

BIOLOGICAL WEAPONS AND GENETIC TECHNOLOGIES

Briefing 4 - August 2002

What Future for Biological Weapons Control?

On September 11th 2001, terrorists killed thousands and destroyed the twin towers of the World Trade Centre in New York and part of the Pentagon by hijacking civilian flights. In the following weeks, letters contaminated with anthrax killed five people in the USA, caused widespread fear, had serious psychological impacts, and disrupted postal and other services. The anthrax organism had been 'weaponised' to ensure it would spread as widely as possible and be at its most infectious when inhaled. Although the culprit has not been identified, there are strong suspicions that the anthrax came from inside the US's own defensive biological weapons research programme. In response, an additional \$3 billion is to be spent on biodefence research in 2003. In contrast, in December 2001, the USA blocked international plans to establish a verification and control protocol to the 1972 Biological and Toxin Weapons Convention (BTWC) (see Briefing 3).

The anthrax organism used in the letters was not genetically modified. It was a naturally very virulent strain of anthrax, showing how harmful biological weapons can be even without genetic modification. However, if the anthrax had been made resistant to antibiotics which were used to prevent people exposed to the organism from developing the disease, the outcome could have been far worse. This briefing reviews how the Protocol - intended to reduce the likelihood of biological weapons being produced - was derailed by the US. It also questions whether investment in biodefence will make the world safer or more dangerous, particularly as the tools of genetic engineering are increasingly applied to already dangerous pathogens.

The demise of the Protocol

A problem with the BTWC is that there is no provision for mechanisms to detect and deter

violations. There are also only weak provisions to ensure that countries are following the rules. In other words, there is no policing of the Convention and it has relied upon the good faith of the signatory states. Unlike other arms control regimes, the BTWC does not even have a secretariat to monitor developments in science, push countries to ratify the Convention, and so on. These weaknesses in the BTWC led to the negotiations on a compliance and verification Protocol.

For some seven years, an Ad Hoc Group (AHG) - formed under the auspices of the Convention - had worked to produce a Protocol to strengthen the BTWC. Following considerable difficulties and the watering down of earlier drafts, a Chairman's text was produced which it was hoped would be agreed at an AHG meeting in July 2001 and then approved at the Fifth Review Conference in November/December. However, the US would not agree to the text at the AHG and on the very last day of the review conference destroyed proceedings by proposing the AHG be disbanded and its mandate to propose measures to strengthen the BTWC ended. This was rejected by other states, the conference was adjourned until November 2002 and any hope of progress evaporated.

The US's public reasoning for opposing agreement on the Protocol was that it was too weak to be effective in deterring biological weapons development. They argued that the proposals for declarations, on-site visits and field inspections would not be able to detect clandestine biological weapons production or research. Since the US had been party to weakening the arrangements, the truth was clearly something different. In reality, the US was concerned that if the Protocol was agreed, their own biodefence programmes would have had to

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be revealed and possibly questioned. The processes would therefore have been too effective from their point of view. In September 2001, the New York Times revealed that during the Clinton presidency, the US had secretly built and tested a model of a Soviet anthrax bomb and also constructed a facility in Nevada where bacteria could have been produced for use in biological weapons. This previously secret work would have had to be declared and could have been inspected if the compliance and verification Protocol had come into force. Whilst the US insists that the research was intended to enable testing of defensive measures, its secrecy undermined confidence in the US intentions.

The US has also always been anxious to protect its biotechnology industry from declarations and inspections on the grounds that these would threaten commercial confidentiality. However, since both the Iraqi and Soviet offensive biological weapons programmes were hidden behind civilian activities, such secrecy does not help to build confidence. On the contrary, it breeds suspicion, which in turn could fuel a biological weapons arms race. This is exactly why declarations and the other mechanisms that had been proposed in the Protocol are so important in biological weapons control.

Finding a new path to biological weapons control?

Secrecy breeds suspicion, which in turn could fuel a biological weapons arms race

Most observers consider that whilst the US is under the Bush administration, there is little or no hope of strengthening the BTWC in the ways that the rest of the world had hoped. As the US is the world's major super-power and has the largest biotechnology industry and biggest investment in biodefence, many other nations are reluctant to proceed without their involvement. Whilst this is the political reality as long as Bush remains in power, there is an opportunity for those countries who have led the drive for strengthening the BTWC (e.g. the UK and South Africa) to work with others to establish the systems envisaged under the failed Protocol and to demonstrate their effectiveness. Such an approach would not be unprecedented – for example, steps have been taken by many countries to ensure the survival of the Kyoto Protocol on climate change.

In a recent Green Paper, the UK Government has identified a series of other steps that could be taken:

- investigations into suspected breaches of the BTWC, perhaps through expansion of the UN Secretary General process for investigation of biological and chemical weapons use;
- assistance for countries subject to biological weapons threat or use against them;
- national criminal legislation and extradition for people involved in offensive biological weapons programmes;
- a scientific review panel to assess the impact of scientific developments on the potential for biological weapons development;
- improved declarations of facilities and activities and possible voluntary inspection systems;
- a new international Convention on handling dangerous pathogens;
- a new international Convention on criminalisation of involvement in offensive biological weapons programmes;
- increased efforts on disease surveillance through the World Health Organisation and Food and Agriculture Organisation;
- a code of conduct for professional bodies;
- promotion of increased membership of the BTWC;
- withdrawal of reservations to the BTWC that allow a country to use biological weapons if they are used against it.

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It would be very welcome if the UK continues to take a leading role in developing compliance and verification measures and considers making this a formal process through the involvement of other nations. If governments do not take this responsibility, NGOs may find themselves forced into a monitoring role on behalf of society.

More 'biodefence' research as a path to arms control?

As a result of the anthrax attacks, the main response of the US has been to invest in biodefence measures. The US spending on basic biodefence research is set to increase to \$1.5 billion in 2003 as part of a proposed \$4.5 billion funding increase for general biodefence spending in 2003 - up 319% from 2002. The proposed new Department of Homeland Security seems likely to manage this research and the vast increase will inevitably drain funding from elsewhere.

The irony is that the anthrax used in the attack came from within the US's current biodefence programme and appeared to involve someone working there. This inevitably leads to the question whether the increased biodefence programme will be secure enough against the risk of individual or state sponsored terrorists gaining access to dangerous agents. To make and test vaccines, detect organisms or develop other protective measures, the pathogen has to be made and 'weaponised'. Not only does increasing the amount of work on such infectious organisms increase the risk of theft, release or spread of dangerous knowledge, but suspicions are raised elsewhere about intentions, which in turn could fuel proliferation.

Genetic technologies are at the forefront of this new research. Scientists have talked of a 'molecular arms race'. Genome sequencing of pathogenic organisms, isolation of toxin genes and identification of pathogenic determinants will be among the targets of the research. Bacteria or viruses may be genetically modified to make them more toxic in order to test defences. Whilst this may have relevance to natural disease prevention and treatment, the focus on biodefence means that the underlying thinking will be associated with biological weapons and not health.

Will secrecy in science help?

Another consequence of the anthrax attacks has been a tendency towards increased secrecy about the use of pathogens. In the UK, new regulations have restricted public information on where potential biological weapons agents are being genetically modified on grounds of national security. Although a list of work taking place in the UK is available, other details are not. Civil society scrutiny of the legitimacy of such research has been compromised as a result.

The recent synthesis of an infectious poliovirus from the organism's genome sequence data has led to fears that aggressors or terrorists may do the same and recreate other viruses such as Ebola and HIV. There have been calls for potentially dangerous information not to be published in the scientific literature.

The more secrecy there is around the use of dangerous pathogens, the more likely it is that offensive uses could be hidden or at least the suspicion of such activity be increased. Rather than deterring biological weapons production, secrecy in science could encourage it and mean that legitimate work on natural disease control is hindered as normal exchange of information between scientists is limited.

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Conclusions

2001 was a depressing year for those who believe that international legislation is crucial to deter the production of biological weapons. It is impossible to see how measures will be agreed that include the USA during the Bush administration. However, other countries could take steps to use the procedures contained in the draft Protocol to demonstrate their effectiveness and practicability as an additional way of challenging the US position. The other measures the UK have proposed will also be useful in building security, but nothing will match a binding multi-lateral agreement.

The US intention to reduce the threat of bioterrorism by vastly increasing its investment in research may backfire in two ways. Firstly, as with the anthrax attacks, someone working at a research facility may misappropriate organisms or knowledge to use in weapons production. Increasing the number of organisms being studied and the application of genetic knowledge will further exacerbate the dangers of such misappropriation and since the research focus is on biological weapons, the harmful uses of the organisms will be all too obvious. Secondly, investment in biodefence may look like a screen for the development of weapons that are intended for offensive use. Because the US have been unwilling to declare programmes in the past or support the Protocol to the BTWC, their motives inevitably come under scrutiny and an already fragile trust is further eroded.

Secrecy in science is also unlikely to work in deterring biological weapons development and may also prevent progress in understanding or treating natural outbreaks of disease. Openness is one important pillar in building confidence about intentions. In the biotechnology arena, where knowledge and facilities could be used for both civilian and military purposes, secrecy does not help. In both Iraq and Russia, where offensive biological weapons programmes have been investigated, civilian scientific research and industrial production facilities have been used to hide biological weapons production.

If the secret production of an anthrax bomb had been revealed in Iraq rather than the US, it is possible that the US, perhaps with the help of the UK, would have attacked -even if it was claimed that it was part of Iraq's biodefence programme. These kinds of double standards fuel weapons proliferation and heighten international tensions. As genetic technologies increase the dangers of biological weapons, the lack of effective international rules and procedures to deter their production could have serious consequences for global security.

Resources

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"The insider", New Scientist vol 173 issue 2329, 9th February 2002, page 8.

Medicine Conflict and Survival, Volume 18, Number 2, 2002. Whole issue on biological weapons largely based on papers presented at GeneWatch conference in May 2001.

The CBW Conventions Bulletin, produced by the Harvard Sussex Program on CBW Armament and Arms Limitation: www.sussex.ac.uk/spru/hsp/. Detailed monitoring and commentary on the progress of the Biological and Toxin Weapons Convention.

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