14. Chemical and biological warfare developments and arms control

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I. Introduction

In 2005 the states parties to the 1972 Biological and Toxin Weapons Convention (BTWC)[1] held their third annual expert and political meetings, which considered 'the content, promulgation, and adoption of codes of conduct for scientists' and started preparations for the Sixth Review Conference, to be held in 2006. The states parties to the 1993 Chemical Weapons Convention (CWC)[2] decided to extend the action plans on national implementation and universality. The US-led Iraq Survey Group (ISG) published its conclusions on past Iraqi weapon programmes at the end of its investigations in Iraq, and further information was made public about the sources that had been used for pre-war intelligence and the methodologies for handling such information. More information relating to allegations of terrorist acquisition of chemical and biological materials for hostile purposes was revealed as a consequence of the acquittals of a number of individuals accused of such activities.

Issues relating to the control of biological weapons are discussed in section II of this chapter. Developments in chemical weapons and disarmament are described in section III. Section IV discusses developments in relation to Iraq and the connected intelligence issues. Section V covers other allegations, activities and prosecutions. Section VI presents the conclusions. Appendix 14A considers means of enhancing bio-security and the need for a global strategy.

II. Biological issues

In 2005 Moldova acceded to the BTWC, meaning that, as of 31 December 2005, 155 states were parties to it. An additional 16 states have signed but not

[1] The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction was signed on 10 Apr. 1972 and enterd into force on 26 Mar. 1975. It is reproduced on the SIPRI Chemical and Biological Warfare Project website, URL <http://www.sipri.org/contents/cbwarfare/>. The site includes complete lists of parties, signatories and non-signatories to this convention. See also annex A in this volume.

[2] The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (corrected version), 8 Aug. 1994 was signed on 13 Jan. 1993 and enterd into force on 29 Apr. 1997. It is available on the SIPRI Chemical and Biological Warfare Project website (note 1). The site includes complete lists of parties, signatories and non-signatories to this convention. See also annex A in this volume.

ratified the BTWC.[3] During 2005, separate from the formal meetings of the BTWC parties, a number of external activities took place such as a regional meeting of BTWC parties co-hosted by Australia and Indonesia in February.[4]

The BTWC is the only global convention prohibiting possession of a class of weapons of mass destruction (WMD) that has no formal verification and compliance mechanisms. Negotiations on a protocol that had been intended to provide such a mechanism came to an abrupt halt in 2001.[5]

The 2005 BTWC meetings: codes of conduct

In 2005 the parties to the BTWC held a Meeting of Experts and a Meeting of States Parties, following on from similar meetings held in 2003[6] and 2004.[7] The mandate for the 2005 meetings was to consider 'the content, promulgation, and adoption of codes of conduct for scientists'.[8] The meetings are the result of a decision taken by the reconvened Fifth Review Conference of the States Parties to the BTWC in 2002.[9]

The BTWC *Meeting of Experts* was held in Geneva on 13–24 June 2005.[10] In addition to the usual presentations by states parties, a novel feature was that

[3] 'List of states parties', BTWC Meeting of the States Parties document BWC/MSP/2005/MX/INF.5, 21 June 2005. Although no states are reported to have acceded later in the year, Kazakhstan indicated in 2005 that 'the appropriate internal procedures are currently taking place' to accede to the BTWC in a statement to the Conference on Disarmament (CD) in Mar., as reproduced in CD/PV.980, 17 Mar. 2005. Unless otherwise noted, all United Nations (UN), CD and BTWC meetings documents cited in this chapter are available via the UN documents website URL <http://documents.un.org>.

[4] Mathews, R. J. (ed.), *Proceedings of the Biological Weapons Convention Regional Workshop: Co-hosted by the Governments of Australia and Indonesia: 21–25 February 2005* (University of Melbourne: Melbourne, 2005).

[5] Zanders, J. P., Hart, J. and Kuhlau, F., 'Chemical and biological weapon developments and arms control', *SIPRI Yearbook 2002: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2002), pp. 665–708.

[6] Guthrie, R. et al., 'Chemical and biological warfare developments and arms control', *SIPRI Yearbook 2004: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2004), pp. 661–67. The 2003 meeting topics were 'the adoption of necessary national measures to implement the prohibitions set forth in the Convention, including the enactment of penal legislation' and 'national mechanisms to establish and maintain the security and oversight of pathogenic microorganisms and toxins'.

[7] Guthrie, R., Hart, J. and Kuhlau, F., 'Chemical and biological warfare developments and arms control', *SIPRI Yearbook 2005: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2005), pp. 604–607. The 2004 meeting topics were 'enhancing international capabilities for responding to, investigating and mitigating the effects of cases of alleged use of biological or toxin weapons or suspicious outbreaks of disease' and 'strengthening and broadening national and international institutional efforts and existing mechanisms for the surveillance, detection, diagnosis and combating of infectious diseases affecting humans, animals, and plants'.

[8] Final Document of the Fifth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) Weapons and on Their Destruction, BTWC Review Conference document BWC/CONF.V/17, para. 18 (a), URL <http://www.opbw.org>, p. 3.

[9] Hart, J., Kuhlau, F. and Simon, J., 'Chemical and biological weapon developments and arms control', *SIPRI Yearbook 2003: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2003), pp. 646–50.

[10] Pearson, G. S., 'Report from Geneva: the Biological Weapons Convention new process', *CBW Conventions Bulletin*, no. 68 (June 2005), URL <http://www.sussex.ac.uk/spru/hsp/cbwcb68.pdf>, pp. 12–19. Participants from 82 states parties, 3 signatory states, 1 observer state, 8 specialized agencies and intergovernmental organizations, and 16 non-governmental organizations attended. 'List of participants', BTWC Meeting of the States Parties document BWC/MSP/2005/MX/INF.6, 24 June 2005.

formal presentations were made by a number of outside organizations, such as professional associations, invited as 'guests of the Chair'. As in 2004, an informal list of issues raised at the meeting was prepared by the chairman and appended to the report of the meeting.[11] This list of issues was distilled into a synthesis paper by the chairman before the *Meeting of States Parties*,[12] which was held in Geneva on 5–9 December.[13] The meeting recognized that, while the primary responsibility for implementing the convention rests with the states parties, codes of conduct, voluntarily adopted, can make a significant and effective contribution to combating the present and future threats posed by biological and toxin weapons and that a range of different approaches exists to develop such codes. The meeting also recognized that all those with a responsibility for, or legitimate interest in, codes of conduct should be involved in their development, promulgation and adoption.[14]

The issues addressed by these two inter-governmental meetings are challenging and require the attention not only of governments but also of the scientific community.[15] As the process of scientific study involves communication between scientists and relies on the free exchange of information between individuals and between institutions, a framework that includes codes of conduct relating to any activities that could potentially promote the hostile use of biological sciences should enhance the overall regime. While the guidance in codes might not inhibit an individual with the intent to cause harm, it would strengthen the norm and make it easier for scientists to alert others if someone were undertaking questionable activities.

Concerns have been expressed that codes of conduct are difficult to formulate precisely. However, by their nature, codes deal primarily with subject matter that cannot be clearly defined. Where there are clear dividing lines between acceptable and unacceptable practices, traditional forms of law and regulation can operate effectively, but many life science subjects deal with dual-use materials and technologies and have no such clear dividing lines. The context and circumstances of each research activity in these cases must be carefully assessed and reviewed, and this is where codes of conduct have their greatest added value.

[11] 'Report of the Meeting of Experts', BTWC Meeting of the States Parties document BWC/MSP/2005/MX/3, 5 Aug. 2005. The report includes a complete list of working papers and other documents from the meeting.

[12] 'Considerations, lessons, perspectives, recommendations, conclusions and proposals drawn from the presentations, statements, working papers and interventions on the topic under discussion at the Meeting of Experts', BTWC Meeting of the States Parties document BWC/MSP/2005/L.1, 16 Nov. 2005.

[13] Pearson, G. S., 'Report from Geneva: the Biological Weapons Convention Meeting of States Parties, 2005', *CBW Conventions Bulletin*, no. 69/70 (Sep.–Dec. 2005), pp. 15–27, URL <http://www.sussex.ac.uk/Units/spru/hsp/CBWCB%2069-70.pdf>. Participants from 87 states parties, 7 signatory states, 2 observer states, 6 specialized agencies and intergovernmental organizations, and 18 non-governmental organizations attended. 'List of participants', BTWC Meeting of the States Parties document BWC/MSP/2005/INF.2, 9 Dec. 2005.

[14] 'Report of the Meeting of States Parties', BTWC Meeting of the States Parties document BWC/MSP/2005/3, 14 Dec. 2005.

[15] See also appendix 14A.

Codes of conduct create a set of benchmarks by which activities can be assessed. In the context of the BTWC, the most significant benchmark that could be adopted in codes is the general purpose criterion embodied in the convention. This criterion prohibits all activities within the remit of the convention unless there is legitimate justification for an activity, including the scale of that activity. Some comparisons have been made with the Hippocratic oath traditionally taken by doctors when qualifying. However, few medical schools use the original oath; there have been a number of modern variations, and some attempts have been made to unify these newer versions.[16] Only a small proportion of professional scientific associations have a code of conduct for their members.

Other subjects of debate have included: (*a*) whether ethical standards should be established on a national basis, with the hope that eventually international standards will develop, or whether an international set of codes should be agreed upon which can then be adopted on a national basis; and (*b*) whether codes should be promulgated by governments, by professional scientific associations or by both.

Codes cannot exist in isolation but must form part of a broader package of educational measures. There is a broad consensus that scientists should receive more training to help them examine the wider consequences of their research and how it might be misused by others. Codes formulated with the cooperation of scientists would be better than codes imposed by governments which may be overly restrictive and have the effect of both hampering legitimate research and discouraging scientists from pursuing certain legitimate research areas.

The 2006 BTWC Review Conference and the inter-sessional process

The sixth five-yearly BTWC review conference is to be held within the period 20 November–8 December 2006.[17] The Preparatory Committee (PrepCom) meeting for the review conference is to be held on 26–28 April 2006 and will take the formal decision on the dates. Ambassador Masood Khan of Pakistan will chair both the PrepCom and the review conference. There is still no clear common understanding on how the outcomes of the series of annual meetings that formed the inter-sessional process will be handled during the 2006 review conference.

The inter-sessional process since 2003 has made a number of achievements. It enabled a focus on particular practical subjects; it encouraged states parties to implement the convention more effectively through a range of national measures, based on shared experience and lessons learned by other states parties; through the intergovernmental process it ensured that states maintained a political focus on biological issues and continued to employ officials special-

[16] E.g., a proposed 'Revised Hippocratic oath' was presented to the World Medical Association by the British Medical Association in 1997.

[17] At the time of this decision at the Meeting of States Parties there was no consensus over whether the review conference should be of 2 or 3 weeks' duration. See 'Report of the Meeting of States Parties' (note 14).

izing in the subject; and, to some extent, it mitigated the negative atmosphere existing at the time the protocol negotiations came to a halt.[18]

A number of lessons were learned from the inter-sessional process. The scale of effort that would be needed to bring all states parties up to a basic level of national implementation of BTWC obligations became apparent during the meetings. Many states had believed that national implementation would simply involve adopting laws and regulations but came away from the meetings with a better appreciation of the challenges associated with national legislation, pathogen security and disease surveillance.

Procedural questions

The same decision that established the inter-sessional process also decided that 'The Sixth Review Conference will consider the work of these meetings and decide on any further action'.[19] A measure of the value of the inter-sessional process will be how it is reflected in the proceedings of the review conference. When the inter-sessional process was established, it was assumed that there were various ways in which this might be done.

1. Ideas from the inter-sessional process could be raised during the standard article-by-article review of the convention as carried out at previous review conferences.
2. Presentations could be made to a special portion of the review conference, perhaps as one part of an approach to review by themes.
3. Some form of reporting back to the review conference could be made during the PrepCom.

The alternative to these three options would be not to have any form of input from the inter-sessional process.[20]

Lessons learned

As preparations are made for the review conference, there is an appreciation by many states of the vacuum that would have existed without the inter-sessional process between 2002 and 2006. A number of states, including the members of the European Union (EU), have made explicit calls for a comparable work programme to follow from the 2006 meeting.[21]

Further lessons may be learned from the experiences of other arms control regimes, such as the Action Plans on national implementation and universality

[18] See Zanders, Hart and Kuhlau (note 5), pp. 669–73.

[19] BWC/CONF.V/17, para. 18(e) (note 8).

[20] It is possible that none of the Chairs of the meetings of the inter-sessional process will be attending the review conference as all 3 individuals have moved to other posts unconnected with the convention. One early proposal had been for the Chairs of each of the inter-sessional meetings to introduce the relevant subjects being discussed.

[21] The statement by the United Kingdom on behalf of the EU and the national statement by Germany at the Meeting of the States Parties explicitly called for a follow-on work programme.

carried out under the framework of the CWC.[22] However, direct parallels cannot be drawn as there is no central institution for the BTWC equivalent to the CWC's Organisation for the Prohibition of Chemical Weapons (OPCW). As there is firm opposition to the establishment of any form of BTWC institution or secretariat, most notably from the USA, novel thinking may be required: it may be possible to create an 'action plan liaison office' in a form that would not be seen as a prototype for such an institution but could still be a useful focal point for assistance.

Preparedness and response issues

The economic and national security implications of diseases received unprecedented attention during 2005. The reasons for this included: continuing fears that terrorists might deliberately spread disease; the spread outwards from Asia of the H5N1 strain of avian influenza combined with fears that this strain may develop into another that could cause a human epidemic; and the lessons from the impact of Hurricane Katrina on New Orleans and the surrounding area, which made clear that preparations in the USA to protect civilian populations had been inadequate. A number of countries updated or introduced plans for responding to pandemic influenza,[23] and cooperative response measures were discussed in various international forums.[24]

The World Health Assembly adopted new International Health Regulations in May comprising legally binding provisions for member states of the World Health Organization (WHO) on sharing epidemiological information about the transboundary spread of infectious diseases in order to manage public health emergencies of international concern. The new rules will 'prevent, protect against, control and provide a public health response to the international spread of disease'. The original regulations, agreed in 1969, were designed to help monitor and control six serious infectious diseases—cholera, plague, relapsing fever, smallpox, typhus and yellow fever. The new rules will govern a broader range of public health emergencies of international concern, including emerging diseases, and are scheduled to take effect in 2007.[25] The new regulations allow for the WHO Director-General to form a 'determination of a public health emergency of international concern', even if the government of the territory is in disagreement with this conclusion. They also allow for greater flexibility in responding to outbreaks as the WHO may also consult unofficial reports and ask for cooperation from the relevant state in verifying

[22] The Action Plans are discussed in section III below.

[23] E.g., US President George W. Bush announced a national strategy in Nov. 2005. The White House, 'National strategy for pandemic influenza', News release, Washington, DC, 1 Nov, 2005, URL <http://www.whitehouse.gov/homeland/pandemic-influenza.html>.

[24] E.g., the Association of South East Asian Nations Summit in Kuala Lumpur on 14 Dec. 2005 adopted the 'East Asia Summit declaration on avian influenza prevention, control and response', URL <http://www.aseansec.org/18101.htm>.

[25] World Health Organization (WHO), 'World Health Assembly adopts new international health regulations', Press release, 23 May 2005, URL <http://www.who.int/mediacentre/news/releases/2005/pr_wha03/en/>. The regulations are contained in WHO document A58/55, 23 May 2005. On emerging diseases see appendix 14A.

them. If a state does not provide a timely response to a request from the WHO for disease outbreak verification, the WHO would be authorized to make such information public.

The European Centre for Disease Prevention and Control (ECDC) began operations in Stockholm, becoming an independent legal entity on 1 July 2005.[26] The role of the centre is to 'to identify, assess and communicate current and emerging threats to human health from communicable diseases'.[27] The ECDC was established in response to an assessment that existing arrangements were 'simply not efficient enough to protect the EU's citizens sufficiently against threats to their health posed by communicable diseases, including the possibility of the deliberate release of infectious agents ("bioterrorism")'.[28]

III. Chemical weapons and disarmament

As of December 2005, 175 states had ratified or acceded to the CWC and a further 11 states had signed but not ratified it,[29] while 8 states had neither signed nor ratified the convention.[30]

The Conference of the States Parties to the CWC

The 10th Session of the Conference of the States Parties (CSP) to the CWC met on 7–11 November 2005. It approved the OPCW 2006 budget of €75.6 million (*c.* $88.6 million), a decrease of around 0.1 per cent from the 2005 budget.[31] The CSP focused on agreeing follow-up measures to the OPCW Action Plans on national implementation measures (Article VII of the CWC) and universality (i.e., achieving universal membership to the convention). The CSP also considered the implementation of CWC provisions

[26] ECDC website, URL <http://www.ecdc.eu.int>.

[27] 'Regulation (EC) No. 851/2004 of the European Parliament and of the Council of 21 April 2004 establishing a European Centre for disease prevention and control', *Official Journal of the European Union*, L142 (30 Apr. 2004), pp. 1–11.

[28] European Commission, Health & Consumer Protection Directorate-General, 'Preparatory actions for setting up the ECDC: handover file', Brussels, 15 July 2005, URL <http://www.eu.int/comm/health/ph_overview/strategy/ecdc/ecdc_handover1_en.pdf>.

[29] Antigua and Barbuda, Bhutan, Cambodia, the Democratic Republic of the Congo, Grenada, Honduras, Niue and Vanuatu became parties to the CWC in 2005. The states that have signed, but not ratified the CWC are Bahamas, Central African Republic, Comoros, Congo, Djibouti, Dominican Republic, Guinea-Bissau, Haiti, Israel, Liberia and Myanmar.

[30] The states that had not signed or acceded to the CWC as of Dec. 2005 were Angola, Barbados, Egypt, Iraq, North Korea, Lebanon, Somalia and Syria.

[31] One area in which cost savings have been realized is with the implementation, on a trial basis, of an on-call inspector scheme in 2004–2005 whereby inspectors are based in their home countries, rather than at the OPCW headquarters in The Hague. See 'Note by the Technical Secretariat: the trial phase of the on-call-inspector scheme', OPCW document S/523/2005, 29 Sep. 2005. OPCW costs will tend to rise as the number of operational chemical weapon destruction facilities (CWDFs) increases. Starting in 2004 additional costs were incurred as a consequence of the implementation of the OPCW's 7-year tenure policy that affects most OPCW Secretariat staff. Additional training and recruitment costs have resulted. Annual contributions by states parties are expected to decrease by almost 1.3% because of improved recovery of Article IV and Article V inspection costs.

pertaining to the declaration and inspection of chemical industry facilities and the implementation of the CWC's provisions on economic and technological development (Article XI).[32]

In its official statement, the Africa Group of states parties to the CWC urged the OPCW to open a regional office in Africa.[33] Supporters of the proposal noted that not all of the African parties to the CWC have permanent diplomatic representation in The Hague and argued that the establishment of a regional office would promote universality of adherence to and effective implementation of the CWC by states in the region.[34] The proposal, which has been considered at least informally for a number of years, was resisted by some states partly because of uncertain cost implications and the possibility that other geographical regions of the CWC regime might also push for the establishment of their own regional offices. The CSP recommended to the Executive Council that an ad hoc, open-ended working group be established to examine the proposal.[35]

The CSP also authorized the Executive Council to establish a working group to prepare for the Second Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention (Second Review Conference), which will be held no later than 2008.[36] In addition, the CSP re-elected by acclamation OPCW Director-General Ambassador Rogelio Pfirter of Argentina to a second, and final, term that will start on 25 July 2006 and end on 24 July 2010.[37] The CSP adopted a decision on implementing a common understanding of 'captive use', a chemical industry implementation matter relating to whether and how chemicals that appear in the CWC's Annex on Chemicals should be declared.[38] Finally, the CSP endorsed a proposal to establish 29 April, the day the CWC entered into force, as a day of remembrance for victims of chemical warfare and that a memorial to its victims be established in The Hague.[39]

[32] See Hart, J., Verification Research, Training and Information Centre (VERTIC), *Chemical Industry Inspections under the Chemical Weapons Convention*, Verification Matters Research Report no. 1 (VERTIC: London, 2001).

[33] 'Statement by the African Group of States Parties to the CWC at the 10th Session of the Conference of States Parties, 7–11 November 2005', 10th Conference of the States Parties to the CWC, The Hague, 7–11 Nov. 2005.

[34] In most cases, the nearest permanent diplomatic representation is located in Brussels.

[35] Organisation for the Prohibition of Chemical Weapons (OPCW), 'Decision, establishment of an OPCW office in Africa', OPCW document C-10/DEC.13, 10 Nov. 2005.

[36] Organisation for the Prohibition of Chemical Weapons, 'Report of the tenth session of the Conference of the States Parties, 7–11 November 2005', OPCW document C-10/5, 11 Nov. 2005, para. 23.1.

[37] Organisation for the Prohibition of Chemical Weapons, 'Decision, renewal of the appointment of the Director-General', OPCW document C-10/DEC.7, 10 Nov. 2005.

[38] Organisation for the Prohibition of Chemical Weapons, 'Decision, understanding relating to the concept of "captive use" in connection with declarations of production and consumption under Part VI of the Verification Annex to the convention', OPCW document C-10/DEC.12, 10 Nov. 2005. For background on captive use and the OPCW's 2004 decision on the issue, see Guthrie, Hart and Kuhlau (note 7), pp. 610–11.

[39] Organisation for the Prohibition of Chemical Weapons (note 36), para. 23.3.

Action Plans

In 2003 the OPCW began to carry out a two-year 'plan of action' to ensure that the parties to the CWC have effectively enacted their obligations in the area of national implementation measures. This included the adoption of penal legislation that prohibits individuals and groups under a party's jurisdiction or control from carrying out activities banned by the CWC.[40] In the same year the OPCW also began to implement a plan of action to promote universality of the CWC. Both plans expired when the 10th Conference of the States Parties to the CWC met.

With respect to the *Action Plan on national implementation measures*, as of 17 October 2005, 147 of the parties (84 per cent) had established or designated a National Authority; 105 parties (60 per cent) had reported the adoption of general domestic legislative or administrative measures to the OPCW Secretariat; and 59 parties (34 per cent) had adopted and reported national legislation covering all key areas required by the CWC.[41]

The main concern behind the discussions on the Article VII Action Plan on national implementation measures was the extent to which follow-on measures should be of a cooperative, as opposed to a more coercive, nature. These discussions focused on three areas: (*a*) agreeing a suitable time frame for achieving specific objectives; (*b*) the extent to which any follow-up measures should be taken up under Article XII (Measures to redress a situation and to ensure compliance, including sanctions); and (*c*) the extent to which any follow-up measures should be handled by the United Nations (UN). There was a strong reluctance by some parties to include references to Article XII and the UN.[42] These discussions also highlighted differences in understanding among the parties of when a violation of a technical or administrative nature should be considered a fundamental violation. The discussion on possible referral of non-compliance with the Action Plan to the UN focused on whether non-implementation of Article VII obligations should fall under UN Security Council Resolution 1540 or under the 2000 OPCW–UN relationship agreement.[43]

[40] Organisation for the Prohibition of Chemical Weapons, 'Decision, plan of action regarding the implementation of Article VII obligations', OPCW document C-8/DEC.16, 24 Oct. 2003.

[41] Organisation for the Prohibition of Chemical Weapons, 'Note by the Director General, report on the plan of action regarding the implementation of Article VII obligations', OPCW document C-10/DG.4/rev.1, 2 Nov. 2005, pp. 5, 11. At the time these figures were compiled, there were 174 parties to the CWC.

[42] E.g., the African Group stated: 'The African Group acknowledges the delay by some of its members to notify the Organization of their National Authorities at the time the Convention entered into force for them. We are, however, of the view that this issue is not one of those prohibited by the Convention. This issue is therefore, in our view, neither of serious gravity nor does it call for invoking the provisions of Article XII of the Convention'. 'Statement by the African Group of States Parties to the CWC at the 10th Session of the Conference of States Parties, 7–11 November 2005' (note 33).

[43] Agreement Concerning the Relationship between the United Nations and the Organisation for the Prohibition of Chemical Weapons, New York, 17 Oct. 2000, URL <http://www.opcw.org/html/db/legal/rel_agree.html>. The relationship agreement was delayed for several years to a large extent over the question of whether and how information can be transferred to the UN without violating the OPCW confidentiality policy. In principle, there is a significant degree of flexibility in the interpretation of the relationship agreement to allow for essentially open-ended consultations. On the implementation of

The CSP agreed language that strongly urged a process of focused engagement among the parties and the Technical Secretariat to identify and resolve specific difficulties, partly through the further exchange of information and the continued involvement of the Executive Council. The CSP decided to review the implementation of the Article VII Action Plan during the 11th CSP, in 2006, 'to consider and decide on any appropriate measures to be taken, if necessary, in order to ensure fulfillment' by the parties of their Article VII obligations.[44]

With respect to the *Action Plan on universality*, the CSP called on all states not party to the CWC to join the convention 'without delay', particularly in cases where states' 'non-adherence' to the CWC is a 'cause for concern'. The CSP urged the parties and the OPCW Secretariat to intensify their efforts to achieve universality of membership to the CWC by attempting to ensure that the membership to the convention is at least 180 by the end of 2006 and that the CWC achieve universal membership by the time the 12th CSP convenes in 2007, 10 years after the entry into force of the convention.[45]

Assisting Iraq to become a party to the CWC

On 6–9 July 2005 the OPCW convened a CWC implementation training workshop in The Hague for nine representatives of the Government of Iraq. While there was no official indication of when Iraq would accede to the CWC, the Iraqi delegation affirmed its country's intention to accede to the CWC and an observer from Iraq attended the 10th CSP.[46] The workshop, which was funded by a voluntary contribution by Japan, was designed to ensure that the convention is effectively applied upon Iraq's accession to the CWC and was attended by representatives of interested member states, including Japan, the Netherlands, the United Kingdom and the USA. The topics considered included the preparation of declarations, the establishment and efficient operation of a National Authority, and the enactment of national implementing legislation.[47]

The factors related to Iraq's accession to the CWC include the fact that the current and future governments of Iraq will not have complete access to pertinent information and records about past programmes and activities.[48] The

Resolution 1540, see chapter 12 in this volume. UN Security Council Resolution 1540, 28 Apr. 2004, URL <http://www.un.org/Docs/sc/unsc_resolutions04.html>.

[44] Organisation for the Prohibition of Chemical Weapons, 'Decision, follow-up to the plan of action regarding the implementation of Article VII obligations', OPCW document C-10/DEC.16, para. 14.

[45] Organisation for the Prohibition of Chemical Weapons, 'Decision, universality of the Chemical Weapons Convention and the implementation of the universality Action Plan', OPCW document C-10/DEC.11, 10 Nov. 2005, paras 1, 4.

[46] For background, see Zanders, J. P. et al., *The Relevance of the Chemical Weapons Convention for Cases of Non-compliance: Lessons from and for Iraq?*, SIPRI Policy Paper no. 5 (SIPRI: Stockholm, Oct. 2003), URL <http://www.sipri.org/>.

[47] Organisation for the Prohibition of Chemical Weapons, 'OPCW trains Iraqi officials in CWC implementation', OPCW Press release no. 32, 11 July 2005, URL <http://www.opcw.org>.

[48] The CWC requires that facilities that produced chemical weapons at any time since 1 Jan. 1946 be declared and verifiably destroyed or converted for peaceful purposes. It is not clear how comprehensive any past records may be because many developments seem to have been unrecorded and many records were deliberately destroyed by past governments or were destroyed as a consequence of military action.

Iraqi Government also has limited or no access to or control over the scientists and technicians who were involved with the former programmes for weapons that were prohibited by the UN.[49] During the period when Iraq was under UN sanctions, the UN Special Commission on Iraq (UNSCOM) and the International Atomic Energy Agency (IAEA) had provided Iraq with model legislation to assist with the implementation of relevant UN Security Council resolutions, including through the adoption and implementation of laws prohibiting any legal person or entity under Iraq's jurisdiction or control from developing, producing or storing UN-prohibited weapons.[50] Iraq's new constitution makes specific reference to similar prohibitions on these types of weapons.[51]

The 'assistex' exercise

An important aspect of CWC implementation relates to OPCW assistance and protection under Article X for those attacked with or threatened by chemical weapons. On 9–13 October 2005 the OPCW conducted its second 'assistex' field exercise (Joint Assistance 2005) in Ukraine to help develop and maintain the organization's readiness to fulfil the provisions of this article. (The first exercise was held in Croatia in 2002.) The 2005 exercise, which was conducted jointly with the Government of Ukraine and the North Atlantic Treaty Organization (NATO) Euro-Atlantic Disaster Response Coordination Centre, consisted of a simulated chemical attack by terrorists.[52] The participants assessed the nature and type of contamination that might result and implemented procedures for decontaminating affected areas and individuals, disseminating information to the public and evacuating local inhabitants.[53] The OPCW also rehearsed procedures for investigating alleged use of chemical weapons.[54] Confidence in the CWC regime could be significantly undermined if the OPCW were not able to give a credible response in this area.

[49] Four Corners Australian Broadcasting Corporation, 'Secrets and lies', Transcript, 15 Feb. 2005, URL <http://www.abc.net.au/4corners/content/2005/s1302767.htm>; and Global Security Newswire, 'Former inspectors want release of Iraqi scientists', 18 July 2005, URL <http://www.nti.org/d_newswire/issues/2005_7_18.html#DB36F26F>. The number of scientists and technical experts from the former Iraqi chemical and biological weapon programmes remaining in the custody of coalition forces is unknown.

[50] Blix, H., 'Briefing the Security Council, 19 December 2002: inspections in Iraq and a preliminary assessment of Iraq's weapons declaration', Presentation by UNMOVIC Executive Chairman to the UN Security Council, 19 Dec. 2002, URL <http:/www.unmovic.org>.

[51] The relevant section of the draft reads: 'The Iraqi Government shall respect and implement Iraq's international commitments regarding the non-proliferation, non-development, non-production and non-use of nuclear, chemical, and biological weapons. Associated equipment, material, technologies and communications systems for use in the development, manufacture, production and use of such weapons shall be banned.' As included in a speech by Ambassador Majid H. Al-Anbaki of Iraq to the UN General Assembly First Committee, 17 Oct. 2005, reproduced in UN document A/C.1/60/PV.13, 17 Oct. 2005.

[52] Organisation for the Prohibition of Chemical Weapons, 'Note by the Technical Secretariat, final exercise instructions "Joint Assistance 2005"', OPCW document S/511/2005/Rev. 1, 6 Oct. 2005.

[53] North Atlantic Treaty Organizaion, Euro-Atlantic Disaster Response Coordination Centre, 'Joint Assistance exercise 2005', 17 Oct. 2005, URL <http://www.nato.int/eadrcc/2005/ukraine/index.html>.

[54] Organisation for the Prohibition of Chemical Weapons, 'Chemical terrorism protection and assistance exercise "Joint Assistance 2005" concludes in Ukraine', Press release no. 60, 13 Oct. 2005, URL <http://www.opcw.org/html/global/press_releases/2005/PR60_2005.html>.

Consultations, cooperation and fact finding

One of the least understood but, nevertheless, most important aspects of the implementation of the CWC has been the implementation of the provisions of Article IX on consultations, cooperation and fact finding regarding concerns about non-compliance. Although no challenge inspection has been requested,[55] the other provisions of the article have been regularly implemented since the CWC's entry into force in 1997. In 2005 a US Department of State report noted that the USA has used the bilateral consultation provisions of this article to 'resolve numerous compliance concerns' and that recent US bilateral discussions with other parties to the CWC under the article had been 'well received' and were 'useful in laying the groundwork for judging compliance'.[56]

Destruction of chemical weapons

The states that declared the possession of chemical weapons at the time the CWC entered into force for them are Albania, India, Libya, Russia, the USA and 'another state party', not identified at its request but widely understood to be South Korea. As of 31 December 2005, of approximately 71 373 agent tonnes of declared chemical weapons, about 12 434 agent tonnes had been verifiably destroyed; of approximately 8.68 million declared items, about 2.4 million munitions and containers had been destroyed.[57] As of the same date, 12 states[58] had declared 64 chemical weapon production facilities,[59] of which 37 had been certified by the OPCW as being destroyed and 14 as being converted for purposes not prohibited under the CWC. While information on the stockpiles of India and the unnamed state party is limited, both states are said to be on schedule to meet their final CWC destruction deadlines.

Albania's chemical weapon stockpile consists of approximately 16 tonnes of agent—mainly sulphur mustard but also reportedly adamsite, lewisite and sulphur mustard–lewisite mixtures—stored in bulk at a single location near Tirana.[60] Destruction of the stockpile is set to begin in 2006 using a portable incinerator provided by the US Cooperative Threat Reduction programme.[61]

[55] See Hart, J., 'Political and technical aspects of challenge inspections under the Chemical Weapons Convention', Paper presented at the EU seminar on 'challenge inspections' in the framework of the CWC, Vienna, 24–25 June 2004, URL <http://www.sipri.org/contents/cbwarfare/Publications/Publications/cbw-papersfactsheets.html>.

[56] US Department of State, 'Adherence to and compliance with arms control, nonproliferation and disarmament agreements and commitments', Washington, DC, Aug. 2005, URL <http://www.state.gov/t/vci/rls/rpt/51977.htm>, p. 5.

[57] Organisation for the Prohibition of Chemical Weapons, 'Inspection activity', URL <http://www.opcw.org>.

[58] The 12 states were Bosnia and Herzegovina, China, France, India, Iran, Japan, South Korea, Libya, Russia, Serbia and Montenegro, the UK and the USA.

[59] Article II, para. 8, of the CWC defines a chemical weapon production facility as any facility that was designed, constructed or used to produce chemical weapons at any time since 1 Jan. 1946.

[60] Guthrie, Hart and Kuhlau (note 7), pp. 611–12.

[61] On the Cooperative Threat Reduction programme see chapter 12 in this volume.

Albania has reportedly not uncovered any paperwork about or found eyewitnesses willing to discuss the origin of the stockpile that was discovered in an unused military bunker in 2003.[62] There were further reports stating that many of the estimated 600 containers have Chinese-language labels that describe the contents.[63]

The CSP granted *Libya*, in principle, a further extension of its intermediate deadlines for destroying its Category 1 chemical weapon stockpiles.[64] The specific dates will be determined by the Executive Council, which will then submit a report on the matter to the 11th CSP in 2006.[65]

The *Russian* chemical weapon stockpile consists of about 40 000 agent tonnes and is stored at seven locations.[66] As of December 2005, Russia had destroyed approximately 4 per cent of this stockpile. In 2005 destruction operations were carried out at Gorny; these operations were scheduled to be completed by the end of 2005, while the destruction facility at Kambarka was expected to become operational by the end of the year (see table 14.1).[67]

In October 2005 Russia issued a revised chemical weapon destruction plan which places the total cost of the destruction programme at 160.4 billion roubles (*c.* $5.6 billion) and states that the total amount of international financial and technical assistance required will be 34.2 billion roubles (*c.* $1.2 billion).[68] The plan also estimates that up to 0.6 billion roubles (*c.* $21 million)

[62] Albania's post-World War II Communist regime constructed numerous and now mostly unused bunkers throughout the country.

[63] Warrick, J., 'Albania's chemical cache raises fears about others', *Washington Post*, 10 Jan. 2005, URL <http://www.washingtonpost.com/wp-dyn/articles/A61698-2005Jan9.html>, p. A01.

[64] The CWC's Annex on Chemicals consists of 3 'schedules'. Schedule 1 chemicals consist of chemicals and their precursors judged to have few, if any, peaceful applications. Chemicals listed in schedules 2 and 3 have wider peaceful, including commercial, applications. The definition of chemical weapon categories, which is partly based on what schedule a chemical may be listed under, is given in CWC, Part IV(A) of the Verification Annex, para. 16.

[65] Organisation for the Prohibition of Chemical Weapons, 'Decision, request by the Libyan Arab Jamahiriya for extensions of the intermediate deadlines for the destruction of its Category 1 chemical weapons stockpiles', OPCW document C-10/DEC.10, 10 Nov. 2005. For background see Hart, J. and Kile, S., 'Libya's renunciation of nuclear, biological and chemical weapons and ballistic missiles', *SIPRI Yearbook 2005* (note 7), pp. 643–45; and 'Khimicheskaya bomba obezvrezhena: voennyie khimiki unichtozhili pervuyu tonn boevikh otravlyayushchikh veshchstv' [The chemical bomb rendered harmless: military chemists have destroyed the first 1000 tonnes of military poisonous substances], Interview with Valery Petrovich Kapashin, head of the Federal Directorate on Safety, Storage and Destruction of Chemical Weapons, *Rossiiskaya Gazeta*, 26 Sep. 2005, URL <http://www.rg.ru/2005/09/26/kapashin.html>.

[66] The 7 locations are Kambarka, Udmurtia Republic (planned destruction capacity 2500 tonnes/year); Gorny, Saratov oblast (390 tonnes/year); Kizner, Udmurtia Republic (1900 tonnes/year); Maradikovsky, Kirov oblast (1200 tonnes/year); Pochep, Bryansk oblast (2000 tonnes/year); Leonidovka, Penza oblast (2000 tonnes/year); and Shchuchye, Kurgan oblast (1900 tonnes/year). For background on Russian chemical weapon destruction see Hart, J. and Miller, C. D. (eds), *Chemical Weapon Destruction in Russia: Political, Legal and Technical Aspects*, SIPRI Chemical & Biological Warfare Studies, no. 17 (Oxford University Press: Oxford, 1998); and *Khimicheskoe Razoruzhenie* [Chemical disarmament], URL <http://www.chemicaldisarmament.ru/>.

[67] For background see Hart, J., 'Assistance for the destruction of chemical weapons in the Russian Federation: political and technical aspects', Paper presented at the Conference on Strengthening European Action on WMD Non-proliferation and Disarmament: How Can Community Instruments Contribute?, Brussels, 7–8 Dec. 2005.

[68] On assistance see Hart (note 67); Global Green USA, Green Cross Switzerland and Institute for Urban Economics, 'Deadly weapons and dire needs: exploring the intersection of social infrastructure

Table 14.1. Schedule of chemical weapon agent destruction in Russia, 2004–12

Year	Quantity
2004	692
2005	304
2006	5 202
2007	3 000
2008	5 970
2009	7 787
2010	7 720
2011	6 047
2012	3 244

Source: 'Changes to be included in the Special Federal Programme Destruction of Chemical Weapons in the Russian Federation, approved by Resolution no. 305, dated 21 March 1996, for the Russian Federation', Resolution of the Government of the Russian Federation no. 639, 24 Oct. 2005 (in Russian).

can be recovered by reusing destruction by-products such as purified arsenic and decontaminated scrap metal.[69] Contracts with donors totalling approximately 10.5 billion roubles (*c*. $364 million) had been signed by mid-2005.[70]

The stockpile of chemical weapons in *the United States* is stored at eight locations.[71] As of December 2005, approximately 36 per cent of the USA's 31 280-tonne chemical weapon stockpile had been destroyed.[72] In 2005 destruction operations were carried out at the Aberdeen, Anniston, Edgewood, Pine Bluff, Tooele and Umatilla facilities. In February 2005 the last of the sulphur mustard agent stored at Aberdeen Proving Ground was destroyed and the destruction facility will be shut down once the decontamination of the bulk containers and the destruction of any residual gelled sulphur-containing sludge ('heels') remaining within the storage containers are completed.[73] In 2005 destruction operations were temporarily suspended at three facilities owing to

and weapons demilitarization in Shchuch'ye, a struggling chemical weapons community', Zurich, Sep. 2005, URL <http://www.globalgreen.org/>; and Ember, L. R., 'The Shchuch'ye dilemma: civil unrest could undermine construction of a Russian chemical arms disposal facility', *Chemical & Engineering News*, vol. 83, no. 45 (7 Nov. 2005), pp. 19–24. See also Anthony, I. and Fedchenko, V., 'International non-proliferation and disarmament assistance', *SIPRI Yearbook 2005* (note 7), pp. 675–98.

[69] 'Changes to be included in the Special Federal Programme Destruction of Chemical Weapons in the Russian Federation, approved by Resolution no. 305, dated 21 March 1996, for the Russian Federation', Resolution of the Government of the Russian Federation no. 639, 24 Oct. 2005 (in Russian).

[70] 'Failure to comply with chemical weapons liquidation program will cost Russia dearly', *RIA Novosti*, 21 July 2005, URL <http://en.ria.ru/russian/20050721/40945404.html>.

[71] The US chemical weapon stockpiles are located at Aberdeen Proving Ground, Md.; Anniston Army Depot, Ala.; Lexington-Blue Grass Army Depot, Ky.; Newport Chemical Depot, Ind.; Pine Bluff Arsenal, Ark.; Pueblo Chemical Depot, Colo.; Deseret Chemical Depot, Utah; and Umatilla Chemical Depot, Oreg.

[72] Types and quantities of the US chemical weapon stockpile are given in Zanders, J. P., Eckstein, S. and Hart, J., 'Chemical and biological weapon developments', *SIPRI Yearbook 1997: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1997), pp. 449–51.

[73] US Army Chemical Materials Agency, 'Last mustard agent container is removed from the APG chemical agent storage yard for destruction', Press release no. 05–02, 4 Feb. 2005.

operational problems: Newport, Umatilla and Pine Bluff.[74] As of December 2005 it was not clear when destruction operations at the Blue Grass and Pueblo sites might start.[75] The delay is partly the result of political and technical difficulties surrounding long-standing opposition, including by the areas' congressional representatives, to incineration at these sites. Concern was also expressed over a study funded by the US Army to consider the feasibility of transporting the chemical weapons stockpiled at the Blue Grass and Pueblo sites to the Tooele destruction facility for disposal.[76] Under current US law, chemical weapon stockpiles must be destroyed on site. There was also concern that funding thought to be earmarked for these two sites was being improperly transferred to the other sites to support the destruction operations at these sites.

Meeting the final CWC destruction deadline

The continuing difficulties with chemical weapon destruction mean that it is becoming increasingly unlikely that all states will meet the destruction deadline (29 April 2012) mandated under the CWC. If one or more states need extra time to complete their destruction, having shown good faith in their destruction efforts, this may seem of little consequence. However, the precedent could be set that weapon destruction deadlines under international treaties are flexible.[77]

Some of these issues were highlighted in a senior official's testimony to the US Senate on the implications of a chemical weapon possessor not meeting the final CWC stockpile destruction deadline.[78] The official stated: 'if current

[74] Neutralization of VX at the Newport facility was stopped in June when tests showed the hydrolysate to be flammable due to the presence of diisopropylamine (DIPA). The neutralization process was modified to reduce the level of DIPA to an acceptable level and destruction operations were resumed. There was also opposition in the US Congress and elsewhere to the shipping of VX hydrolysates off-site. The Centers for Disease Control and Prevention (CDC) and the Department of Health and Human Services (DHHS) were asked to study the matter. Operations were also suspended at Newport after approximately 114 litres accumulated in a containment area due to a faulty valve. Destruction operations at the Umatilla and Pine Bluff facilities were temporarily suspended following the outbreak of fires in an explosive containment chamber where sarin-filled M-55 rockets are cut into pieces ('guillotined'). Fires have occasionally occurred during destruction operations since 1990. However, operations were suspended to investigate further methods to minimize their occurrence. 'Army studying chemical arms fires', *Chemical & Engineering News*, vol. 83, no. 24 (13 June 2005), p. 22; 'VX spill at disposal facility', *Chemical & Engineering News*, vol. 83, no. 25 (20 June 2005), p. 22; Ember, L., 'Army halts VX destruction', *Chemical & Engineering News*, vol. 83, no. 28 (11 July 2005), p. 13; and Ember, L., 'Army resumes disposal of VX nerve gas', *Chemical & Engineering News*, vol. 83, no. 39 (26 Sep. 2005), p. 13. See also DHHS and CDC, 'Review of the U.S. Army proposal for off-site treatment and disposal of caustic VX hydrolysate from the Newport Chemical Agent Disposal Facility', Apr. 2005, URL <http://www.cdc.gov/nceh/demil/reports/VX/vxreporttoc.htm>.

[75] See the US Army Chemical Materials Agency website, URL <http://www.cma.army.mil/>; and the Program Manager, Assembled chemical weapons alternatives website, URL <http://www.pmacwa.army.mil/>.

[76] 'Army considers shipping chemical arms to Utah for disposal', *Chemical & Engineering News*, vol. 83, no. 4 (24 Jan. 2005), p. 24.

[77] Flexibility of deadlines reduces pressure to ensure that they are achieved. As well as reducing pressure to keep to the chemical weapon destruction timetable, this might make future negotiations on agreements to destroy other classes of weapon more difficult.

[78] Mahley, D. A., Deputy Assistant Secretary for Arms Control Implementation, US Department of State, 'Chemical weapons demilitarization', Statement before the Subcommitee on Emerging Threats

assumptions hold' and the USA becomes non-compliant for not having completed destruction of its chemical weapon stockpile by the final deadline, some countries will argue that the USA has 'lost the right to offer opinions' on the chemical weapon-related activities of other countries. In addition, Russia could seize any US destruction delays past the 2012 deadline 'as an excuse to further submerge its own destruction program in competing budget priorities, and to justify its own failure to meet the treaty deadline'.

The official strongly recommended against any attempt by the USA to modify the CWC provisions to allow for a further extension because: (*a*) doing so would result in the chemical weapon destruction obligation becoming 'essentially open-ended' and the political priority given to chemical weapon destruction within states that possess chemical weapons would therefore be reduced; (*b*) other parties to the CWC could propose amendments of their own with uncertain consequences; and (*c*) any amendments not of an 'administrative or technical nature' can be vetoed by a single vote.[79] Such a case of US non-compliance, he said, should not be viewed as an attempt by the USA to evade its legal obligations to destroy its stockpile or of its commitment to the rule of law and should not automatically result in a loss of voting rights or of a seat on the Executive Council. However, he stated that the possibility for those with 'a particular political agenda' to 'seek to exploit the situation'—either at the OPCW or elsewhere—could not be ruled out.[80]

It is important that the parties with chemical weapon stockpiles remain actively engaged in order to ensure that political and technical difficulties associated with their destruction programmes are resolved. Where appropriate, the possibilities for taking advantage of international expertise and assistance should also be actively considered.

Old and abandoned chemical weapons

As of December 2005 three countries had declared that abandoned chemical weapons (ACWs) were present on their territories, and 11 countries had declared that they possessed old chemical weapons (OCWs).[81]

and Capabilities, Senate Armed Services Committee, 11 Apr. 2005, URL <http://www.state.gov/t/ac/rls/rm/44633.htm>. The CWC requires that all stockpiles be destroyed no later than 10 years after the convention enters into force, a deadline that can be extended by agreement of the states parties to 15 years. For provisions regarding 'order of destruction' and intermediate and final deadlines for the destruction of chemical weapons see CWC, Verification Annex, Part IV(A), paras 15–28.

[79] Two types of amendment are possible. Those of an administrative or technical nature can be taken by a majority vote of parties attending a Conference of the States Parties. Amendments not of an administrative or technical nature can be voted down by a single party to the CWC. The question of whether a proposed amendment is of an administrative or technical nature can also be determined by a majority vote. See CWC, Article XV.

[80] Mahley (note 78).

[81] The countries that have declared ACWs to the OPCW are China, Italy and Panama. The countries that have declared OCWs to the OPCW are Australia, Belgium, Canada, France, Germany, Italy, Japan, Russia, Slovenia, the UK and the USA. ACWs are defined as chemical weapons that were abandoned by a state after 1 Jan. 1925 on the territory of another state without the permission of the latter. CWC, Article II, para. 6. OCWs are defined as chemical weapons that were produced before 1925 or chemical weapons produced between 1925 and 1946 that have deteriorated to such an extent that they are no

In 2005 *China* and *Japan* reportedly agreed to start construction in China of a chemical weapon destruction facility, which will cost an estimated 97.3 billion yen (*c.* $815 million), to eliminate chemical weapons abandoned in China by Japan in the 1930s and 1940s.[82]

In *Russia* it was reported that seven chemical rounds dating from World War II were found near the town of Balakovo (Saratov oblast) inside a concrete and iron container, and a number of identical rounds were discovered near the village of Ivanovka (Balakov region). Russian officials declined to confirm the type of chemical weapon agent contained in the munitions, but the report indicated that they contained sulphur mustard, phosgene or an organophosphorus nerve agent. It was suggested that the weapons may have been located at a secret munitions storage facility in the region since military combat apparently did not occur in the region during the war.[83]

In *the USA*, the Department of Health and Human Services issued a further report on possible adverse effects of World War I-era chemical munitions located in Spring Valley, in the District of Columbia.[84] The report concluded that the state of health of the local population does not detectably differ from that of the people who live in the surrounding regions and that demonstrating any possible adverse health effects caused by the chemical weapon-related materials is problematic. In 2005 remediation work focused on an area where at least 15 sealed glass bottles were recovered which were found to contain suspected degradation products of sulphur mustard.[85] Clean-up operations were expected to cost approximately $165 million and continue until 2010.[86]

Codes of conduct

In 2005 a joint OPCW–International Union of Pure and Applied Chemistry (IUPAC) Project on Education and Outreach Regarding Chemical Weapons met twice. The meetings complemented and paralleled the consideration in

longer usable in the manner in which they were designed. CWC, Article II, para. 5. For information on countries not discussed in this chapter see CBW chapters in previous editions of the SIPRI Yearbook.

[82] 'Estimates cost of chemical weapons disposal facility at almost $1 billion', *Sankei Shimbun*, 17 Oct. 2005, Translation from Japanese, World News Connection, National Technical Information Service (NTIS), US Department of Commerce; and 'Japan, China agree on chemical arms disposal facility', *Japan Today*, 29 Apr. 2005.

[83] Bocharova, S., 'Khimicheskie bomby plokho okhranyali' [Chemical bombs were poorly protected], *Nezavisimaya Gazeta*, 4 Oct. 2005, p. 9.

[84] Federal Facilities Assessment Branch, Division of Health Assessment and Consultation and Agency for Toxic Substances and Disease Registry, *Health Consultation: Spring Valley Chemical Munitions, Washington, District of Columbia, Public Health Evaluation for the Spring Valley Community* (US Department of Health and Human Services: Washington, DC, 7 Sep. 2005), URL <http://www.atsdr.cdc.gov/>. The 268-hectare area in north-west Washington, DC, was used for field testing of weaponry during and shortly after World War I (the area was then called the American University Experiment Station), and clean-up operations and sampling and analysis operations have been under way there since 1993 when chemical weapons were first uncovered. See Hart, Kuhlau and Simon (note 9), pp. 658–59.

[85] US Army Corps of Engineers, 'Spring Valley, Washington, DC, project overview', URL <http://www.nab.usace.army.mil/projects/WashingtonDC/springvalley/overview.htm>.

[86] Levine, S., 'Spring Valley toxins report sounds an almost all-clear', *Washington Post*, 20 Mar. 2005, p. C03.

2005 of codes of conduct by the parties to the BTWC.[87] The participants agreed that there is a need for chemists to develop their own codes of conduct and recommended that educational material be developed that describes the CWC and its obligations. The project, which was scheduled to issue a final report in 2006, considered it important to place the CWC in the context of the beneficial uses and misuses of chemicals and to raise awareness of multiple uses of the same substances as otherwise the perceived relevance of the CWC to chemists and chemistry students would be lessened.[88]

IV. Investigations and intelligence relating to Iraq

In 2005 the US-led Iraq Survey Group closed its investigation into the past chemical and biological weapon programmes in Iraq. The United Nations Monitoring, Verification and Inspection Commission (UNMOVIC) remained excluded from Iraq but continued to monitor and analyse past and current issues according to its mandate in UN Security Council resolutions.[89] The outcome of the investigation concerning the mismanagement of the Oil-for-Food Programme (OFFP) impacts on the continued work of UNMOVIC, which has hitherto been funded from that source, as well as on the entire UN structure.[90]

The last of the major official inquiries into the issues of pre-war intelligence relating to Iraq was published in 2005.[91] The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction was established in February 2004 and submitted its final report to the US Government on 31 March 2005.[92] The report concluded that the 'Intelligence Community's Iraq assessments were . . . riddled with errors'.[93]

[87] See section II above.

[88] International Union of Pure and Applied Chemistry, 'A joint OPCW–IUPAC project on education and outreach regarding chemical weapons', Project no. 2004-048-1-020, URL <http://www.iupac.org/projects/2004/2004-048-1-020.html>.

[89] See, in particular, UN Security Council Resolution 1284, 17 Dec. 1999, which established UNMOVIC, but also previous resolutions describing the tasks of inspection that remain in place.

[90] The OFFP was established by UN Security Council Resolution 986, 14 Apr. 1995, in order for Iraq to sell oil in exchange for purchasing humanitarian goods and other UN-approved materials. It was intended to enable the meeting of humanitarian needs in Iraq while the country remained under international sanctions for failing to comply fully with UN Security Council Resolution 687, 3 Apr. 1991, which, specified the terms for the cessation of hostilities between Iraq and the UN coalition forces that began as a result of Iraq's 1990 invasion of Kuwait. The programme was discontinued on 31 May 2004. In Oct. 2005 the UN Security Council independent enquiry, chaired by Paul A. Volcker, issued the final report on its investigation into the administration and management of the OFFP, including allegations of corruption and fraud within the UN. The report concluded that Iraq derived $228.8 million of illicit income through its manipulation of the OFFP, while a total of $1.8 billion was misspent. See reports Independent Inquiry Committee, 'The management of the United Nations Oil-for-Food programme', vol. I, p. 60, 7 Sep. 2005, URL <http://www.iic-offp.org/Mgmt_Report.htm>; and Independent Inquiry Committee, 'Report on programme manipulation: summary of report on programme manipulation', 27 Oct. 2005, URL <http://www.iic-offp.org/story27oct05.htm>.

[91] For background on the intelligence reports during 2004 see Guthrie, Hart and Kuhlau (note 7), pp. 622–26. See also chapter 1 in this volume.

[92] United States, 'Final report of the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction', 31 Mar. 2005, URL <http://www.wmd.gov/report/>.

[93] United States (note 92), p. 9.

The final Iraq Survey Group report and unresolved concerns

In March 2005 the ISG released a series of addenda to its 2004 report on the search for Iraqi chemical and biological weapons.[94] These addenda officially closed the ISG investigation and concluded that the investigation had 'gone as far as feasible'.[95] In 2005 a small group of inspectors continued to operate in Iraq, although after more than 18 months of ISG inspections no evidence of active chemical or biological warfare programmes had been found, indicating that such programmes no longer existed at the time of the military action in 2003. The report concluded that, while Iraq's chemical and biological physical infrastructure did not pose a proliferation concern, some missing dual-use equipment could contribute to chemical and biological weapon production by insurgents or terrorists.[96] The addenda also warned of the risk of the proliferation of weapon expertise to countries of concern, to terrorists and to insurgent groups and of the possibility that small numbers of degraded chemical weapons remain in Iraq.[97] The ISG considered it 'unlikely that an official transfer of WMD material from Iraq to Syria took place'.[98]

UNMOVIC: present and future activities

Although its inspectors have not been involved in searching for weapons and programmes on the ground, UNMOVIC continues to collect information on Iraq using satellite imagery. According to UNMOVIC, imagery has been examined for 378 of the 411 sites inspected from November 2002 to March 2003, including those considered to be most important. On this basis, analysts have concluded that 120 sites have been 'cleaned' (i.e., equipment or materials removed, to varying degrees).[99] UNMOVIC has also made progress on the compendium[100] of Iraq's proscribed weapons and programmes, the first draft of which was compiled in March 2005. The draft contains lessons learned from the experience gained in the verification process by UN inspectors. Issues include VX nerve agent, missile monitoring and determining the final status of biological warfare agent production facilities.[101] Since the main compendium contains sensitive information on technological details of research

[94] Iraq Survey Group (ISG), 'Addenda to the comprehensive report of the special advisor to the DCI on Iraq's WMD', Mar. 2005, URL <http://www.cia.gov/cia/reports/iraq_wmd_2004/addenda.pdf>. For background on the Oct. 2004 ISG final report findings see Guthrie, Hart and Kuhlau (note 7), p. 617.

[95] Iraq Survey Group (note 94), 'Iraqi detainees: value to investigation of Iraq WMD and current status', p. 3.

[96] Iraq Survey Group (note 94), 'Residual proliferation risk: equipment and material', p. 1.

[97] Iraq Survey Group (note 94), 'Residual pre-1991 CBW stocks in Iraq', p. 1.

[98] Iraq Survey Group (note 94), 'Pre-war movement', p. 1.

[99] UN Security Council, 'UNMOVIC's 22nd quarterly report', S/2005/545, 30 Aug. 2005, p. 2; and UN Security Council, 'UNMOVIC's 23rd quarterly report', S/2005/742, 29 Nov. 2005, URL <http://www.unmovic.org>, p. 3.

[100] For background see Guthrie, Hart and Kuhlau (note 7), pp. 619–20.

[101] UN Security Council, 'UNMOVIC's 21st quarterly report', S/2005/351, 27 May 2005, URL <http://www.unmovic.org>, pp. 13–18.

and production, a summary providing a general description of proscribed programmes and lessons learned is being produced and will be made public.[102]

The debate about the future of UNMOVIC continued in 2005.[103] Iraq has called for UNMOVIC to be terminated and support for this position has been growing in the UN Security Council.[104] One outstanding issue is to make the final judgement on whether Iraq has met its disarmament obligations under remaining relevant UN Security Council resolutions. This decision will require a new Security Council resolution.[105] Criteria need to be established in order to finalize the work and to lift the standing resolutions.[106] There are also indications that Iraq will not in future accept the special constraints or continued intrusive monitoring that UNMOVIC is mandated for.[107] One suggestion is that UNMOVIC, together with the IAEA, should evaluate the technical information and methodologies that have been developed for future reference and, after this is done, UNMOVIC should be disbanded.[108]

Several states have proposed that UNMOVIC's capacities and expertise be used to permanently enhance the UN's verification capability, and some states consider it an opportunity to obtain such a capacity with respect to biological weapons and missiles, where international verification is lacking. Some analysts have gone further, suggesting that all UNMOVIC's capabilities be absorbed into the international system.[109] The question of whether and how UNMOVIC's institutional expertise could be used to strengthen the UN Secretary-General's mechanisms to investigate alleged breaches of the 1925 Geneva Protocol[110] also continued to be considered in 2005. By the end of 2005, no formal decision on UNMOVIC's future had been taken.

[102] Extracts of summaries and lessons learned are provided in UNMOVIC's quarterly reports 21 (note 101), 22 and 23 (note 99), URL <http://www.unmovic.org>. The finalized summary of the compendium will be published on the UNMOVIC website.

[103] Guthrie et al. (note 6), pp. 689–91; and Guthrie, Hart and Kuhlau (note 7), pp. 620–21.

[104] Reuters, 'UN eyes shutting down Iraq arms inspection agency', 8 June 2005, URL <http://www.nti.org/e_research/profiles/Iraq/Nuclear/2121_4595.html>.

[105] Iraq has a continued obligation to submit reports and notifications under various Security Council resolutions. The Iraq counterpart to UNMOVIC, the Iraqi National Monitoring Directorate, was asked in Sep. 2005 to clarify its functions and competences and its relevant point of contact. The readiness of UNMOVIC to assist Iraq in fulfilling its obligations and in particular in developing an appropriate national monitoring system was repeated. A response has not yet been received. See UN Security Council, 'UNMOVIC's 23rd quarterly report' (note 99).

[106] Kerr, P., 'New reports cite looting at Iraqi sites; UNMOVIC future discussed', *Arms Control Today*, vol. 35, no. 3 (Apr. 2005), pp. 36–37.

[107] Barry, J., 'Iraq: stepped-up scrutiny', *Newsweek*, 22 Aug. 2005, URL <http://msnbc.msn.com/id/8940843/site/newsweek/>.

[108] United States Institute for Peace (USIP), 'Deterring death and destruction: catastrophic terrorism and the proliferation of nuclear, chemical, and biological weapons', *American Interests and UN Reform: Report of the Task Force on the United Nations* (USIP: Washington, DC, 2005), URL <http://www.usip.org/un/report/>, p. 79.

[109] Findlay, T., 'Looking back: the UN Monitoring, Verification and Inspection Commission', *Arms Control Today*, vol. 35, no. 7 (Sep. 2005), URL <http://www.armscontrol.org/act/2005_09/LookingBack-UNMOVIC.asp>, pp. 45–48.

[110] On the Geneva Protocol see annex A in this volume.

The funding of UNMOVIC

UNMOVIC currently has an annual budget of about $12 million.[111] Although the OFFP was terminated in 2003,[112] UNMOVIC continues to receive funding from Iraqi oil revenues. It holds an 'escrow account', created under UN Security Council Resolution 1284, which held $345.9 million on 31 December 2004, and the UN Secretary-General wrote to the President of the Security Council requesting the release of $220 million from this account.[113] The Security Council agreed to this request, allowing $200 million to be transferred to the Iraqi-administered Development Fund for Iraq and the remainder of the request 'to be credited against assessments issued in respect of the obligations of the Government of Iraq for regular budget, peacekeeping and tribunal activities and the capital master plan of the [UN]'.[114]

V. Other allegations of chemical and biological warfare activities and related prosecutions

Significant information relating to alleged and confirmed past and present activities in the chemical and biological warfare field became public in 2005.

The US Department of State published its assessment of 'Adherence to and compliance with arms control, nonproliferation and disarmament agreements and commitments' covering the years 2002 and 2003.[115] The report is highly nuanced and reveals disagreements between analysts. For example, in relation to *Cuba*, the report states that 'the Intelligence Community unanimously held that it was unclear whether Cuba has an active offensive biological warfare effort now, or even had one in the past'. Yet, 'On the basis of the same reporting, the policy community believes that the compliance judgment of the [previous report] that Cuba has "at least a limited, developmental offensive [biological warfare] research and development effort" remains correct'.

According to the report, *China* maintains 'some elements' of an offensive biological warfare capability 'in violation of its BWC obligations', 'has not acknowledged past transfers of chemical weapons' and may not have declared all relevant chemical facilities. *Iran* is reported to have 'an offensive biological weapons program in violation of the BWC' and 'is acting to retain and modernize' key infrastructure elements to include an offensive chemical warfare research and development capability. *North Korea* is alleged to have 'a dedicated, national-level effort to develop a [biological warfare] capability and

[111] Ridolfo, K., Radio Free Europe/Radio Liberty, 'Iraq: UN chief seeks mission extension, amid corruption allegations against former Oil-for-Food head', 8 Aug. 2005, URL <http://www.rferl.org/features article/2005/08/77a012bb-6da8-4597-9e73-2dc3b3cc0b30.html>.

[112] UN Security Council Resolution 1483, 22 May 2003, URL <http://www.un.org/Docs/sc/unsc_resolutions03.html>, para. 16.

[113] The letter, dated 20 June 2005, is reproduced in UN document S/2005/406, 24 June 2005.

[114] UN Security Council, Provisional verbatim records of the 5214th meeting, 24 June 2005, UN document S/PV.5214. This decision was communicated to the Secretary-General via a letter reproduced in UN document S/2005/407, 24 June 2005.

[115] US Department of State (note 56). The previous report in the series was published in June 2003.

has developed, produced, and may have weaponized for use, [biological warfare] agents in violation of the BWC'. The report claims that *Russia* 'continues to maintain an offensive [biological warfare] program in violation of the Convention' and 'is in violation of its CWC obligations because its CWC declaration was incomplete with respect to declaration of production and development facilities, and declaration of chemical agent and weapons stockpiles'; and *Syria* is 'developing an offensive biological warfare capability that would constitute a violation of the BWC if Syria were a State Party'. In a change from earlier policy, the report states that the 'United States lacks sufficient evidence to determine whether *Sudan* is in violation of its CWC obligations'.

A survey of proliferation threats and responses which summarized returns from 85 international security experts was published by Richard Lugar, Chairman of the Senate Foreign Relations Committee.[116] Asked to give an assessment of the probability of a biological terrorist attack inflicting numerous casualties in the next five years, the average response was 19.7 per cent with the median response being 10 per cent. When the period was extended to 10 years the average response was 32.6 per cent with the median response being 20 per cent. The equivalent response figures for similar questions on the probability of a major chemical weapon terrorist attack were on average 20.1 per cent (median 15 per cent) over 5 years and on average 30.5 per cent (median 15 per cent) over 10 years.

Allegations and prosecutions relating to state activities

In *the Netherlands*, Frans van Anraat was convicted of supplying chemicals for *Iraq*'s chemical warfare programme in the 1980s. It had been alleged that, between 25 October 1984 and 12 January 1989, the defendant had arranged 36 shipments of materials to Iraq totalling 2360 tonnes of chemicals.[117] Van Anraat, a Dutch national, was given a 15-year jail sentence for complicity in war crimes (the maximum sentence for the charge) but was acquitted on genocide charges relating to attacks on Kurdish villages in the late 1980s. The Dutch court stated that it considered the Kurdish population an ethnic group under the 1948 Genocide Convention[118] and that 'The court has no other conclusion than that these attacks were committed with the intent to destroy the Kurdish population of Iraq'. The judges ruled that van Anraat was not aware of the 'genocidal intentions' of the Iraqi regime when he sold the chemicals.[119]

[116] Lugar, R., 'The Lugar survey on proliferation threats and responses', 22 June 2005, URL <http://www.lugar.senate.gov/reports/NPSurvey.pdf>.

[117] Karskens, A., 'De Ondergang van Nederlands Grootste Oorlogsmisdadiger' [The demise of the greatest Dutch war criminal], *Nieuwe Revu*, no. 51 (Dec. 2004), pp. 20–24. Van Anraat was initially arrested in 1989 in Italy. Jumping bail, he escaped to Iraq where he lived until 2003. He was arrested in Dec. 2004 in the Netherlands.

[118] Convention on the Prevention and Punishment of the Crime of Genocide, available at URL <http://www.icrc.org/>.

[119] 'Killing of Iraq Kurds "genocide"', BBC News Online, 23 Dec. 2005, URL <http://news.bbc.co.uk/2/hi/europe/4555000.stm>.

The Constitutional Court of *South Africa* delivered its verdict on an appeal relating to the earlier prosecution of Wouter Basson, who was involved in that country's past chemical warfare programme.[120] During the earlier case, certain allegations had been considered by the trial judge as outside the jurisdiction of the court because they concerned activities outside South Africa: namely, conspiracy to murder using toxic substances. The Constitutional Court found that such charges were within the jurisdiction of the lower court and so should be reinstated, but left open whether this would amount to 'double jeopardy', the issue of which 'will have to be considered by a trial court'. The prosecuting authorities subsequently decided not to pursue the reinstated charges on the grounds of 'double jeopardy' so the issue will not be decided by a court.[121]

In *the United Kingdom* more information was revealed about LSD tests on humans in the 1950s suggesting that the intelligence services as well as the military had been behind testing policy.[122] Separately, the Ministry of Defence won a High Court appeal on 19 April enabling it to challenge an inquest's verdict of 'unlawful killing'[123] in the case of Ronald Maddison, a Royal Air Force serviceman who died during nerve agent exposure tests in 1953.[124]

Allegations that *the United States* had used toxic materials in its military action in Fallujah, Iraq, in November 2004 were repeated during 2005 and focused on suggestions that, in particular, white phosphorus devices were employed against civilian targets.[125] The main allegations related to the suggestion that the white phosphorus munitions were being used to cause burns on human flesh rather than as a screening smoke. While the burns might be caused by a chemical reaction, this manner of operation would fall outside the definition of a chemical weapon. Some later allegations suggested that the white phosphorus was actually being used to exploit the effects of the smoke produced, which has an irritant effect on those who inhale it. If white phosphorus is being used in lieu of riot control agents and employed as a method of warfare, this activity would be contrary to the terms of the CWC.[126]

[120] South Africa, Constitutional Court, Case CCT 30/03, The State versus Basson, 9 Sep. 2005, URL <http://www.constitutionalcourt.org.za/site/basson.htm>. Details of the original trial can be found in Zanders, J. P. et al., 'Chemical and biological weapon developments and arms control', *SIPRI Yearbook 2000: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2000), pp. 536–37.

[121] Menges, W., '''Dr Death'' is off the hook in South Africa', *The Namibian*, 24 Oct. 2005

[122] Evans, R., 'MI6 ordered LSD tests on servicemen', *The Guardian*, 22 Jan. 2005, URL <http://www.guardian.co.uk/print/0,3858,5109714-111400,00.html>

[123] Guthrie, Hart and Kuhlau (note 7), p. 627.

[124] Press Association, as reproduced in 'MoD to challenge Porton Down verdict', *The Guardian*, 19 Apr. 2005, URL <http://politics.guardian.co.uk/print/0,3858,5174609-110247,00.html>

[125] Guthrie, Hart and Kuhlau (note 7), p. 627.

[126] The definition of 'chemical weapons' in the CWC is deliberately broad. Aside from issues of legitimate industrial uses, items and materials that might fall within the definition of chemical weapons under the convention might be considered to lie within 4 groupings relating to human exposure: (*a*) items or materials that have no purpose other than as chemical weapons and so the possession of them is clearly prohibited except for some clearly defined activities such as defensive research (e.g., specialized delivery systems and chemicals such as VX or sarin); (*b*) materials that can be used as chemical weapons but have other uses that would be rarely confused with use as a chemical weapon (e.g., nitrogen mustard which is used as an anti-cancer drug under the names mustine and chlormethine); (*c*) chemicals that operate through a deliberate toxic effect but which have specific uses not prohibited by the CWC, such as domestic law enforcement (e.g., tear gases); and (*d*) materials that do not rely on their toxic

Allegations and prosecutions relating to non-state activities

Allegations of possible terrorist acquisition of biological weapons were repeated in 2005. At a conference on bio-terrorism convened by Interpol in March, French Interior Minister Dominique de Villepin stated that, after the fall of the Taliban in Afghanistan, al-Qaeda cells relocated to the Pankisi Gorge region of *Georgia* to produce biological agents.[127] No supporting evidence was supplied for this assertion. The Russian authorities stated that they took these allegations very seriously.[128] The Georgian authorities countered by asserting that the problem in Pankisi had been resolved and no threat of terrorism currently existed in that region.[129] In an effort to reduce the controversy, the French ambassador to Georgia suggested that de Villepin's statement 'concerned the situation in the gorge which existed several years ago'.[130]

In *the United Kingdom* a court case claiming a terrorist conspiracy for the production of ricin concluded with one defendant, Kamel Bourgass, found guilty and eight co-defendants found not guilty on 8 April, leading to the abandoning of a second conspiracy trial.[131] Although the arrests leading to the case in January 2003, at a flat in London, had been cited many times as evidence that terrorists were actually acquiring biological materials for hostile uses, the prosecution evidence to the court showed that no evidence of ricin production had been found. The court heard that, although an early test had indicated the possible presence of ricin when investigators entered the flat, subsequent detailed chemical analysis had shown that there was no ricin

properties for their primary purpose (such as a screening smoke) during which use they would not cause 'chemical casualties', but which, if deliberately targeted against humans, would cause injury through their toxic properties and hence, if used in this way, would come under the CWC definition of 'chemical weapon'.

[127] Gecker, J., Associated Press, as reproduced in 'Official: U.S. prepared to fight anthrax', *The Guardian*, 1 Mar. 2005. The allegations were essentially those in the presentation by US Secretary of State Colin Powell to the UN Security Council on 5 Feb.2003. Powell stated: 'We also know that Zarqawi's colleagues have been active in the Pankisi Gorge, Georgia, and in Chechnya, Russia. The plotting to which they are linked is not mere chatter: members of Zarqawi's network say their goal was to kill Russians with toxins.' Presentation as reproduced in UN document S/PV.4701, 5 Feb. 2003.

[128] Russian Ministry of Foreign Affairs, 'Alexander Yakovenko, the spokesman of Russia's Ministry of Foreign Affairs, answers a media question regarding French Interior Minister Dominique de Villepin['s] statement concerning chemical and bacteriological weapons being made by terrorists in Pankisi Gorge, Georgia', 1 Mar. 2005 <http://www.ln.mid.ru/brp_4.nsf/sps/DAAB52A44925D929C3256FB8003C8160>.

[129] Georgian authorities carried out extensive actions to clear terrorist groups from the Pankisi Gorge with assistance from other states during 2002 and 2003. In 2003 Georgia declared the gorge clear of terror groups. If biological or chemical activities had been discovered, it is implausible that such a discovery would not have been publicized.

[130] 'Georgia's authorities doubt possibility of biological weapons development in [P]ankisi', *RIA Novosti*, 1 Mar. 2005, URL <http://en.rian.ru/onlinenews/20050301/39698523.html>.

[131] Campbell, D., 'The ricin ring that never was', *The Guardian*, 14 Apr. 2005, URL <http://politics.guardian.co.uk/print/0,3858,5170380-108933,00.html>. This story was removed from *The Guardian* website and later reinstated with certain details removed relating to government scientists who carried out the ricin analysis. See also Mayes, I., 'Open door: The readers' editor on . . . the welcome restoration of a report to the website', *The Guardian*, 24 Oct. 2005, URL <http://www.guardian.co.uk/Columnists/Column/0,5673,1599273,0.html>. See also Summers, C., 'Questions over ricin conspiracy', BBC News Online, 13 Apr. 2005, URL <http://news.bbc.co.uk/2/4433499.stm>.

present at the location.[132] In the words of one analysis, 'There was no UK poison cell linked to al Qaida or [Abu Musab] al Zarqawi. There was no ricin with which to poison London, only notes and 22 castor seeds. There was no one who even knew how to purify ricin'.[133] Bourgass was found guilty of 'conspiring to commit a public nuisance by the use of poisons and/or explosives to cause disruption, fear or injury'[134] but was not found guilty of conspiracy to commit murder by the same methods.

VI. Conclusions

Although there had been many initial doubts about the usefulness of the BTWC inter-sessional process, there is now a broad consensus that the series of meetings have been productive. It will be important for the 2006 Review Conference of the convention to build on this, and the most obvious way to do so would be through the adoption of a further programme of work up to the time of the following review conference in 2011. Many lessons may be drawn from the successes of the Action Plans carried out under the CWC and from the work under UN Security Council Resolution 1540. The lack of an institution or mechanism for the BTWC limits the ability of the states parties to carry out similar activities and presents a continuing challenge.

The magnitude of terrorist threat in the chemical and biological field remains unclear. Two of the most often cited cases relating to terrorist acquisition of chemical and biological materials for hostile purposes are the London 'ricin conspiracy' and the Pankisi Gorge allegations. In both cases, the initial claims and the final results were very different. The other high-profile 'bio-terrorism' case was the anthrax letters in the USA in late 2001, since which time there has been no repetition, only hoaxes. The longer the time before this happens, the more uncertain it becomes that there is a large number of people with the capability or the intent to carry out similar actions.

However, this should not lead to complacency. There is still a need to prevent the inappropriate use of biological and chemical materials. While such inappropriate use might be either through deliberate or accidental actions, many of the mechanisms for prevention or response are similar in either case.[135] While the magnitude of biological and chemical dangers may be hard to quantify, the scale will inevitably change over time, sometimes for the better, sometimes for the worse. It would be prudent to ensure that effective bio-safety and bio-security measures are adopted as soon as is practicable.

[132] 'Ricin results not told to police', BBC News Online, 15 Sep. 2005, URL <http://news.bbc.co.uk/2/4249516.stm>.

[133] Smith, G., 'UK terror trial finds no terror: not guilty of conspiracy to poison London with ricin', *National Security Notes*, 11 Apr. 2005, URL <http://www.globalsecurity.org/org/nsn/nsn-050411.htm>

[134] British Crown Prosecution Service, 'Crown Prosecution statement on convictions of Kamel Bourgass', 13 Apr. 2005, URL <http://www.cps.gov.uk/news/pressreleases/121_05.html>. Bourgass had been convicted at an earlier trial of the murder of a police officer with a knife at the time of his arrest.

[135] See appendix 14A.