

Tuesday 24th August 2021

MX2 on scientific and technological developments: setting the scene

The second of the 2020 Meetings of Experts (MXs) to the 1972 Biological and Toxin Weapons Convention (BWC/BTWC) is scheduled to convene on the first two days of September 2021 in Geneva. Like the other MXs in this series, MX2 has been held back by a year owing to the COVID-19 pandemic and resultant restrictions to protect health. The overarching topic for MX2 is 'Review of Developments in the Field of Science and Technology Related to the Convention' and the meeting has a number of agreed sub-topics on the agenda to guide discussion. The meeting is to be chaired by Kazuhiro Nakai (Japan) and will be the last occasion on which the MX2 topics will be discussed in an MX format before the Ninth BWC Review Conference, now scheduled for 2022.

The ongoing rapid advances within the life sciences mean that the BWC operates within a constantly changing scientific and technological (S&T) context. These advances bring new positive opportunities for peaceful uses, such as innovative medical treatments and new detection methods, but also lead to new negative opportunities for hostile uses. This leads to changes in the nature of risks and threats the BWC may need to counter. Ongoing understanding of this changing context is a critical challenge. Real world experience is that S&T developments move at a faster pace than policy developments meant to oversee them. In order to keep measures to control biological weapons under constant review there are many assessments that need to be made based on emerging scientific evidence. The emerging understandings of COVID-19 have been a clear example of the complex interactions at the interface where science and policy meet.

Since the previous MX2 in 2019, informal webinars have been held in October 2020 and June 2021. At the time of writing, ten working papers for MX2 had been published. Links to these papers, the webinars and statements/presentations given during MX2 can/will be found via <https://meetings.unoda.org/section/bwc-mx-2020-mx2/>.

Scientific and technological developments in context

Simply understanding any new S&T developments is not enough – the greater challenge is to understand the implications of such developments. This has led to a widespread recognition for a number of years that there would be multiple benefits in reviewing S&T issues in a regular, consistent and ongoing manner (i.e., not just a one-off or occasional event). A number of statements at BWC meetings have suggested that the five year gap between Review Conferences is too wide for effective S&T review. The creation of MX2 within the current inter-sessional work programme was, in part, a recognition of this, but there have been many calls for a more specific arrangement or process. An example of a rapid advance in S&T that poses challenges to existing BWC arrangements is the CRISPR/Cas9 gene editing tool, often simply referred to as CRISPR, which allows for exact and accurate editing of genetic sequences. This had not been discovered when the Seventh BWC Review Conference met in 2011, yet by the time of the next Review Conference five years later it was in use in many labs around the world.

One area of concern is the convergence of scientific fields, most notably biology and chemistry. 'Convergence' means much more than just overlap as it also implies combining understandings or techniques from each field to create new possibilities

not possible in the single traditional discipline. As controls have tended to be focused on the traditional disciplines, this raises questions of effective regulation.

Proposals relating to S&T development issues

There have been numerous proposals over the years for methods to enhance review of S&T developments. Some have called for a panel selected in some way in order to create a board or committee. Others have called for a structure involving experts from all states parties willing to participate. Each approach has certain advantages and disadvantages. A small panel can be rapidly tasked to examine a new issue in depth. An open membership arrangement can encourage inclusivity and more direct links into national processes. A selected panel would probably need financial resources to support it centrally whereas costs for an open membership model would be likely to fall on the states parties participating. Despite the differences in structure, all of the proposals bring similar elements together – the examination of S&T developments in order to understand the implications for the BWC and the need for a review process to provide relevant information in a timely manner to assist policy processes keep pace with S&T developments. The end result is likely to be a hybrid arrangement, drawing upon aspects and elements from a number of the proposals made thus far. Some proposals have included suggestions for a science officer post within the BWC Implementation Support Unit (ISU). This would have financial implications but proposers of such an addition suggest that the benefits would be worth the extra cost. It is not yet clear whether many delegations have come to a position on this.

Most stated national positions on S&T review are lacking in detail so that it is possible to identify some common ground on the need for a review process, but harder to identify any clear common ground on how to turn this into practical action. The lack of expressions of support for specific models may be a positive sign as many delegates would seem to prefer achieving consensus on some form of review arrangement rather than pressing for one specific model. However, it is clear that a number of states do not see S&T review as a priority. A key measure of success for some participants is how well any BWC system for S&T review assists national policy processes.

A further area in the S&T field that the BWC has dealt with over the years is codes of conduct for scientists. A China-Pakistan working paper from MX2 in 2018 on model codes has led to the creation of the Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists which were endorsed in July by the Inter-Academy Partnership, a global network of national academies of sciences. These guidelines are likely to be presented to the Ninth BWC Review Conference for further endorsement.

A key element of codes of conduct is about empowering scientists to consider risks and benefits of research options. Wider forms of biological risk management have also been considered by MX2 in recent years and proposals put forward within the meetings for harmonized biorisk management practices. Of particular note has been biological risk management practices in laboratories.

Examples of connections with other MX topics

Effective implementation of Article X relies on nuanced understandings of S&T developments [MX1]. National implementation relies on understanding the S&T context for effective judgements on what should be controlled; not just for Article IV national obligations but also Article III and export controls [MX3]. Article VII issues benefit from a pragmatic understanding of S&T developments as positive uses of advances in the life sciences are often the best defence against negative uses; an example of this would be new vaccines against modified disease agents [MX4].

This is the second in a series of reports for the Meetings of Experts for the BWC which are scheduled to be held from 30 August to 8 September 2021 in Geneva. These reports have been produced for all BWC meetings since the Sixth Review Conference in 2006 by the BioWeapons Prevention Project (BWPP). They are posted to <<http://www.bwpp.org/reports.html>> and <<http://www.cbw-events.org.uk/bwc-rep.html>>. An email subscription link is available on each page. The reports are prepared by Richard Guthrie, CBW Events, who is solely responsible for their content. He can be contacted via <richard@cbw-events.org.uk>.