

# Royal Society Submission to the Foreign and Commonwealth Office Green Paper on Strengthening the Biological and Toxin Weapons Convention

September 2002

This document is the Royal Society response to the Green Paper *Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological Weapons*, published by the Foreign and Commonwealth Office (FCO) of the British Government in April 2002<sup>1</sup>. This submission has been prepared by members of the Royal Society's standing committee on the Scientific Aspects of International Security (SAIS) and members of relevant Royal Society working groups. They are listed at the end of the document.

The FCO published the Green Paper to solicit the views of Members of Parliament, NGOs, other organisations and individuals with an interest in the subject of strengthening the 1972 Biological and Toxin Weapons Convention (BTWC). Following the failure in December last year of the States Parties to agree on the text of a Protocol to the Convention, renewed efforts have been made to find ways of making the BTWC more effective. The Green Paper discusses UK priorities and the next steps ahead of the reconvened BTWC Fifth Review Conference in November 2002, and invites comments on the outlined proposals and any other ideas for strengthening the Convention.

The Royal Society response concentrates in particular on two of the possible measures that have been identified in the Green Paper - a Scientific Advisory Panel (47(d) in the Green Paper), and codes of conduct for professional bodies (47(i) in the Green Paper).

## Summary of key points

- Successful Scientific Advisory Panels have in common a number of key features that should be taken into account in the creation of a body to improve the efficacy of the BTWC. These include highly respected memberships directed by bodies set up as the result of international political agreement. Their objectives must be clearly defined and widely accepted as beneficial to human welfare.
- Addressing issues of scientific responsibility and ethics in research is an important but complex undertaking, which can only be tackled in a number of complementary ways. One is the agreement of a universal set of standards for research that can be incorporated into internationally-supported treaties; another is a concerted effort to increase awareness of international treaties and implicit codes of ethical conduct amongst researchers.

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<sup>1</sup> For the full text of the Green Paper visit <http://files.fco.gov.uk/npd/btwc290402.pdf>

## Scientific Advisory Panel

The Society supports the creation of an international Scientific Advisory Panel and agrees that the rapid pace of technological advancement in the life sciences necessitates a more regular review than the technology reviews by the States Parties linked with the five yearly Review Conferences.

### Examples of Scientific Advisory Panels

There are a number of examples of successful national and international science advisory boards that could serve as a model for this panel, such as the European Pharmacopoeia Commission<sup>2</sup>, where representative scientists from the European countries work productively together to agree formal monographs defining the qualities of medicinal drugs. This results in a published Pharmacopoeia accepted by all European countries. Other examples include the Swiss National Cancer Institute's Science Advisory Committee, the World Health Organization (WHO) committee on encapsulated bacteria and the Global Technical Consultative Group (TCG) for the WHO's poliomyelitis eradication programme, which is the main source of scientific advice for the programme. Another successful WHO group is that on biological and chemical weapons, which has recently drafted a guidance publication on the public health response to biological and chemical weapons<sup>3</sup>. Consultants for this guidance were a core group of about 10 individuals, supplemented by contributions from a broad, international range of experts. A number of other WHO scientific groups are well-regarded and have good records of international concord, for example in agreeing international biological standards or recommendations relating to the quality of manufactured vaccines. The General Medical Council (GMC) Advisory Committees also demonstrate well how a panel can cover a broad range of potential areas in depth<sup>4</sup>. Examples of successful advisory panels also exist widely in industry.

### Key features of successful Advisory Panels

These groups have in common highly respected memberships working under the authority of bodies set up with international political agreement. They are also working to a clear set of objectives that are widely accepted as beneficial to human welfare.

There are a number of key features that are invaluable in ensuring the success of such panels:

- 1 **Expertise:** It is vital that members are of the appropriate stature and expertise, and represent a number of different relevant disciplines. Each member should have a broad perspective on science superimposed upon expertise in a specific area. It might also be of benefit to include at least one member who has personal expertise in national-security matters associated with BW (support for this comes from the experience of the Science Advisory Board for the Organisation for the Prohibition of Chemical Weapons and that of the Advisory Committee for the UK Chemical Weapons Convention National Authority).
- 2 **Independence:** Here any 'conflicts of interest' as well as industrial contacts should be clearly addressed. An example of where this would be relevant is if a committee's conclusion over vaccine supplies and choices had an impact on a corporate contact.
- 3 **Personal attributes of members:** Certain attributes are helpful in ensuring the success of a committee, particularly commitment, vision, and a strong motivation to engage in debate, collectively consider alternatives and promote knowledge. The overall dynamic of the group should also be considered in deciding membership.

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<sup>2</sup> [http://www.pheur.org/site/page\\_dynamique.php3?lien=R&lien\\_page=3&id=12](http://www.pheur.org/site/page_dynamique.php3?lien=R&lien_page=3&id=12)

<sup>3</sup> [http://www.who.int/emc/book\\_2nd\\_edition.htm](http://www.who.int/emc/book_2nd_edition.htm)

<sup>4</sup> <http://www.gmc-uk.org/about/comms.htm>

- 4 **Strong leadership:** The Chair of the group should have a good understanding of both the intellectual and political issues, as well as an ability to motivate the group and to optimise its effectiveness.
- 5 **Clear mandate:** The group should have a clear mission and terms of reference defining scope, aims and responsibilities. In line with best practice on openness and transparency, these should be made publicly available. The creation of biological weapons relies on a continuum of science and technology, from basic microbiology to the chemistry, physics and engineering of weaponising a stable organism. Therefore, a clear definition of the areas under the panel's remit is essential. Will even wider issues, such as the possible adverse impacts upon scientific inquiry caused unwittingly by new regulation, fall within their remit?  
The committee also needs to be clear exactly whom it is advising and to what degree its recommendations can be enforced, as frustrations could occur if it was felt that the commissioning body was failing to take notice of the committee's advice.
- 6 **Small size:** Experience has shown that smaller groups of less than 10 people are likely to be more effective. However, it is appreciated that if the group is to have international influence with Governments it will need to contain broader representation. A smaller core membership could be supplemented with a broad register of international experts on which to call for specific expertise.
- 7 **Regular meetings:** The number of meetings per year must reflect the amount of business, but ideally should not be less than 2 per year.
- 8 **Administrative support:** High quality in-house, secretarial, administrative and knowledge support is essential.

It is recommended that, after an initial set-up period of 1-2 years, members rotate so as to allow for new perspectives and input. It is also important that individual members of an international committee be up-to-date with their countries' position and policy, and therefore regular contact with each country's Government representatives should be maintained. Along with other useful principles on the use and presentation of scientific advice in policy making, this was highlighted in the publication *The Use of Scientific Advice in Policy Making*<sup>5</sup>.

The Society would be happy to suggest potential members for the Panel.

## Codes of conduct for professional bodies

Issues of scientific responsibility and ethics in research are of pre-eminent importance, particularly in the light of recent experiments with potentially dangerous implications, such as those conducted in Australia in which the interleukin-4 (IL-4) gene from a mouse was inserted into the mousepox virus, enhancing its virulence<sup>6</sup>, and the synthesis of the polio virus from only its chemical components in a laboratory<sup>7</sup>.

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<sup>5</sup> Published by the Office of Science and Technology (1997).

<sup>6</sup> Ronald J Jackson et al (2001). *Expression of Mouse Interleukin-4 by a Recombinant Ectomelia Virus Suppresses Cytolytic Lymphocyte Responses and Overcomes Genetic Resistance to Mousepox*, *Journal of Virology*, 1205-1210

<sup>7</sup> Jeronimo Cello, Aniko V Paul, and Eckard Wimmer (2002). *Chemical Synthesis of Poliovirus cDNA: Generation of Infectious Virus in the Absence of Natural Template*. *Science* 297: 1016-1018

Owing to the well-known 'dual-use' nature of advanced biotechnology, it is extremely difficult to oversee such research so as to encourage the free international exchange of ideas and their ethical application, whilst at the same time discouraging maleficent work. Whatever strictures are applied, ultimately it will depend on an individual's judgment as to whether 'dangerous' research is conducted or not. A concerted effort to increase awareness of ethical issues amongst researchers and to improve standards in the scientific community should therefore be a priority. One way of achieving this is through codes of conduct that are developed by academic and professional bodies to lay out international standards in biotechnological research. However, a number of related activities could also be pursued in working towards this goal. These are also outlined below and attest to the complexity of addressing an issue, which, though universally felt to be of importance, poses considerable challenges.

- Whilst it is broadly agreed that researchers in the UK do follow accepted codes of conduct, for example in adherence to safe laboratory practice, these do not necessarily extend to consideration of the broader ethical implications of their work. In addition, codes of conduct are predominantly implicit and little discussed. There is also considerable ignorance of agreements such as the BWC amongst UK researchers.
- There would be significant value in addressing this issue in the UK as this would not only inform UK citizens but also the large number of foreign researchers present. The ethical implications of research, the relevance of international treaties and good research practice should all be considered in formulating a code of ethics. Amongst other things, this could reduce the likelihood of scientists' inadvertently undertaking inappropriate research.
- International cooperation and support is essential if such a project is to be successful. One way of achieving this would be to incorporate a code of conduct into international treaties, to which each Government acts as guarantor.
- Serious consideration needs to be given as to how to ensure that such a code will be effective. This includes questions such as how the code and good practice procedures will be enforced, who will be responsible for checking a researcher's work, what penalties would occur if a researcher contravened the code, whether 'whistleblowing' would be encouraged, and what mechanisms would be in place to protect the whistleblower.  
It is likely, however, that one of the most practical and effective methods of control generated by a code of conduct will be an increased peer pressure from the academic community itself.
- The mechanism by which academic and industrial scientists share their research – through publishing in journals - should also be examined in any attempt to improve ethical standards. Journal editors and potential authors, conference organisers and speakers, should be reminded that the ethical standards of work will play an integral part in determining whether it is appropriate for publication and discussion.
- Increasing standards in the wider scientific culture will be a considerable and complex undertaking. It will need to be a long-standing objective that evolves and adapts over time and in response to changes in the field. A variety of activities other than a code of conduct will need to be considered, such as producing briefing documents for UK academic and industrial researchers, and supplying packages of information to relevant organizations for their websites. Constant updates on scientific advances and their ethical implications would need to be disseminated amongst the UK academic industrial community and other relevant organizations. The overall aims would be to increase awareness, open debate and widen perspective, as well as encourage vigilance.

There could also be great value in addressing the following related issues:

- Education. Consideration should be given to some formal introduction of ethical issues into academic courses, perhaps at undergraduate and certainly at postgraduate level. In France, for example, all PhD theses must include an element that considers the ethical impact of the accompanying research.

- Support for researchers. This suggestion stems from experience abroad of situations where inappropriate research was being conducted but where the culture or regime of the country did not at that time question it. Researchers who were uncomfortable in their work had no mechanism for reporting or discussing it. Since it is likely that there will continue to be inappropriate pressures from employers or regimes, some way of addressing this should be considered.

### **Examples of codes of conduct**

There are a number of examples of codes of conduct in fields of science that could be used as a model, perhaps the best-known being the General Medical Council's code of ethics for doctors. Many professional organizations have required members to subscribe to a code of conduct for a number of years (eg Institute of Electrical Engineers since 1972, the American Society of Microbiology since 1988, American Chemical Society since 1965), which includes consideration of the member's role in serving society's interest. Guidance on professional practice is also a common resource, for example for all microbiologists to keep written records for all requests for reagents, technologies and knowledge, and to monitor such requests and derive a risk assessment before deciding whether or not to fulfil a request. Within this context, the standard practice adopted by some institutions of dated records of all ideas, discussion and experimental work in a fixed-page notebook that is periodically signed-off by a supervisor, could become a standard requirement in all microbiological labs. The question of checking how this procedure is upheld would then need to be addressed. A parallel could also exist with the World Medical Association Declaration of Helsinki<sup>8</sup> which is a statement of ethical principles that provide guidance to physicians and other participants in medical research involving human subjects. The Declaration was adopted by the 18<sup>th</sup> WMA General Assembly in 1964 and is revisited and amended periodically.

Given the continuum of ethical issues and the pace of research advancement, it is clear that working towards a more informed and aware scientific community will be a long-term, evolutionary process.

### **Royal Society role**

The Society is keen to raise awareness of international agreements and make more explicit the implicit codes of practice and behaviour that are followed by the majority of researchers. This could be achieved in a number of ways, including by engaging in discussions with other national academies and learned societies as to how best to facilitate this process across the biosciences community, both in the UK and abroad.

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<sup>8</sup> <http://www.wma.net/e/policy/17c.pdf>

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For the Royal Society report *Measures for controlling the threat from biological weapons*, published in July 2000, visit <http://www.royalsoc.ac.uk/templates/statements/statementDetails.cfm?StatementID=114>

The Society also published a report in 1994 on *Scientific aspects of control of biological weapons*. Paper copies of these can be obtained from the address below.

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