

Moving Towards the Seventh BWC Review Conference¹

Geneva, Switzerland, 29-30 November 2008

Report by Catherine Jefferson (Harvard Sussex Program)

This workshop was hosted by the Association Suisse de Pugwash in association with GIPRI, the Geneva International Peace Research Institute. The meeting was supported by a grant provided by the Swiss federal authorities.

The workshop took place on the eve of the 2008 Biological Weapons Convention (BWC) Meeting of States Parties and was attended by 53 participants, all by invitation and in their personal capacities, from several countries including Australia, Canada, China, France, Germany, India, Italy, the Netherlands, New Zealand, Pakistan, Russia, Sweden, Switzerland, the United Kingdom (UK) and the United States of America (USA). This report is the sole responsibility of its author, who was asked to prepare a brief account of the proceedings of the meeting in consultation with the Steering Committee. It does not necessarily reflect a consensus of the workshop as a whole, nor of the Study Group. The workshop was strictly governed by the Chatham House Rule, so reference to specific speakers is not detailed here.

I

Introductory Sessions

In memoriam

Before the business of the workshop, there were tributes to three colleagues who had passed away during the summer: Lenna Kaplan, wife of Martin for 60 years, who had made it possible for Pugwash work on CBW to keep moving since its inception in 1958; Ian Kenyon, chemical engineer, British diplomat, architect of the OPCW, and participant in most of the Pugwash CBW meetings since 1993; and Vladimir Vojvodic, participant in thirteen Pugwash CBW meetings during 1974-91, pharmacologist, and last head of the Yugoslav CW programme.

The Outcome of the Second CWC Review Conference

The workshop opened with an examination of the outcome of the Second Review Conference of the Chemical Weapons Convention (CWC). It was suggested that the outcome of the process was generally a positive one – it confirmed the political will of States Parties to support the implementation of the convention; it confirmed the basic objectives of the treaty; and it made steps forwards in allowing the system to work constructively with the Organisation for the Prohibition of Chemical Weapons (OPCW).

The extent and organisation of preparatory work, and the role played by the OPCW in this, was also commented upon. Significant contributions to preparatory work were made by the OPCW Secretariat, particularly in relation to the events of the 10th anniversary of the CWC, such as

¹ A list of participants and papers is included at the end of this document.

the Academic Forum and the Industry and Protection Forum. The importance of initiatives of particular governments in organising seminars to aid preparatory work was also noted, and it was pointed out that the extension of deadlines for CW destruction (for the US and Russia) had been successfully resolved by the Conference of the States Parties.

The final document contained positive dimensions for the future, including the recognition of the potential role of the CWC in mitigating the threat of terrorism; the recognition of the evolving role of the OPCW; and the recognition of the role of wider stakeholder engagement.

Yet despite a number of positive outcomes, it was noted that important elements were left out of the final declaration, including the toxin issue and the question of incapacitants. It was suggested that the substance had been compromised by the struggle to arrive at a final declaration which ensued in the final days of the conference. This also raised concerns over how a Review Conference with such extensive preparation could have faltered towards the closing days. It was suggested that preparatory work did not engage all governments equally, nor in a timely enough fashion. It was also suggested that procedural difficulties had created suspicions (especially in the Non-Aligned Movement) that some States Parties were not being included in the full negotiation process.

Finally, comments were made on the lack of opportunities for interaction with civil society during the Review Conference, particularly in comparison to the BWC process in Geneva. It was suggested that outreach activities should be improved to aid fuller participation.

International CBW Criminalization: the Harvard Sussex Draft Convention

A brief presentation was made on the Harvard Sussex Draft Convention on the international criminalization of CBW. The Draft Convention proposes to harmonise domestic law with international law by conferring on national courts jurisdiction over individuals present in their national territory, regardless of their nationality or official position, who order, direct, or knowingly render substantial assistance to the use of biological or chemical weapons anywhere.

The initiative originated from research begun in the mid-1990s and has received expressions of interest from a number of governments. It was suggested that the time might now be ripe for meaningful discussion of moving the draft convention forward into the domain of public policy.

Meeting of Experts BWC 18-22 August 2008

This session examined the outcomes of the 2008 Meeting of Experts (MX) at which, for the first time, poster sessions had been held involving participants from both government and civil society. It was noted that a high level of preparation had been conducted, generating a large volume of high quality information, including background papers prepared by the Implementation Support Unit (ISU) and working papers from States Parties. There was also participation throughout by guests of the meeting. There were several positive and tangible results from the MX. Key outcomes on the topic of biosafety and biosecurity include:

- The recognition that ‘no one size fits all’
- A clear statement of what is meant by biosafety and biosecurity in relation to the BWC
- The recognition of the need to involve all relevant stakeholders

- The recognition of the need for capacity building and the harmonisation of national legislative and regulatory regimes
- The recognition of the importance of engaging with the private sector

Key outcomes on the topic of education and awareness-raising include:

- The recognition of the importance of education and awareness-raising programmes, and the role that States Parties should play in developing and implementing such programmes
- The recognition of the need to encourage scientists to take active responsibility in addressing the threats posed by BW
- The suggestion of formal requirements in training programmes

A question was raised as to the criteria used to judge the outcome of the intersessional process a success. It was suggested that success could be defined in terms of continued relevance and could be measured by the increased participation in the MX process. The positive level of interaction between governments and industry (and the scientific community more broadly) was also stressed. It was further suggested that the value of the MX lay in providing rich and fruitful debates as part of the preparatory work of a longer-term process.

II

Moving Towards the Seventh BWC Review Conference

The Intersessional Programme 2008

Biosafety and biosecurity

This session began with a brief examination of the new EU Joint Action mandate. The new Joint Action provides a framework for cooperation on:

- National implementation assistance
- Universalisation of the BWC
- Improved modalities of Confidence-Building Measures (CBMs) forms
- Promotion of the intersessional process at regional levels
- Providing legal advice
- Promotion of the establishment of networks of national and regional actors and organisations in the arena of biosafety and biosecurity.

The next discussion examined the activities of the World Health Organisation (WHO) in respect to biosafety and biosecurity. The WHO Partnership, a collaboration of 4 WHO departments, has conducted a range of activities, including the 2006 scientific working group; technical regional meetings, raising awareness of biosafety practices and issues of biosecurity; and outreach activities on the management of risks. Feedback from these outreach activities has demonstrated the disparity of knowledge and awareness of the topic among different member states. It was suggested that guidance must be available to member states, and that a spectrum of risk management strategies applicable to different regions would be necessary.

The last discussion in this session was based on a study of dual use life sciences and their potential application in bioterrorism. Areas of life science research activities of particular

concern were identified and the potential threat posed by terrorist misuse was assessed, looking at both necessary capabilities (expertise and equipment) of terrorists and the likely resulting consequences. The results of the study suggest that the most likely bioterrorist threat scenarios are 'low tech' (require only basic knowledge and equipment) and are unlikely to produce high consequences in terms of casualties. However, it was noted that terrorists might acquire sophisticated BW capabilities through theft or diversion. A number of suggestions to mitigate the threat of bioterrorism were put forward:

- Need to enhance biosecurity to minimise the risk of unauthorised access, loss, theft, misuse, diversion or intentional release
- Need to raise scientists' awareness of potential risks since they are the first port of call in noting deviant behaviour
- Need an international, harmonised process of review for work involving 'enhanced' biological agents
- Need a verification mechanism within the BWC to minimise the possibility of illegal states programmes
- Need for transparency in biodefense programmes

Questions were raised over the process of review. It was suggested that the review process should take place before research goes ahead due to the difficulties of preventing the publication of dual use research. However, the problem of tackling inadvertently or accidentally dual use research was also recognised.

Questions were also raised over the need for transparency in biodefense programmes. It was noted that transparency at this level would potentially open access to dangerous dual use knowledge. It was also suggested that transparency in biodefense programmes could lead to misinterpretations and fear in other states and, therefore, an increase in their biodefense activities. However, it was generally agreed that biodefense programmes should be made as transparent as possible.

Oversight, education, awareness-raising and adoption and/or development of codes of conduct

This session began with a brief discussion of the Green Customs Initiative, a partnership that offers information and training materials for customs officials to combat illegal trade in commodities of environmental concern. The OPCW became a partner in the Green Customs Initiative in 2005 and it was suggested that the involvement of the BWC in the Green Customs Initiative would also be an excellent opportunity for States Parties to promote awareness-raising.

The next discussion was based on a study of biosecurity education in the life sciences. The need for education of the life scientists was stressed in order to ensure that scientists have an awareness of international law and the potential misapplication of the life sciences, but also to mitigate feelings of over-regulation and to foster a culture of responsibility. The study examined a sample of 142 university courses across 57 universities in 29 European countries for evidence of modules on biosecurity, biosafety and bioethics, as well as references to the BWC, BW arms control, dual use and codes of conduct.

The study found only 3 out of 57 universities offered an optional biosecurity module. While there were a greater number of references to biosecurity in the sample of university courses (37 out of 142), a large number of courses made no mention at all. About one fifth of the 142

degree courses offered a biosafety module, but several of these were optional. Bioethics modules were far more prevalent. One of the biggest barriers in considering the development of biosecurity education appears to have been the growing body of competing topics which life science educators are required to teach. It was suggested that the integration of biosecurity issues into existing course structures, such as bioethics modules, could provide a means of developing biosecurity education.

The European focus of the study was emphasised and extrapolations to the global context were cautioned, though it was suggested that the results would be likely to apply globally. However, it was also noted that higher education structures and standards vary widely from country to country. As such, it was suggested that adaptable resources, rather than core content, needs to be available to countries. The possibility of introducing compulsory biosecurity courses was discussed though it was argued that this approach would not be problem-free since it might turn biosecurity education into a simple 'tick-box' process rather than helping to foster a culture of responsibility.

The next discussion examined oversight, focusing on the US Department of Homeland Security (DHS) Compliance Review Group. The Compliance Review Group reviews all DHS-related biodefense projects to determine if they are in compliance with the BWC. Reviews of projects are made in advance of their commencement and are based on three categories – low risk (unless flagged, research is automatically approved); research that might raise questions in public; and research that is flagged as a possible compliance concern. The Compliance Review Group also maintains continual oversight as projects evolve.

While the Compliance Review Group process was considered to be robust, it was noted that the procedure was entirely internal to the DHS and it was suggested that interagency review would provide a more rigorous mechanism of oversight. It was further suggested that the DHS oversight procedure could serve as a model for consideration by State Parties of the BWC at its Seventh Review Conference. It was also noted that oversight procedures would be necessary for all dual use research activities, not just for biodefense projects.

The Seventh Review Conference 2011

The Convergence of Chemistry and Biology

This session began with a discussion of the challenges presented by synthetic biology and the overlap of chemistry and biology. It was noted that there has been an increasing interest in creating synthetic viruses in the laboratory and the process is becoming faster, easier, cheaper and more reliable. It was noted that as well as being able to recreate traditional BW threat agents, synthetic biology could also lead to the creation of new agents through the design and construction of biological components and systems that do not already exist in nature. It was suggested that this could pose a huge challenge to the BWC in terms of the control of agents and could make the traditional select agents list obsolete.

Furthermore, it was noted that the application of engineering principles to biology means that the procedures are becoming less skill-based and more knowledge-based, which could potentially open up access to more people. It was suggested that this could have serious ramifications for the BWC in terms of regulation and verification.

The next discussion further examined the issue of dual use knowledge, focusing on an example of the new centre for molecular medicine in Sweden. The research centre is producing a compound library which includes data not only of compounds that kill bacteria, but also of compounds that kill cells. It was noted that this database could potentially provide a library of many new toxic compounds. Concerns were raised over access to and security of the database.

The next discussion examined the problem of the convergence of chemistry and biology from the perspective of the treaty regime. It was noted that both treaties have mechanisms to ensure adaptability to changes in science and technology. However, while it was agreed that the treaties could be interpreted broadly to continue to prohibit all new threat agents, doubts were raised over the effectiveness of the treaty regime to regulate new developments.

It was suggested that greater dialogue should be initiated between the chemical and biological arms control worlds to encourage convergence of the regimes. While the difficulty of implementing verification at the international level was recognised, it was suggested that this needs to be examined as a possibility. It was further suggested that as convergence becomes more widespread the role of individual criminal responsibility becomes increasingly applicable. It was proposed that developing a concept of individual criminal responsibility and raising awareness of it could help to discourage misuse.

The next discussion provided some historical perspectives on the negotiations leading to the BWC and CWC and examined the implications of CB convergence. It was noted that while both conventions prohibit the weaponisation of toxins, this overlap has resulted in gaps rather than reinforced safeguards. It was suggested that the overlap should be rebuilt through the improved implementation and transparency-enhancing procedures of both treaties. For the BWC, a way forward would be in developing the existing CBM regime; for the CWC, there are possibilities in developing the verification regime for Other Chemical Production Facilities.

The discussion continued with an examination of the evolution of the BWC mechanism. It was proposed that the evolution of the BWC mechanism should take into account two phases – incremental changes as a result of annual meetings and review conferences; potentially fundamental changes as a result of the convergence of chemistry and biology. It was said that bridges need to be built between the BWC and CWC, though it was noted that it could be problematic for the OPCW to engage in new objectives until the CW destruction deadlines had been met.

The discussion on convergence ended with an examination of the idea of a Framework Convention. It was suggested that the CWC and BWC, being essentially Cold War arms control treaties concerned with state programs, are insufficient for the twenty-first century. It was argued that a legal instrument was required to deal with the accelerating rate of change in science and technology, particularly as the threat moves from crude killing capabilities to the more subtle manipulation of human physiology.

Based on models from environmental law, a Framework Convention could provide capabilities to react to changes, with protocols being produced as issues become negotiable. The Framework Convention could outline objectives and principles (ie, to protect present and future generations from being subjected to the non-consensual manipulation with malign intent of their bodies' regulatory systems through biological, biochemical and chemical agents); general guidelines for state action; established organisation infrastructures; and procedures for implementation.

Concerns were expressed that the negotiation of a Framework Convention would be difficult, especially with the extant treaties still in place, though it was noted that it could provide a useful bridge between the two treaties. Concern was also expressed that priority should be given to improving national implementation of the BWC and CWC rather than diverting resources and efforts towards the negotiation of a new convention.

Preparing for a Successful Outcome

This session highlighted a number of issues to be considered in the run-up to the Seventh Review Conference of the BWC. Of particular note was the issue of verification of compliance. It was suggested that it would be an error for States Parties and civil society groups to expect to revert back to an attempt to continue to negotiate a BWC Protocol from where it had been in 2001. It was argued that the 2001 draft Protocol was a product of its time and new measures for verification will require careful consideration of what the BWC needs from 2011 and beyond. As was pointed out, even in terms of advances in science and technology, huge progress has been made that will impinge upon attempts to produce an effective verification protocol. It was also emphasised that the focus on verification of compliance should not distract from concerns over implementation.

A number of recommendations and courses of action were made for civil society involvement in preparations for the Seventh Review Conference:

- Production of a reference guide to all problems/contentious issues within the CWC, BWC and wider regime
- Learning from other types of treaties and regimes, including non-security agreements
- Establishment of a BWC wiki
- for the Seventh Review Conference in order that civil society groups may share and test ideas to facilitate the production of a feasible set of policy proposals and possible solutions that could be presented to States Parties.
- Do not allow preparations for 2011 to completely distract from consideration of the important topics in the ongoing intersessional programme – promoting capacity building in the fields of disease surveillance, detection and diagnosis, and containment of infectious diseases (2009); and the provision of assistance and coordination in the case of alleged use of biological or toxin weapons, including improving national capabilities for disease surveillance, detection and diagnosis and public health systems (2010).

Improving the CBM Regime

The session began by noting that CBMs continue to be an important agenda item at intersessional meetings and review conferences, which suggests that States Parties do want to obtain greater clarity. A number of themes were identified that might be useful in the discussion of CBMs during the Seventh Review Conference including the development of guidelines; clarification on the nature of past programs; elaboration of parameters; consideration of the CBM structure, procedures and political support; general consideration of non-state actors; and the revision of forms to take into account new science and technology.

The next session provided a summary of open source CBM data. At the time of discussion, 60 states had submitted a CBM form in 2008. It was stressed that this is a far cry from universal implementation for a Convention of 162 States Parties. It was noted, however, that about 50

states submitted CBMs last year and had not done so this year. It was suggested that a simple mechanism for confirming that there had been no changes would be useful. It was further pointed out that, while important, CBMs placed a large burden on the resources of many countries, particular in regard to the rapid rate of growth in biotechnology industries. To this end, it was suggested that the forms could be redesigned to improve options for indicating changes.

Strengthening the effectiveness and improving the implementation of the Convention

This session begun by examining mechanisms for strengthening the effectiveness and improving the implementation of the BWC. It was noted that a number of States Parties in the 2008 MX made reference to the importance of an implementation mechanism for the BWC in the form of a legally binding instrument of verification of compliance. A number of State Parties also highlighted the importance of the implementation of the CBM regime. It was suggested that States Parties should be encouraged to develop these thoughts by preparing Working Papers which should be submitted during the intersessional period in order to help prepare the ground for the Review Conference.

The final discussion in this session examined Vertic's Sample Act for National Implementation of the BWC which was developed to assist countries in drafting legislation to implement the BWC as well as the BW-related provisions of UN Security Council Resolution 1540. It was stressed that the Act was still a work in progress and several questions remained, the following being of particular note in discussion:

- Is it a Sample Act life scientists can live with?
- Does the certification process go far enough?
- Is the issue of publication adequately addressed?
- Is there an adequate balance between freedom of scientific research and national security/public health?

Concerns were expressed over the inclusivity of scientists in the process, though it was noted that representation could be included in the establishment of a responsible authority for enforcement. In terms of the reaction of the scientific community it was suggested that this might depend on the process. A multistakeholder approach that included scientists around the table was recommended. It was also noted that scientists are already regulated in many other areas (eg, genetic engineering) and so should be receptive to the need for accountability. However, it was pointed out that the level of acceptability depends on the extent of the regulation and the extra work involved. Finally, concerns were expressed over the cost to countries in developing this legal framework, particularly if little or no existing provisions were in place. It was suggested that assistance from other states could provide some help in this direction.

*

The session closed with the observation that a new perspective had emerged from the Pugwash workshop, one that addresses the hostile use of biology and biochemistry not only as an arms control issue, but also as a humanitarian concern. The growth of new science and technology and the attendant challenges of compliance and verification of the treaty regime were stressed, and the value of developing the idea of individual criminal responsibility was reaffirmed.

List of participants

Dr. David Atwood (USA), Representative, Disarmament and Peace, Quaker United Nations Office, Geneva, Switzerland

Amb. Georgi Avramchev, Ambassador and Permanent Representative of The Republic of Macedonia to the UNOG and Other International Organizations in Switzerland

Ms. Tatiana Balykina, Ministry of Foreign Affairs, Moscow, Russia

Dr. Maurizio Barbeschi, Scientist, Health Security, Office of the Director of the Epidemic and Pandemic Alert and Response, Health Security and Environment Cluster (HSE/EPR), World Health Organization (WHO), Geneva, Switzerland

Amb. Sergey Batsanov, Director, Geneva Office, Pugwash Conferences on Science and World Affairs; Member, Pugwash Council; Member, International Advisory Board, Geneva Centre for the Democratic Control of Armed Forces (DCAF)

Prof. Bjorn Peter Berdal MD, PhD, Head, Institute of Microbiology, Armed Forces Medical Services, Oslo, Norway

Mr. Bernhard Brasack, Permanent Representative of Germany to the Conference on Disarmament in Geneva

Dr. Vladimir S. Bundin, Senior Counselor, Department of Security & Disarmament Affairs, Ministry of Foreign Affairs of the Russian Federation, Moscow

Ms. Katharine Crittenberger, Deputy Director, Office of Conventional & CBW Affairs, Bureau of Verification, Compliance and Implementation, US Department of State, Washington, DC; Deputy Head of Delegation, US Delegation to Meetings of BWC States Parties

Dr. Ake Forsberg, Research Director, CBRN protection and security, Swedish Defense Research Agency, Umea, Sweden; Professor (50%), Molecular Biology, Umea University

Mr. François Garraux, M.Sc., Policy Adviser, Federal Department of Defence, Civil Protection and Sport (DDPS), Directorate for Security Policy (DSP), Arms Control and Disarmament Policy, Bern,

Mr. Geoff Gartshore, Counsellor, Deputy Permanent Representative, Permanent Mission of Canada to the UN, Geneva, Switzerland

Dr. Jozef Goldblat (Sweden/Switzerland), Vice President, Geneva International Peace Research Institute (GIPRI), Geneva, Switzerland; Consultant, United Nations, Geneva

Mr. Mikaël Griffon, Conseiller, Permanent Mission of France to the Conference on Disarmament

Mr. Richard Guthrie (UK), Co-ordinating Editor, CBW Events. <http://www.cbw-events.org.uk>

Dr. Gert Günter Harigel, Senior Physicist (Emeritus), European Laboratory for Particle Physics (CERN), Geneva, Switzerland (1995-); Treasurer, Geneva International Peace Research Institute (GIPRI); President, Association Suisse Pugwash; Council member, International Network of Engineers and Scientists for Global Responsibility (INES)

Mr. John Hart (US), Head, Chemical and Biological Security Project (Arms Control and Non-proliferation Programme), Stockholm International Peace Research Institute (SIPRI), Solna, Sweden

Mr. Junko Horibe, Adviser, Delegation of Japan to the Conference on Disarmament, Geneva, Switzerland

Dr. Iris Hunger, Head, Research Group for Biological Arms Control, Centre for Science and Peace Research, University of Hamburg, Germany

Dr. Jo Husbands, Scholar/Senior Project Director, Board on Life Sciences, U.S. National Academy of Sciences, Washington, DC; Adjunct professor, Security Studies Program, Georgetown University

Mr. Nicolas Isla, Researcher, Hamburg Research Group for Biological Arms Control, Centre for Science and Peace Research, University of Hamburg, Germany

Ms. Catherine Jefferson, Doctoral Candidate, Harvard Sussex Program, SPRU - Science and Technology Policy Research, Freeman Centre, University of Sussex, Falmer, East Sussex, BN1 9QE, UK

Mr. Jiang Bo, Third Secretary, Department of Arms Control and Disarmament, Ministry of Foreign Affairs, People's Republic of China

Dr. Alexander Kelle (Germany), Lecturer in Politics and International Relations, Department of European Studies and Modern Languages, University of Bath, UK

Mr. Aftab A. Khokher, Counsellor, Permanent Mission of Pakistan to the United Nations, Geneva, Switzerland

Mr. Vladimir Ladanov, First Secretary, Ministry of Foreign Affairs, Moscow, Russia

Dr. Jez Littlewood, Director, Canadian Centre of Intelligence and Security Studies (CCISS), and Assistant Professor, Norman Paterson School of International Affairs, Carleton University, Ottawa, Ontario, Canada

Mr. Dominique Loye, Deputy Head, Mines-Arms Unit, International Committee of the Red Cross (ICRC), Geneva, Switzerland

Mr. Francesco Marelli, Programme Manager, Security Governance/Counter-Terrorism Laboratory, UNICRI, Turin, Italy

Prof. Robert Mathews, Associate Professor, Asia Pacific Centre for Military Law, University of Melbourne, Australia

Ms. Kathryn McLaughlin, Publications Coordinator, BioWeapons Prevention Project (BWPP), Geneva, Switzerland; Fellow, Landau Network-Centro Volta (LNCV), Como, Italy

Prof. Matthew S. Meselson, Thomas Dudley Cabot Professor of the Natural Sciences, Department of Molecular and Cellular Biology, Harvard University, Cambridge, Massachusetts, USA; Member, Pugwash CBW Steering Committee

Dr. Robert P. Mikulak, Director, Office of Chemical and Biological Weapons Threat Reduction, Bureau of Arms Control, US Department of State, Washington, DC, USA

Dr. Lorna Miller, Senior Biological Advisor/Non-Proliferation, Defence Science and Technology Laboratory, Porton Down, UK

Dr. Piers Millett (UK), Deputy Secretary, 2008 BWC Meeting of States Parties, Geneva, Switzerland

Prof. Kathryn Nixdorff (USA/Germany), Professor (retired), Dept. of Microbiology and Genetics, Darmstadt University of Technology, Darmstadt, Germany

Mr. Krzysztof Paturej (Poland), Director of Special Projects, OPCW, The Hague, The Netherlands

Dr. Graham S. Pearson, Visiting Professor of International Security, Department of Peace Studies, University of Bradford, Bradford, West Yorkshire, UK; Member, HSP Advisory Board; Member, Pugwash CBW Steering Committee

Mr. James Reville, Researcher & PhD Candidate, Depart. of Peace Studies, University of Bradford, Bradford, UK

Prof. Julian Robinson, Emeritus Professor in the Science & Technology Policy Research Program (SPRU), University of Sussex, Brighton, UK; Member, Pugwash CBW Steering Committee

Ms. Marie-Gaëlle Robles, Desk Officer, French Ministry of Foreign Affairs, Paris, France

Mr. Scott Spence, Senior Legal Officer, VERTIC, London, UK

Prof. Jean-Pierre Stroot (Belgium/Switzerland), retired Physicist; President of the Board of the Geneva International Peace Research Institute (GIPRI), Geneva, Switzerland; Association Suisse Pugwash, Geneva

Dr. Ralf Trapp (Germany), Independent disarmament consultant (CBW), Chessenaz, France

Dr. Emmanuelle Tuerlings (Belgium), Biorisk Reduction for Dangerous Pathogens (BDP), Department of Epidemic and Pandemic Alert and Response (EPR), World Health Organization, Geneva, Switzerland

Mr. Venkatesh Varma, Minister (Disarmament), Mission of India, Geneva, Switzerland

Amb. Hendrik Wagenmakers (Netherlands), Consultant, Bern, Switzerland

Mr. Wang Chang, Second Secretary, Chinese Mission, Geneva, Switzerland

Mr. Shige Watanabe, First Secretary, Delegation of Japan to the Conference on Disarmament, Geneva, Switzerland

Ms. Angela Woodward (New Zealand/UK), Executive Director, Verification Research, Training and Information Centre (VERTIC), London; Teacher, Law Department, London School of Economics

Ms. Yang Yi, Deputy Director, Department of Arms Control and Disarmament, Ministry of Foreign Affairs, People's Republic of China

Mr. Yu Peng, Attache, Permanent Mission of China to the UN Office at Geneva and Other International Organizations in Switzerland

Ms. Anna Zmorzynska, Researcher, Research Group for Biological Arms Control, Carl Friedrich von Weizsäcker Centre for Science and Peace Research, University of Hamburg, Hamburg, Germany

Pugwash Staff: Claudia Vaughn, Pugwash Conferences, Accademia Nazionale dei Lincei, via della Lungara 10, I-00165 Rome, Italy, Tel. (++39-06) 6872 606, Fax: (++39-06) 6878 376, Mobile: (++39) 333 456 6661, E-mail: pugwash@iol.it

GIPRI: Christine Demierre, Commissaire d'apprentissage pour les employé-e-s, de commerce et vente, Ch. Frank-Thomas 40, CH-1208 Genève, Tél.: +41-78.818.06.54, Fax. +41-22.736.89.19, E-mail: Cdapp.demierre@gmail.com

List of papers

1) Kathryn Nixdorff: BD: Advances in Targeted Delivery Technology (Bradford Science and Technology Report, 2008, with financial support by the German Foundation for Peace Research [DSF])

2) Scott Spence: BD: VERTIC's Sample Act for National Implementation of the 1972 Biological and Toxin Weapons Convention and Related Requirements of UN Security Council Resolution 1540

3) Julian Robinson: From Divergence to Convergence

4) Graham Pearson: BD: Report Agenda item 1. 4 Report - Meeting of Experts BWC 18-22 Aug 2008 (report of MX08 for CBW Conventions Bulletin)

5) Richard Guthrie: BD: CWC Review Conference Report, nos. 1-11 (7-21 April 2008): The Run-up to the Conference: Preparations and expectations

6) Richard Guthrie: BD: BWPP MX Reports #1-6 (18-25 August 2008): The 2008 Meeting of Experts: Biosecurity and Education

7) Jo Husbands: The Contributions of Academies of Science and Scientific Unions to Understanding the Convergence of Chemistry and Biology

- 8) Katherine Bowman, Jo L. Husbands, Ben Rusek, Rapporteurs: BD: (Prepublication copy)The Second International Forum on Biosecurity, Summary of an International Meeting, Budapest, Hungary, March 30-April 2, 2008, The National Academies Press, Washington, DC* http://www.nap.edu/catalog.php?record_id=12525
- 9) Graham Pearson: A Fresh Start to Strengthen the Effectiveness and Improve the Implementation of the BTWC"
- 10) Graham Pearson: Awareness-Raising: An Opportunity for the BTWC
- 11) Nicolas Isla: BD CBM Reader on Publicly Available CBMs 2008, Research Group for Biological Arms Control, December 2008
- 12) Anna Zmorzynska, Iris Hunger: BD Dual Use Life Science Research and its Potential Application in Bioterrorism—Presentation of a Study in Progress, Research Group for Biological Arms Control
- 13) Giulio Mancini and James Revill: BD Fostering the Biosecurity Norm: Biosecurity Education for the Next Generation of Life Scientists
- 14) Jez Littlewood: On Your Marks. Thinking about preparing for the Seventh Review Conference of the Biological Weapons Convention in 2011
- 15) Distributed by Graham Pearson: BD 10 October 2008 Chairman's Synthesis paper for MSP 2008: Synthesis Of Considerations, Lessons, Perspectives, Recommendations, Conclusions and Proposals Drawn from the Presentations, Statements, Working Papers And Interventions
- 16) Distributed by Graham Pearson: BD 2008 Advance Copy of ISU Report
- 17) Kathryn McLaughlin: BD: Bringing Biologists on Board: A Report from Inside the 2008 Meeting of Experts of the Biological and Toxin Weapons Convention, Draft article for publication in Disarmament Diplomacy 90, 2009
- 18) John Hart: Improving the Confidence-building Measures Regime under the Biological and Toxin Weapons Convention
- 19) Alexander Kelle: Bath Framework Convention.