:2, September 1991; The Royal Society, *Submission to the Foreign and Commonwealth Office Green Paper on Strengthening the Biological and Toxin Weapons Convention*, September 2002; The Royal Society, International Council for Science (ICSU) and the InterAcademy Panel on International Issues (IAP), *Scientific and technological developments relevant to the Biological & Toxin Weapons Convention*, September, 2006.

<sup>8</sup> See for example Sims, N Written evidence to the UK House of Commons Foreign Affairs Select Committee *Global Security: non-proliferation*, 28<sup>th</sup> November 2008

understandings of science and technology prevalent at the time of the convention's entry into force: the pre-molecular-biology pace of change in science, the pre-biotechnology level of diffusion of technology in industry and a linear understanding of the relationship between science and technical change.<sup>9</sup> The pace at which science advances and both scientific knowledge and technology disseminates has changed dramatically since 1975 and much has been written on how this relates to the current threat posed by biological weapons. Advances in the life science are leading some, for example to postulate the possibility of "the creation and production of new biological weapons and agents of biological terrorism possessing unique and dangerous but largely unpredictable characteristics".<sup>10</sup> Similarly, the spread of relevant technology is linked to increased risks as for example was postulated in the UK's recent Strategic Review, which states that the range of risks facing the UK such as "weapons of mass destruction, emerging technologies with potential military application, and the systems used to deploy them..." was "likely to worsen with the spread of technology over the coming years....".<sup>11</sup> Combined, the pace of scientific advances and the speed of dissemination across the world, is leading to consensus that reviewing science and technology relevant to the BWC needs to occur more frequently than once every five years.

The second theme - that a body should be created to review relevant science and technology - has equal merit as it reflects the increasing complexity of reviewing "scientific and technological developments relevant to the Convention." The increasing convergence of life sciences with other disciplines such as chemistry, IT and engineering means that the difficulties of performing a comprehensive S&T review have also increased. If a comprehensive review is the aim then a dedicated body of experts appears a logical choice. The proposal also has merit if one is attempting to overcome the low participation of States Parties in the review of science and technology and variability in content of those reviews submitted. The current process is begun by the instructions issued by the Preparatory Committee of each Review Conference which tend to invite States Parties, if they so wish, to provide a national paper on any new scientific and technological developments relevant to the convention.<sup>12</sup> Despite all States Parties being invited to participate, the number of contributions to the S&T review process has never exceeded ten (as shown in the table below) with only Sweden, the United Kingdom and the United States participating on each of the six occasions.

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<sup>9</sup> See Caitriona McLeish and Paul Nightingale "Biosecurity, Bioterrorism and the Governance of Science: the increasing convergence of science and security policy", *Research Policy*, vol 36 no 10, December 2007, pp 1635-1654

<sup>10</sup> National Academy of Sciences [US] "*Globalization, Biosecurity, and the Future of the Life Sciences*", National Academies Press. p17

<sup>11</sup> United Kingdom (2010) "*Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*", Presented to Parliament by the Prime Minister by Command of Her Majesty October 2010. pp 55.

<sup>12</sup> The actual wording used by the PrepComs has evolved over the past six review conferences. At the PrepCom for first Review Conference in July 1979 the Committee requested the depositary governments prepare a single background paper on new scientific and technological developments relevant to the convention. The Secretary of the Committee then invited comments from any States Party on this background paper as well as inviting any State Party who wished to submit their views on scientific and technological developments relevant to the Convention to do so. At the PrepCom for the Second Review Conference in April-May 1986 each of the depositary governments were requested to produce a review of developments in science and technology relevant to the Convention and any other State Party who wished to do so was also invited to conduct a similar review. No set of instructions was given by the PrepCom for the Third Review Conference in April 1991. At the PrepCom for the Fourth Review Conference in April 1996 any State Party that wished to do so, "including the Depositary Governments" was invited to submit to the Secretariat information on new scientific and technological developments relevant to the Convention. The same language was issued by the PrepCom for the Fifth Review Conference in April 2001. For the first five review conferences the national statements were aggregated into a single document. At the PrepCom for the Sixth Review Conference it was decided to request the Secretariat to prepare six background information documents one of which was to be "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."

As the only guidance on what should be reviewed is contained in the words of Article XII, the style and content of national submission varies. Some contributions are country-specific activity reports, including nil submissions (i.e. nothing to report); other contributions refer only to biodefence activities; and others are meta-level reviews of relevant new developments in science and technology. A single body charged with producing a single product could help overcome these variances.

Table 1: Number of contributions to the S&T review process

REVIEW CONFERENCE	NUMBER OF CONTRIBUTIONS	STATES PARTIES
1	3	Depository governments, Hungary*, Sweden
2	7	Czechoslovakia*, Denmark*, Finland, Sweden, UK, USA, USSR
3	9	Australia, Canada, Czechoslovakia, Denmark*, Sweden, Switzerland, UK, USA, USSR
4	7	Cuba, Finland*, Germany, Sweden, Switzerland, UK, USA
5	5	Bulgaria, South Africa, Sweden, UK, USA
6	10	Argentina, Australia, China, Czech Republic, Netherlands, Portugal, Russian Federation, Sweden, UK, USA

\* A nil submission i.e. 'nothing to report'

However, both the notion of conducting reviews more frequently and/or the idea of constituting some form of a new review body generate a number of second order questions that need to be considered. For the purposes of illustrating the types of questions that will need to be addressed, the two themes will be taken separately but most questions asked would be equally valid if a combination of the two themes was thought appropriate.

#### *Increasing the frequency of reviews*

The convergence and deepening complexity of science and technology relevant to the convention suggests more frequent reviews would be more meaningful than what currently occurs. But how often would the reviews recur? Annual reviews or mid-cycle reviews, i.e. every 2.5 years? What form would the output of these more frequent reviews take: national submissions, national submissions aggregated into a single document or Implementation Support Unit background documents? Would the reports be overviews of relevant developments or subject orientated reviews? What additional resources would be needed by those who either author the national submissions, and/or author the ISU background papers? The authors for example, would need to have the necessary time and support to perform this task each year. In short, opting for more frequent reviews of science and technology would require working through issues such as:

- What added value would more frequent reviews of science and technology achieve?
- How often would the more frequent reviews occur?
- Are the national S&T reviews submitted in the current process sufficiently useful to justify more frequent review? If not, what additional direction or components would be needed to make it more useful?

- Is the current number of national submissions satisfactory? If not what needs to be done to increase levels of participation?
- What amendments would have to be made to the emerging process of holding intersessional meetings to accommodate more frequent science and technology reviews?
- What additional resources are needed to realise more frequent reviews?

#### *Creating some form of S&T review body*

If the route of constituting a new body is pursued, then basic questions, such as 'what form would this body take' and 'how big would the body be', would have to be addressed. The former question is particularly important as an advisory body could either be formed by scientists appointed by States Parties or developed exogenous to the convention as an independent advisory board. Related to this point are issues concerning membership: who would be permitted to serve on either type of body, and perhaps more importantly, who would be excluded from service on this body and why? How would a quasi-government style of body avoid 'groupthink'? What status would any group - and their output - have to the States Parties and their meetings? Both types of body would also require resources from States Parties to perform their reviews, a carefully drawn mandate and greater clarity in the objectives of the review process. Finally, it will be important to give consideration to the limits of scientific advice and States Parties would have to accept that there are no guarantees that the experts on either review body will be able to agree a single 'definitive' review of science and technology relevant to the convention. The nature of what is being reviewed revolves around incomplete knowledge and so plural and divergent views should be expected, raising the question of how such views will be incorporated in the outputs from such a group. In summary if states wish to opt for this approach they will need to consider second order questions such as:

- What form would this body take?
- Would it be a quasi-governmental or an independent advisory body?
- Who would be appointed to the body? What qualifications are required? Who would be excluded and why?
- Would equitable geographical representation on either style of board be desirable?
- What would the mandate for such a group be?
- Are the 'scientists' going to be able to fulfil the requirements of States Parties?
- What would be the required output and how would this be communicated States Parties?
- What would be the relationship between either model of review body and States Parties?
- How often would the body meet and who will provide the necessary resources?

The purpose of presenting these considerations is to illustrate the sorts of thinking that will be needed to move from general statements about changing the practice of reviewing S&T in the BWC context, to concrete proposals. To assist States Parties in the time they spend in the 'thinkzone', the Harvard Sussex Program is leading a project that is examining options for reforming the S&T review process. This project is funded by the UK's Economic and Social Research Council and falls under the RCUK's Global Uncertainties Project. Over the course of the next six months we will, amongst other things, be reviewing all the proposals that have thus far been put forward by States Parties and NGOs; assessing the feasibility of additional options suggested to us; and considering the potential of alternative models of S&T review which are in operation in other policy domains. To do this, we will be engaging with a sample of stakeholders from both the security and scientific communities through both interviews and questionnaires, gathering both quantitative and qualitative

data on the views and attitudes of stakeholders towards reforming the process. Part of our examination of each proposal will be thinking through what would be needed to operationalise any particular option: what structures and what resources will be required. The results of this work will be presented in special briefing papers that will be made available on our website <http://hsp.sussex.ac.uk/sandtreviews> and disseminated at conferences and workshops, including the PrepCom. Targeted journal papers will also be written.

## Annex I

Illustrative table: State Parties statements calling for changes to the S&T review process as made at BWC meetings

DATE	COUNTRY/GROUP	DOCUMENT TITLE/REFERENCE
10 <sup>th</sup> July 1979	UK	Preparatory Committee for the [First] Review Conference: Working Paper on Background Documentation <sup>o</sup> BWC/CONF.I/PC.3
3 - 21 March 1980	Argentina	Summary records of the eighth meeting of the First Review Conference BWC/CONF.I/SR.8
29 <sup>th</sup> September 1986	German Democratic Republic	Proposal submitted by the German Democratic Republic, Hungary and the USSR, Report of the Committee of the Whole, Addendum, BWC/CONF.II/9/Add.1
27 September 1991	Netherlands	SUMMARY RECORD OF THE 8th MEETING
26 October 2001	United Kingdom of Great Britain and Northern Ireland	Submission to the background paper on Science and Technology reviews BWC/CONF.V/4/Add.1 page 6
19 <sup>th</sup> November 2001	Canada	Statement by His Excellency Christopher Westdal Ambassador and Permanent Representative to the Conference on Disarmament to the Fifth Review Conference
26 <sup>th</sup> November 2001	Japan	Working paper by Japan BWC/CONF.V/COW/WP.14
27 <sup>th</sup> November 2001	EU	Proposals - Working paper submitted by the European Union, BWC/CONF.V/COW/WP.23
21 June 2005	Sweden	Intervention reported in Annex 1 Report of the Meeting of Experts, BWC/MSP/2005/MX/3
10 April 2006	Canada	BWC/CONF.VI/PC/INF.1
26 <sup>th</sup> April 2006	Ukraine	Statement by Ambassador Bersheda, Permanent Representative of Ukraine in Geneva
20 <sup>th</sup> October 2006	Argentina	"Follow up mechanism", Argentina on behalf of , Bolivia, Brazil, Colombia, Costa Rica, Chile, Ecuador, El Salvador, Guatemala, Mexico, Peru And Uruguay., BWC/CONF.VI/WP.11
28 <sup>th</sup> November 2006	NAM	"Intersessional Ad Hoc mechanism to be established between the sixth and seventh review conferences of the BWC", BWC/CONF.VI/WP.32
20 <sup>th</sup> November 2006	EU	Statement by H.E. Markus Lyra Under-Secretary of State Finland, on behalf of the European Union to the Sixth Review Conference of States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction

		(BTWC)
20 <sup>th</sup> November 2006	Ukraine	Statement by the delegation of Ukraine to the Sixth Review Conference Sixth Review Conference of 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 <sup>th</sup> December 2006	China, India	Article XII Proposals, as noted in the Report of the Committee of the Whole BWC/CONF.VI/3
20 <sup>th</sup> October 2008	Canada	“Accountability Framework”, BWC/CONF.VI/WP.1
1 <sup>st</sup> December 2008	Russian Federation	Statement by Ambassador Ioshchinin, head of the delegation of the Russian Federation, permanent representative of the Russian Federation at the Meeting of States Parties
7 December 2009	Canada	“Policy issues for the Seventh Review Conference”, submitted by Canada on behalf of the JACKSNNZ BWC/MSP/2009/WP.4

Illustrative table: Statements by civil society calling for changes to the BWC's S&T review process

DATE	PERSON/GROUP	DOCUMENT TITLE/REFERENCE
January 1980	Pugwash	<i>Statement from the Executive Committee of the Pugwash council on the 1980 review conference on the Biological Weapons Convention</i>
1986	Richard Falk	"Strengthening the Biological Weapons Convention of 1972" in Geissler, E (ed) <i>Biological and toxin weapons today</i> OUP
24 September 1986	International Council of Scientific Unions	<i>Press release at the BWC Second Review Conference</i>
September 1990	Herbert Marcovich	"Annexe 6. Proposal for an international biological monitoring agency", in Geissler E (ed) <i>Strengthening the Biological Weapons Convention by Confidence-Building Measures</i> , Scorpion Paper no 10, SIPRI Chemical and Biological Warfare Studies
Winter 1990	Charles Flowerree	"On tending arms control agreements" <i>The Washington Quarterly</i>
2 June 1991	Nicholas Sims, London School of Economics(LSE) <sup>13</sup>	<i>Strengthening the Biological Weapons Convention: proposals for the Third Review Conference</i> QUNO Geneva: Quaker Residential Conference for Diplomats, 31 May-2 June 1991 Château de Bossey
September 1991	Federation of American Scientists	"Proposals for the Third Review conference of the biological Weapons Convention", <i>Contemporary Security Policy</i> vol12 no2
September 2001	Nicholas Sims, LSE	"Nurturing the BWC: agenda for the Fifth Review Conference and beyond", <i>CBW Conventions Bulletin</i> no 53, September 2001
September 2002	The Royal Society	Royal Society Submission to the Foreign and Commonwealth Office Green Paper on Strengthening the Biological and Toxin Weapons Convention
October 2006	VERTIC	<i>A new strategy: strengthening the biological weapons regime through modular mechanisms</i>
September 2006	The Royal Society, International Council for Science (ICSU) and the InterAcademy Panel on International Issues (IAP)	<i>Scientific and technological developments relevant to the Biological &amp; Toxin Weapons Convention</i>
September 2006	Nicholas A. Sims and Graham S. Pearson,	"ARTICLE XII: Review Conferences", Key Points for the Sixth Review Conference.
November 2006	Jean Pascal Zanders and Kathryn Nixdorff	"Enforcing non-proliferation: the European Union and the 2006 BTWC Review Conference", <i>Chaillot Paper</i> no 93
November 2006	Royal Society	<i>S&amp;T developments relevant to the BTWC</i> RS policy document 38(06)
October 2007	Catherine Rhodes and	"Options for a Scientific Advisory Panel for the Biological Weapons

<sup>13</sup> Nicholas Sims has been a prolific writer on the institutional deficit of the BWC. Only some of his writings are included in this table. For a more detailed list of papers please contact the authors of this discussion paper.

	Malcolm Dando	Convention”, in Brian Rappert and Caitriona McLeish (eds) <i>A Web of Prevention - Biological Weapons, Life Sciences and the Governance of Research</i> . EarthScan
10 <sup>th</sup> December 2007	International Network of Engineers and Scientists for Global Responsibility (INES)	<i>Practical Contributions that Civil Society can make to National Implementation and Regional Cooperation</i> , Participation in the NGO roundtable discussions with the Chair, Meeting of States Parties, Geneva
16 <sup>th</sup> November 2008	Daniel Feakes, The Harvard Sussex Program	Written evidence to the UK House of Commons Foreign Affairs Select Committee, <i>Global Security: non-proliferation</i>
2009	Nicholas Sims, LSE	<i>The future of biological disarmament: strengthening the treaty ban on weapons</i> , Routledge
June 2010	Nicholas Sims, LSE	“An annual meeting for the BTWC”, <i>Bradford Review Conference Paper no 22</i>