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Find the time to discuss new bioweapons

The Biological Weapons Convention needs to take the assessment of emerging scientific dangers more seriously, argues Malcolm Dando.

In Geneva next month, officials will discuss updates to the global treaty that outlaws the use of biological weapons. The 1972 Biological Weapons Convention (BWC) was the first agreement to ban an entire class of weapons, and it remains a crucial instrument to stop scientific research on viruses, bacteria and toxins from being diverted into military programmes.

The BWC is the best route to ensure that nations take the biological-weapons threat seriously. Most countries have struggled to develop and introduce strong and effective national programmes — witness the difficulty the United States had in agreeing what oversight system should be applied to gain-of-function experiments that created more-dangerous lab-grown versions of common pathogens.

As scientific work advances — the CRISPR gene-editing system has been flagged as the latest example of possible dual-use technology — this treaty needs to be regularly updated. This is especially important because it has no formal verification system. Proposals for declarations, monitoring visits and inspections were vetoed by the United States in 2001, on the grounds that such verification threatened national security and confidential business information.

The treaty therefore relies on countries converting its prohibitions into national law, and setting up proper regulations and oversight. But there is a problem with the way that the BWC is set up to receive and process scientific advice, which affects the ability to update it efficiently. Next month's meeting must address this problem, and scientists who care about the societal impacts of research should lobby their elected politicians to make sure that it does.

The BWC is formally reviewed every five years at a special conference (the next is in November this year, and the Swiss August meeting in is to prepare for it). During the intervening years, annual one-week meetings of government experts, and later of government representatives (state parties) are intended to track progress and raise issues. But there is not enough time at these meetings to discuss what is needed in sufficient depth. So no properly thought-out recommendations can be made.

In 2013, for instance, the experts' meeting scheduled a mere six hours of discussions on science and technology — less than a day. That is not enough time for complex science to be presented, digested and discussed, and not enough to consider its implications and suggest revisions to the BWC.

There is widespread awareness that the current system is not fit for purpose. At a preparatory meeting in April, 5 of the 13 working papers dealt with the need to find a better way to carry out these crucial interim discussions on science and technology. As the Russian paper noted: "There is widespread agreement that improved

and more effective arrangements are required."

Other international agreements have effective ways to track and deal with scientific and technological change. The 1997 Chemical Weapons Convention has a permanent scientific advisory board. When concerns were raised in 2011 about the possible harmful implications of the convergence of chemistry and biology, that board set up a dedicated working group to investigate and report back. It did so in 2014 — concluding that the current threat was low but that future developments should be monitored closely. The assessment system led to action. At present, the BWC assessment system cannot.

In the long term, the BWC may need a similar advisory board for science. But that is unlikely to happen soon, and as science is rapidly changing,

we have to find a way to improve the way the interim annual meetings work. My colleague Kathryn Nixdorff and I interviewed delegates at previous meetings about possible improvements, and we have some simple suggestions.

The discussions of science at the experts' meetings should be split off into a separate dedicated parallel track. This is the best way to create the necessary time. Even then, it will be impractical to cover all relevant ground across the sciences, so each year a specific topic — CRISPR editing, say — should be considered. Researchers and scientific bodies should present the facts, and then discuss the implications with government officials at the experts' meeting. Who should attend these sessions? We argue that they should be open to representatives from any member state.

Feeding back results of these expert discussions to the broader BWC, a designated diplomat — in place for the full five-year period between review conferences — would attend the annual experts' meetings and write a report. The annual meetings of state parties should then assess these reports and agree any action needed. Future review conferences should check on progress.

Even so, issues such as the possible dual-use threat from gene-editing systems will not be easily resolved. But we have to try. Without the involvement of the BWC, codes of conduct and oversight systems set up at national level are unlikely to be effective. The stakes are high, and after years of fumbling, we need strong international action to monitor and assess the threats from the new age of biological techniques.

If the BWC cannot find a way to adapt to the pace of scientific and technological change, then it risks becoming irrelevant as the world searches for biosecurity in the coming decades. ■

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