

13. Chemical and biological weapon developments and arms control

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I. Introduction

The development of the treaty regimes banning chemical weapons (CW) and biological weapons (BW) made 1996 an important year as regards chemical and biological warfare (CBW). The 1993 Chemical Weapons Convention (CWC) received the required number of ratifications and will enter into force on 29 April 1997. The Fourth Review Conference of the 1972 Biological and Toxin Weapons Convention (BTWC) was held in November–December. It endorsed the efforts by the Ad Hoc Group in 1995 and 1996 to negotiate a verification protocol for the BTWC.

Throughout 1996 CBW-related topics drew global attention. Although Russia and the United States failed to ratify the CWC in 1996, both made some progress towards destroying their respective CW stocks. The United Nations Special Commission on Iraq (UNSCOM) continued to investigate whether Iraq's CW and BW programmes have been completely eliminated. New information regarding possible exposure of coalition troops to chemical warfare agents during the 1991 Persian Gulf War was released in the United Kingdom and the United States, although experts still advance different opinions about the causes of the so-called Gulf War Syndrome. The trials against the Aum Shinrikyo sect revealed the scope of its preparations for chemical and even biological terrorism.

Part II deals with the institutional and procedural preparations for the entry into force of the CWC. Part III focuses on issues relating to the destruction of the Russian and US CW stockpiles as well as on old and abandoned chemical weapons. Part IV discusses the efforts to strengthen the BTWC disarmament regime. Part V deals with CBW proliferation concerns and Part VI with other CBW-related issues such as Gulf War Syndrome and the Aum Shinrikyo trials in Tokyo.

II. Implementation of the CWC

The CWC prohibits the development, production, stockpiling, transfer and use of chemical weapons. It also provides for the total destruction of chemical

weapons and CW production facilities in all states parties under international supervision and within specific time-frames.¹

The deposit of the 65th instrument of ratification of the CWC by Hungary on 31 October 1996 triggered the 180-day countdown to entry into force. Nineteen other states also deposited ratifications in 1996, bringing the total number to 67 by the end of the year.² There was optimism that the number of states parties would increase considerably before entry into force. Imminent deposits by Benin, Bolivia, Gabon, Ghana, Kenya, Mali, Nigeria, Togo and the United Arab Emirates were expected.³ Belgium completed its ratification process in 1996 but still had to deposit its instrument. Luxembourg introduced the ratification bill into parliament on 11 October. It remained committed to be a state party before entry into force, and parliamentary action was expected in early 1997.⁴ It thus appeared that, in accordance with their pledges, all European Union members will be original states parties.⁵ China approved the CWC on 30 December but did not deposit its instrument of ratification in 1996.⁶

The two largest CW possessors, Russia and the USA, failed to be among the first 65 ratifiers, despite public pledges to do so. In the first half of 1996 opposition against the CWC in the USA became more vocal and concerted, leading to the Clinton Administration's request on 12 September to postpone the ratification debate. Two letters addressed to Senate Majority Leader Trent Lott had broken the sense of widespread industrial and bipartisan political support. Both the National Federation of Independent Business and senior military officers and high-ranking members of the Reagan and Bush administrations expressed serious doubts about the CWC.⁷ After Republican presidential candidate Bob Dole withdrew his support, Republican senators Jon Kyl and Trent Lott drafted a resolution providing that the USA would only comply with the CWC if all other states ratified it and if the Central Intelligence Agency (CIA) certified that it could be confident of catching any 'cheaters'.⁸ Adoption would

¹ The Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction was signed at Paris on 13 Jan. 1993. It is reproduced in *SIPRI Yearbook 1993: World Armaments and Disarmament* (Oxford University Press: Oxford, 1993), appendix 14A, pp. 735–56.

² For a complete list of the states which have signed or ratified the CWC see Annexe A in this volume.

³ *Chemical Weapons Convention Bulletin*, no. 33 (Sep. 1996), p. 33.

⁴ Private communication with Luxembourg Foreign Ministry, 15 Jan. 1997.

⁵ Statement made by the representative of Ireland on behalf of the European Union at the fourteenth session of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons, Preparatory Commission (PrepCom) document PC-XIV/11, 22 July 1996.

⁶ Xinhua (Beijing), 1042 GMT 30 Dec. 1996 (in English), in 'China: decisions of 23d session of NPC Standing Committee cited', Foreign Broadcast Information Service, *Daily Report-China (FBIS-CHI)*, FBIS-CHI-96-251, 31 Dec. 1996.

⁷ Letter from D. Danner, Vice President, Federal Government Relations, National Federation of Independent Business to Trent Lott, 9 Sep. 1996, *Congressional Record*, 9 Sep. 1996, p. S10070, *Congressional Record On-line* via GPO Access, URL <wais.access.gpo.gov>; letter from W. P. Clark *et al.* to Trent Lott, 9 Sep. 1996, *Congressional Record*, 9 Sep. 1996, pp. S10070–71. Among the signatories were W. P. Clark, former national security adviser, C. Weinberger and R. B. Cheney, former secretaries of defense, J. J. Kirkpatrick, former ambassador to the UN, and E. Meese III, former attorney-general.

⁸ Towell, P., 'Chemical weapons ban delayed as Dole joins objectors', *Congressional Quarterly*, vol. 54, no. 37 (14 Sep. 1996), p. 2608.

have imposed impossible standards.⁹ The November elections returned a reinforced Republican majority to Congress, so that success in the ratification of the CWC in President Bill Clinton's second term seemed far from ensured.

In Russia the CWC had not been scheduled for consideration in the Duma by the end of 1996. In December the Russian representative told the Preparatory Commission (PrepCom) of the Organisation for the Prohibition of Chemical Weapons (OPCW) that the procedural documents needed to submit the CWC to the Federal Assembly had been completed and were being considered by the Russian Government. The main problem delaying ratification appeared to be the high cost of the chemical demilitarization programme, for which Russia expects 'concrete contribution[s]' from other states.¹⁰

The participation of some countries is of particular interest to international security. Iran is gradually moving towards ratification¹¹ whereas Egypt, Iraq, Libya, Syria¹² as well as North Korea are still among the 33 non-signatory states.¹³ At the end of 1996 the number of signatory states was 160.

The Preparatory Commission for the OPCW and the Provisional Technical Secretariat

On entry into force of the convention the OPCW, the monitoring and verification organization of the CWC, will be set up in The Hague. The PrepCom, which began meeting in February 1993, established the infrastructure to enable the OPCW to carry out its tasks and developed procedures for the implementation of the CWC.¹⁴ The Provisional Technical Secretariat (PTS), established at the first plenary session, assists the PrepCom in building up the future OPCW and its Technical Secretariat. It is also responsible for the international preparations necessary for implementation of the CWC.¹⁵

⁹ *Congressional Record*, 12 Sep. 1996, pp. S10420-S10421.

¹⁰ Statement by the delegation of the Russian Federation at the fifteenth session of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons, PrepCom document PC-XV/15, 18 Dec. 1996, pp. 1-2.

¹¹ Institute for Defense and Disarmament Studies, 'Statement by Sergey Batsanov, Director of External Relations OPCW', *Arms Control Reporter* (IDDS: Brookline, Mass.), sheet 704.B.603, Feb. 1996.

¹² In Cairo, Arab League officials stated in a report to be submitted to a meeting of League foreign ministers on 14 Sep. that a League commission would urge member states not to sign the CWC until Israel joins the Non-Proliferation Treaty. *Chemical Weapons Convention Bulletin* (note 3), p. 35.

¹³ As of 31 Dec. 1996 the non-signatory states were: Angola, Andorra, Antigua and Barbuda, Barbados, Belize, Bhutan, Bosnia and Herzegovina, Botswana, Grenada, Egypt, Eritrea, Iraq, Jamaica, Jordan, Kiribati, Korea (North), Lebanon, Libya, Macedonia (Former Yugoslav Republic of), Mozambique, Niue (for whose security and foreign relations New Zealand is responsible), Palau, Sao Tome and Principe, Solomon Islands, Somalia, Sudan, Suriname, Syria, Taiwan (not officially recognized as an independent state by the UN), Tonga, Trinidad and Tobago, Tuvalu and Vanuatu. *Chemical Weapons Convention Bulletin*, no. 34 (Dec. 1996), p. 8.

¹⁴ Resolution establishing the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons (the Paris Resolution), adopted in Paris, 13 Jan. 1993. The PrepCom is composed of all signatory states and conducts its work in plenary sessions, working groups and expert groups. All PrepCom decisions are taken by consensus. Provisional Technical Secretariat of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons, Information Series 2, Rev. 5, Sep. 1996, p. 1.

¹⁵ Provisional Technical Secretariat of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons (note 14), p. 2.

With the deposit of the 65th ratification, phase II of the preparations for entry into force began and the PrepCom shifted its attention to the most pressing technical, financial and administrative issues.¹⁶ During this phase operational costs will increase significantly. Some of the immediate costs will include recruitment of additional staff, inspector training, procurement of equipment and renting of interim facilities. In order to ensure that funds were available for phase II, signatory states were asked to pay their contributions to a separate account to which access was blocked until 'trigger point'.¹⁷ Concern was none the less expressed as to whether preparations could be completed in time for the First Conference of States Parties in May 1997.¹⁸

In 1996 the PrepCom held three plenary sessions.¹⁹ Towards the middle of the year the concern that neither Russia nor the USA would be original states parties began to dominate discussions.²⁰ The elimination of their large CW stockpiles and related facilities had been a major goal of the CWC negotiations.²¹ The PrepCom counted on their being states parties because of their technical expertise in CW-related matters and their major financial contributions towards treaty implementation.²² Although neither country has ratified the 1990 Bilateral Destruction Agreement (BDA),²³ the PrepCom none the less hoped that the BDA would be in effect before entry into force of the CWC.²⁴ The PrepCom considered three scenarios. If Russia and the USA are original states parties and the BDA is in effect, the number of inspectors

¹⁶ The PrepCom budget is in 2 parts. Part I covers the 'steady-state' expenses for continued PTS staffing and the activities of the PrepCom from commencement of the PrepCom process until entry into force. Part II of the budget covers the build-up of staff and activities in the 6-month period immediately before entry into force. The calculated contribution of each signatory state is based on the UN Scale of Financial Assessments.

¹⁷ Report of the Commission, PrepCom document PC-XIV/29, 27 July 1996.

¹⁸ Institute for Defense and Disarmament Studies (note 11).

¹⁹ The 13th session, on 18–22 Mar., was attended by 87 states; the 14th session, on 22–26 July, by 88 states; and the 15th session, on 16–20 Dec., by 90 states. PrepCom documents PC-XIII/CRP.3, 21 Mar. 1996; PC-XIV/29, 27 July 1996; and PC-XV/25, 21 Dec. 1996.

²⁰ See, e.g., the statements of Bulgaria, PrepCom document PC-XIV/15, 22 July 1996; Latin American and Caribbean Group, PrepCom document PC-XIV/19, 22 July 1996; New Zealand, PrepCom document PC-XIV/21, 24 July 1996; Pakistan, PrepCom document PC-XIV/23, 24 July 1996; and Chile, PrepCom document PC-XIV/27, 24 July 1996.

²¹ Concerns have been raised that non-participation by Russia and the USA would turn the disarmament treaty into a non-proliferation compromise. The consequences of an entry into force without the United States of America and the Russian Federation: a proposal by the Islamic Republic of Iran, PrepCom document PC-XIV/12, 22 July 1996.

²² The contributions of states are assessed in accordance with the UN Scale of Financial Assessments under which a state pays an amount based on the size of its GDP. In addition, the OPCW draft budget for 1997 was prepared on the assumption that 80 states will have ratified the CWC at entry into force, among them Russia and the USA, whose combined contribution to the OPCW budget based on the UN Scale of Financial Assessments will be approximately 30%. PrepCom document PC-XV/A/WP.3, 11 Sep. 1996.

²³ The US–Soviet/Russian Agreement [between the United States of America and the Union of Soviet Socialist Republics] on Destruction and Non-Production of Chemical Weapons and on the Measures to Facilitate the Multilateral Convention on Banning Chemical Weapons (BDA) was agreed by the Soviet Union and the USA on 1 June 1990. The full text is reproduced in *SIPRI Yearbook 1991: World Armaments and Disarmament* (Oxford University Press: Oxford, 1991), appendix 14A, pp. 536–39.

²⁴ The Executive Council may limit OPCW verification to measures complementary to those under other bilateral or multilateral agreements only if it considers that the verification provisions of such an agreement are consistent with those mentioned in Article IV, para. 13 of the CWC and Part IV(A) of the Verification Annex. The states parties to such an agreement must keep the OPCW fully informed.

required shortly after the CWC's entry into force will be 140 according to the original assumptions for the OPCW budget. If the BDA is not in place, then 210 inspectors will be required shortly after entry into force of the CWC. In both scenarios an additional 71 inspectors will be required six months after entry into force to provide adequate resources for the conduct of industry inspections. If Russia and the USA are not original states parties, the number of required inspectors shortly after entry into force will be 88, with an additional 62 inspectors needed six months later.²⁵ At one point Iran proposed to convene a high-level meeting before entry into force to consider the consequences and options if neither Russia nor the USA had become states parties,²⁶ but other countries dismissed the idea.

The need to plan and prepare for inspector training was another important issue. For most of 1996 uncertainty regarding the trigger point caused considerable concern as to whether the CWC time-lines for inspector training could be met.²⁷ In addition, the OPCW cannot employ citizens from states which are not parties to the CWC. This affects the recruitment of both inspectors and phase II staff.

The inspector recruitment process progressed as follows.²⁸ The selection of candidates for training group A, the majority of whom will conduct the initial inspections of declared CW-related facilities, was completed. The 150 selected trainees from 56 signatory states were scheduled to attend courses between 17 January and 30 May 1997.²⁹ The selection of candidates for training group B was not completed in 1996. As of 4 December 1996, 57 candidates from 26 signatory states had been provisionally selected.³⁰ This second group will not start its training programme until after entry into force. From both training groups, only those participants who are nationals from states parties and have successfully completed the course will be offered employment.³¹

The general training scheme³² for the candidates is divided into three 'modules': a basic course (Module 1), a specialist course (Module 2) and an on-site trial inspection training (Module 3). These modules will take approximately

²⁵ Expert Group on Programme of Work and Budget, Secretariat Discussion Paper, Verification resources requirements: variations on a theme, PrepCom document EG PoWB, 9–24 Oct. 1996, PoWB paper no. 12, 3 Oct. 1996.

²⁶ The consequences of an entry into force without the United States of America and the Russian Federation: a proposal by the Islamic Republic of Iran (note 21).

²⁷ Note by the Executive Secretary, issues for consideration in the light of the current situation regarding ratification, PrepCom document PC-XIV/5, 4 July 1996.

²⁸ The elaborate verification regime provided for under the CWC involves systematic on-site inspections of declared CW-related military facilities. Routine verification will also be applied to chemical industry facilities which produce chemicals listed in 1 of the 3 schedules of the CWC. In addition, any facility on the territory of any state party can be subject to a challenge inspection. The training and recruitment process of the future inspectors of the OPCW has been designed to correspond to the initial inspection requirements immediately after entry into force. Provisional Technical Secretariat of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons (note 14).

²⁹ The training will take place in China, the Czech Republic, Finland, France, Germany, India, Italy, Japan, the Netherlands, Romania, Russia, the Slovak Republic, Switzerland, the UK and the USA. PrepCom document, press release no. 127, 17 Jan. 1997.

³⁰ Report of the Executive Secretary, PrepCom document PC-XV/5, 12 Dec. 1996. pp. 13–14.

³¹ PrepCom document, press release no. 127 (note 29).

³² A definitive outline of the general training scheme was provided in a note by the Executive Secretary, PrepCom document PC-XV/B/10, 6 Nov. 1996.

five months to complete. A draft inspection manual, to be used during training, has been completed and was distributed to the training centres.³³

Preparations for the First Session of the Conference of the States Parties in The Hague on 6 May 1997, which will mark the start of the OPCW, have begun.³⁴ The Executive Council and the Director-General of the Technical Secretariat will be elected, and draft agreements, provisions and guidelines prepared by the PrepCom will be considered and approved. A special body, the Committee on Preparations for the First Conference of States Parties, has been established to make the necessary administrative and logistical arrangements for the First Conference of States Parties, develop the rules of procedure and prepare the final report of the PrepCom.³⁵

As in recent years, Article XI on economic and technological development received considerable attention in 1996.³⁶ The 'full and proper implementation' of the article was advocated by several delegations, who expressed the view that export controls are incompatible with the CWC, impede legitimate economic development and must be abandoned immediately after entry into force.³⁷ Opposing views were also expressed. Australia and several other signatory states argued that national export licensing measures which are applied on a non-discriminatory basis are consistent with Article XI and necessary to ensure compliance with the basic obligations in Article I not to assist any state or individual in any activity prohibited under the CWC.³⁸

On 11 September the OPCW Laboratory and Equipment Store was officially opened in Rijswijk, the Netherlands. It will be fully operational by entry into force.

*Working Group A*³⁹

The Expert Group on the Programme of Work and Budget prepared the 1997 budget of the PrepCom, which was later approved.⁴⁰ Part I of the budget (13 214 800 Dutch guilders) covers ongoing activities of the current staff and is complemented by the 1996 part II budget (30 403 600 guilders) which covers additional activities such as inspector training, procurement of equipment

³³ Report of the Executive Secretary (note 30).

³⁴ Report of the Executive Secretary (note 30). According to Article VIII of the CWC, the 1st session of the conference must be convened not later than 30 days after entry into force.

³⁵ The Committee on Preparations for the First Session of the States Parties, PrepCom document PC-XIV/29, 27 July 1996.

³⁶ Article XI aims at the fullest possible exchange among states parties of chemicals, equipment and scientific and technological information relating to the development and application of chemistry for purposes not prohibited by the CWC. States parties have undertaken to review their national regulations in this field in order to render them consistent with the object and purpose of the CWC.

³⁷ See, e.g., the Indian statement in PrepCom document PC-XIII/B/WP.7, 23 Feb. 1996.

³⁸ PrepCom document PC-XIII/B/WP.9, 26 Mar. 1996. Most Western states argue that Article I takes precedence over Article XI.

³⁹ Working Group A deals primarily with organizational issues, such as rules of procedure, staff and finance matters. The expert groups prepare recommendations on specific issues, which are then put forward to the working groups and the plenary sessions for approval. Provisional Technical Secretariat of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons (note 14).

⁴⁰ Report of the Commission, PrepCom document PC-XV/25, 21 Dec. 1996.

and staff increases from the trigger point to entry into force.⁴¹ The first draft of the 1997 OPCW budget, which will be the basis for discussions by signatory states, has been prepared and work on the preliminary draft has begun.⁴² The draft OPCW financial regulations were finalized by the Finance Group and have now been approved.⁴³

The Expert Group on the OPCW Headquarters and other Agreements continued to work on the draft OPCW headquarters agreement, which has also been provisionally approved.⁴⁴ Already during phase II more office space will be required to accommodate the increased number of personnel. As the OPCW building is not expected to be completed before mid-1998, a consequence of unanticipated problems, additional temporary office space will have to be found.

*Working Group B*⁴⁵

In 1996 the expert groups under Working Group B developed detailed inspection procedures for verification activities at industrial sites and CW storage and destruction facilities. It was originally anticipated that the expert groups would develop agreed procedures well in advance of the trigger point, which would then be considered and approved by the First Conference of States Parties. By the end of 1996, however, some aspects still required full agreement.

The Expert Group on Chemical Industry Issues made progress on the draft model agreements for schedule 1 and 2 facilities.⁴⁶ Work on a draft Declaration Handbook is close to completion.⁴⁷ Sections A (general introduction), B (industrial declarations) and C (declarations required under Part VI⁴⁸ of the Verification Annex) of the handbook progressed the furthest.⁴⁹ However, a number of issues relevant to the submission of declarations remained unresolved. These include the method of reporting aggregate national data for chemicals listed on schedules 2 and 3 of the CWC, the definition of discrete organic chemicals and agreement on scheduled chemicals in low concentrations.⁵⁰ Unless such issues are resolved by entry into force, states parties may

⁴¹ Prorated 1997 Part I Programme of Work and Budget of the Commission, PrepCom document PC-XV/A/WP.2/Rev.1, 12 Nov. 1996; and Eleventh Report of the Expert Group on Programme of Work and Budget, PrepCom document PC-XI/A/WP.5, 16 June 1995.

⁴² Report of the Executive Secretary (note 30).

⁴³ Draft report of the Commission, PrepCom document PC-XIII/CRP.3, 21 Mar. 1996.

⁴⁴ This approval will become final if no objections from any delegation are received by 10 Jan. 1997. Report of the Executive Secretary (note 30).

⁴⁵ Working Group B is responsible for the development of detailed procedures for verification and technical cooperation and assistance. Provisional Technical Secretariat of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons (note 14).

⁴⁶ Report of the Executive Secretary (note 30).

⁴⁷ The Declaration Handbook contains the forms to be used for the initial declarations to be submitted to the OPCW not later than 30 days after entry into force. Report of the Executive Secretary (note 30).

⁴⁸ Part VI addresses 'Activities not prohibited under this Convention in accordance with article VI, regime for Schedule 1 chemicals and facilities related to such chemicals'.

⁴⁹ Report of the Executive Secretary (note 30).

⁵⁰ Report of the Executive Secretary (note 30); and Report of the Commission (note 40).

have to decide on a national basis how to handle them when submitting their initial declarations.⁵¹

The Expert Group on Chemical Weapons Issues was split into two groups in 1996.⁵² Group 1 concentrated on the development of model facility agreements for CW storage, production and destruction facilities. Group 2 focused on developing inspection procedures for verification of destruction of CW stockpiles and former CW production facilities. Criteria for toxicity, corrosiveness and other technical factors remain unresolved.

There was limited progress on the draft model facility agreement for CW destruction facilities.⁵³ The issue of installation of continuous monitoring instruments is still being considered.⁵⁴ Group II discussed the criteria to determine the acceptability of a converted CW production facility for the production of highly toxic chemicals and the quantification of the destruction endpoint for chemical weapons.⁵⁵ Some progress was achieved on the issue of 'levelling out'.⁵⁶

The Expert Group on Old and Abandoned CW continued to work on the development of guidelines for determining the usability of chemical weapons produced between 1925 and 1946 and on other old and abandoned CW issues, including costs associated with verification of their destruction.⁵⁷

The first draft of a handbook on chemicals was distributed to signatory states for comment. This handbook will become an appendix to the Declaration Handbook. It notes the most common chemical substances covered under the three schedules of the CWC. The draft lists 400 chemicals. Its aim is to assist states parties in identifying declarable activities.⁵⁸

The Expert Group on Confidentiality considered issues related to the exercise of jurisdiction and compensation for losses caused by breaches of confidentiality as well as practical steps to implement the draft OPCW confidentiality policy.⁵⁹

Revised model legislation for national implementation of the CWC was published by the PrepCom on 31 May.⁶⁰ A report of the Executive Secretary on 12 December stated that the PTS was aware of the fact that there had been little progress in drafting national implementation legislation in a number of

⁵¹ Report of the Executive Secretary (note 30).

⁵² PrepCom document PC-XIV/29 (note 17).

⁵³ Report of the Executive Secretary (note 30).

⁵⁴ Report of the Executive Secretary (note 30).

⁵⁵ Report of the Executive Secretary (note 30).

⁵⁶ Levelling out refers to the concept of agreed levels of destruction of CW (para. 15, Part IV(A) of the Verification Annex) or chemical weapon production facilities (para. 28, Part V of the Verification Annex) within time periods specified by the convention. The order of destruction of CW is also based on the principle of levelling out. This means that when several states parties possess CW at entry into force, the state(s) possessing larger amounts are required to destroy them at a faster pace than the state(s) possessing less. Verification Annex, Part IV(A) para. 15. The same principle applies to CW production facilities. Verification Annex, Part V, para. 28.

⁵⁷ Report of the Executive Secretary (note 30).

⁵⁸ Note by the Secretariat, Handbook on Chemicals, Appendix 2 of the OPCW Declaration Handbook, PrepCom document, 28 Aug. 1996.

⁵⁹ Report of the Executive Secretary (note 30).

⁶⁰ Note by the Executive Secretary, model national implementing legislation, PrepCom document PC-XI/7/Rev.1, 31 May 1996.

states.⁶¹ Governments were reminded that, according to Article VII, each state party is required to adopt the measures necessary to implement its obligations under the CWC.

III. Other arms control and disarmament activities

CW destruction

The Russian Federation

The Russian Federation ratified neither the BDA nor the CWC in 1996. On 27 December the State Duma passed a comprehensive CW destruction act on its third reading by a vote of 345–0 with one abstention.⁶² It is based on a revised Russian CW destruction programme entitled ‘Special federal programme, destruction of CW stockpiles in the Russian Federation’⁶³ (decree no. 305, see table 13.1). Decree 305, introduced on 21 March 1996, calls for on-site CW destruction to begin in 1998. It also envisages conversion of CW agents.⁶⁴ There have been at least two previous draft destruction plans for Russia’s chemical weapon stockpile, issued in 1992 and 1994, respectively.⁶⁵ Russia has a declared stockpile of approximately 40 000 agent tonnes. Destruction operations were not begun in 1996.

⁶¹ Report of the Executive Secretary (note 30).

⁶² Parrish, S., ‘Duma passes law on chemical weapons destruction’, Open Media Research Institute (OMRI), *OMRI Daily Digest*, 2 Jan. 1997, URL <<http://search.omri.cz>>; Interfax, 27 Dec. 1996, ‘Russian Duma passes law on destruction of chemical weapons’. Version current on 14 Jan. 1996, URL <<http://www.maximov.com/News/recent.cgi?ref=1337>>. The act was introduced in the Duma in Dec. 1995. Stock, T., Haug, M. and Radler, P., ‘Chemical and biological weapon developments and arms control’, *SIPRI Yearbook 1996: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1996), chapter 15, p. 667. On 23 Jan. 1997, however, the Federation Council, the legislative upper house, rejected the bill. From the *Segodnya* newscast presented by announcer Andrey, NTV (Moscow), 0900 GMT 23 Jan. 1997 (in Russian), in ‘Russia: Council rejects law on chemical weapons disposal’, Foreign Broadcast Information Service, *Daily Report–Soviet Union (FBIS-SOV)*, FBIS-SOV-97-015, 24 Jan. 1997. The bill can be considered by a joint committee. Alternatively, the bill could be passed by 2/3 of the Duma in a 2nd vote. Article 105 of the Constitution of the Russian Federation.

⁶³ Russian Federation, Special federal programme, destruction of chemical weapons stockpiles in the Russian Federation, PrepCom document PC-XIV/B/WP.7, 25 June 1996; and ‘Federalnaya tselevaya programma’ [Special federal program], *Rossiyskaya Gazeta*, 2 Apr. 1996, pp. 5–6. Russian CW are stored at Kambarka, Udmurtia Republic; Gorny, Saratov oblast; Kizner, Udmurtia Republic; Maradikovskiy, Kirov oblast; Pochev, Bryansk oblast; Leonidovka, Penza oblast; and Shchuchye, Kurgan oblast.

⁶⁴ Major-General Victor Kholstov, commander of Russia’s Chemical, Radiological and Bacteriological Troops, has been quoted as saying that conversion of blister agents will occur. Yurkin, A., ITAR-TASS (Moscow), 1712 GMT 23 Jan. 1996 (in English), in ‘Russian army commander: Russia willing to scrap chemical weapons’, FBIS-SOV-96-016, 24 Jan. 1996. Additional details of decree 305 are provided in Stock, Haug and Radler (note 62).

⁶⁵ Russian Federation, Comprehensive program for the Multistage Destruction of Chemical Weapons in the Russian Federation (draft), 1992. Russian Federation, Conception: Destruction of Chemical Armament (draft), 1994. Stockpile estimates between the 1994 and 1996 draft destruction plans differ in 2 respects. The 1994 plan stated that 2% of Russia’s CW mustard–lewisite mixture was weaponized (i.e., prepared to be delivered as weapons). In the 1996 plan the number is 40%. The 1994 plan also stated that 10% of Russia’s lewisite was weaponized. The number given in the 1996 plan is 2%. In general, the 1996 plan is more concise than previous plans.

Table 13.1. Breakdown of expenditures and financing of Russian chemical weapon stockpile destruction

Figures are in b. roubles at 1995 prices. Figures in brackets are inconsistent with totals but appear so in the Russian-language original.

Breakdown of expenditures	Duration of financing (years)	1995 ^a	1996	1997	1998	1999
Safety measures	15	2.7	6.4	60.9	38.3	37.3
Scientific/experimental testing	6	28.5	20.1	210.3	108.4	78.2
Establishment of CWDFs and solid waste storage areas (total)	..	..	..	..	..	..
Construction of CWDFs	15	27.0	40.6	609.4	765.0	638.1
Construction of solid waste storage areas	12	..	..	..	15.0	70.0
Operation of CWDFs and solid waste storage areas (including closure)	12	..	..	..	23.5	73.6
Implementation of federal destruction laws	13	..	..	298.6	314.3	394.3
Ensuring readiness of CWSFs and CWDFs for international inspection ^d	10	..	0.1	7.8	5.0	5.9
Other expenditures	15	11.2	76.9	908.7	543.9	646.5
Total		69.4	144.1	2 095.7	1 813.4	1 943.9

Breakdown of expenditures	Duration of financing (years)	2000–2005	2006–2009	Total financing
Safety measures	15	145.8	9.0	300.4
Scientific/experimental testing	6	3	5.4	480.9
Establishment of CWDFs and solid waste storage areas (total)	..	..	..	2 876.6
Construction of CWDFs	15	277.0	180.0 ^b	[2 561.6]
Construction of solid waste storage areas	12	230.0	24.5 ^b	[315.0]
Operation of CWDFs and solid waste storage areas (including closure)	12	2 655.9	328.4	3 081.4
Implementation of federal destruction laws	13	1 535.6	457.2	[3 300.0 ^c]
Ensuring readiness of CWSFs and CWDFs for international inspection ^d	10	.32.0	..	50.8
Other expenditures	15	3 750.6	614.1	6 551.9
Total		8 662.3	1 613.2	[16 642.0]

CWDF = chemical weapon destruction facility, CWSF = chemical weapon storage facility.

^a Figures for each year or period of years represent total financing for the year or period.

^b The indicated amount will be spent on completion of infrastructure elements at CWDFs and solid waste storage areas.

^c 300 b. roubles are provided for possible one-time compensation for damage to health or property in the event of an accident.

^d Russia will appropriate necessary funding to guarantee that national and international inspections are conducted according to the provisions of the CWC.

Chemical weapon destruction efforts were hindered by a lack of funding, including a failure to allocate funds earmarked for CW destruction, and by local and federal opposition to the draft destruction plan and the manner in which it has been implemented.⁶⁶ Hearings on CW destruction held by the Duma Committee on the Environment on 21 May also demonstrated that a number of fundamental aspects of destruction, including choice of destruction technologies, were either unfamiliar or objectionable to a significant number of those who spoke during the hearings.⁶⁷

Russian officials continued to emphasize the need for foreign financial assistance to be able to carry out destruction,⁶⁸ which they estimated as amounting to at least 35–50 per cent of the total destruction cost.⁶⁹ The total cost of destruction was estimated at between \$3.3 billion⁷⁰ and \$5 billion.⁷¹ Foreign assistance for destruction of Russian chemical weapons will probably depend in part, however, on whether Russia ratifies the CWC.⁷²

Germany continued to assist with the destruction of lewisite at Gornyy. It provided 'mobile and stationary laboratories' as well as equipment to ensure the safe transfer of lewisite from its storage containers and for decontamination. By the end of 1996 an estimated 25 million Deutschmarks (DM) had been spent since 1993, when the programme began.⁷³ The *Netherlands* officially announced it will offer assistance for the destruction of the lewisite stockpiled at Kambarka.⁷⁴ An agreement of intent was signed between the Netherlands and Russia.⁷⁵ The total amount spent will be approximately 5 mil-

⁶⁶ Primarily because of perceived inadequate participation by groups and individuals outside the Russian military establishment in the Russian CW destruction process.

⁶⁷ Green Cross, Russia, organized a 2nd on-site hearing in Izhevsk on 14–16 May 1996. Green Cross, Russia, 'Final document, the second public hearing on the problem of the chemical weapons destruction in the area of the town of Kambarka', Izhevsk, Russia, 14–16 May 1996; and Government of Udmurtia Republic and the National Organization of International Green Cross, Russia, 'Vtoroye publichnyie slushaniya po probleme unitchozheniya khimicheskogo oruzhiya' [Second public hearings on the problem of chemical weapon destruction], Izhevsk, Russia, 14–16 May 1996. The Moscow Center for Policy Studies in Russia (PIR Center) published interviews with leading officials and experts on Russian CW destruction. *Khimicheskoe oruzhiye i problemy ego unitchozheniya* [Chemical weapons and problems of their destruction], no. 1 (PIR Center: Moscow, spring 1996); and 'Interviu mesyatsa' [Interview of the month] with Col.-Gen. S. Petrov, *Yadernii kontrol*, no. 13 (PIR Center: Moscow, Jan. 1996), pp. 2–6.

⁶⁸ Parrish, S., 'Deputy: Russia needs foreign assistance to destroy chemical weapons', *OMRI Daily Digest*, no. 141, part I (23 July 1996). Statement by the delegation of the Russian Federation at the fifteenth session of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons (note 10).

⁶⁹ US General Accounting Office (GAO), *Weapons of Mass Destruction: Reducing the Threat from the Former Soviet Union*, appendix II, 'Destruction and dismantlement projects, CTR: an update', GAO/NSIAD-95-165 (US General Accounting Office: Washington, DC, 9 June 1995), p. 17.

⁷⁰ Parrish (note 68).

⁷¹ 'West to help in safe but costly disposal of Russia's CW stocks', *Jane's Defence Weekly*, vol. 26, no. 6 (7 Aug. 1996), p. 15.

⁷² 'West to help in safe but costly disposal of Russia's CW stocks' (note 71).

⁷³ Striedl, E., Office for Military Sciences, Munich, Germany, Private communication on 'German assistance for the destruction of chemical weapons in Russia', 4 Dec. 1996.

⁷⁴ 'West to help in safe but costly disposal of Russia's CW stocks' (note 71).

⁷⁵ Yurkin, A., ITAR-TASS (Moscow), 1222 GMT 11 Nov. 1996 (in English), in 'Russia: general says financial aid needed to eliminate chemical arms', FBIS-SOV-96-219, 13 Nov. 1996. Dutch assistance will focus on 4 projects: (a) soil remediation, (b) assistance with treatment of people who come in contact with lewisite, (c) provision of a mobile analytical laboratory to assess the environmental impact of destruction operations, and (d) development of the means to transfer lewisite into smaller containers. The initial emphasis will be on soil remediation, which is scheduled to begin in 1997 or 1998. The

lion guilders per year for five years. The *Swedish* National Defence Research Establishment (FOA) continued the second phase of its assistance programme for the Kambarka facility, worth 2.6 million Swedish crowns.⁷⁶ FOA is offering to examine ways to reduce the risk of accidents during storage or destruction operations. It will also investigate ways of minimizing the consequences of an accident.⁷⁷ *Finland* was reportedly considering destruction assistance to Russia within the framework of the Dutch programme. *Italy* was also reported to be considering destruction assistance.⁷⁸

US assistance for Russian CW destruction is allocated within the framework of the Cooperative Threat Reduction (CTR) programme, also known as the Nunn–Lugar programme.⁷⁹ The CTR programme is scheduled to end in 2001. Between 1992 and 5 August 1996, 5 per cent of both the total amount of CTR funds obligated (\$1 040 790 810) and the total amount disbursed (\$571 064 508) were spent on the CW component. Sixty million dollars out of a total of \$73 million allocated for Russian CW destruction for fiscal year (FY) 1996 were removed, however, when President Clinton did not certify to Congress that Russia was in compliance with international obligations related to biological weapons.⁸⁰ In 1996 US assistance focused on the construction of a pilot CW destruction facility at Shchuchye⁸¹ and the establishment of a central CW destruction analytical laboratory in Moscow.⁸² In late autumn the United States awarded a \$600 million contract for the construction of a pilot CW destruction facility at Shchuchye.⁸³ It also awarded a \$5.7 million contract

remaining 3 projects are still in the early planning stages. Their future may depend on how the soil-remediation project progresses. Private communication with TNO Prins Maurits Laboratory (Netherlands Organisation for Applied Scientific Research), 24 May 1996.

⁷⁶ Könberg, M., 'Swedish–Russian cooperation project concerning the lewisite storage facility in Kambarka', Paper presented at the Conference on Dismantlement and Destruction of Nuclear, Chemical and Conventional Weapons, Bonn, Germany, 19–21 May 1996, p. 5.

⁷⁷ Könberg (note 76), p. 2. A risk analysis was produced during the 1st phase worth 1 million Swedish crowns (approximately \$125 000).

⁷⁸ Unattributed report: 'Finland and the Netherlands to clear up weapons in Russia', *NRC Handelsblad* (Rotterdam) 23 Feb. 1996, p. 7 (in Dutch), in 'Netherlands, Finland to participate in Russian CW cleanup project', Foreign Broadcast Information Service, *Daily Report—Arms Control & Proliferation Issues (FBIS-TAC)*, FBIS-TAC-96-004, 20 Mar 1996; and 'West to help in safe but costly disposal of Russia's CW stocks' (note 71).

⁷⁹ See also chapter 11 in this volume. Senators Sam Nunn and Richard Lugar co-sponsored the original authorizing legislation in 1991.

⁸⁰ US GAO, *Weapons of Mass Destruction: Status of the Cooperative Threat Reduction Program*, GAO/NSIAD-96-222 (US General Accounting Office: Washington, DC, Sep. 1996), pp. 19, 21, 28–29. A total of \$68 million was allocated for Russian CW destruction in 1992–96. Funding for the elimination of former Soviet BW research facilities was included for the first time in the FY 1997 Department of Defense request for funding.

⁸¹ *Specifications for Engineering Management Support (EMS) for a Russian Chemical Weapons Destruction Facility*, CTR document, request for proposal, DACA87-96-R-0031 (Engineering and Support Center, Huntsville, Ala., 16 Aug. 1996).

⁸² Lajoie, R. (Maj.-Gen.), 'US support to the Russian CW destruction program', Paper presented at Conference on Dismantlement and Destruction of Nuclear, Chemical and Conventional Weapons, Bonn, Germany, 19–21 May 1996, pp. 1, 5. See also decree no. 1447 of 7 Dec. 1996, 'O sozdanii tsentralnoi laboratorii po chimiko-analiticheskomu kontroliu za rabotami v oblasti khimicheskoro razaruzheniu' [On the establishment of a central chemical analytical laboratory for work in the area of chemical disarmament], *Rossiyskaya Gazeta*, 19 Dec. 1996.

⁸³ US GAO (note 80), p. 21; *Specifications for Engineering Management Support (EMS) for a Russian Chemical Weapons Destruction Facility* (note 81); 'Russian demil plant', *Military Engineer*,

on 18 October 1996 for design and renovation of the central analytical laboratory in Moscow.⁸⁴

US chemical weapon destruction assistance to Russia is closely associated with a continuing joint evaluation of Russia's nerve agent destruction technology. The Russian-US Joint Evaluation Program on the Russian two-stage nerve agent destruction process, which is being conducted within the framework of the BDA and a 1994 Plan of Work addendum to the agreement, was initiated in part because the USA wished to learn more about a technology with which it was unfamiliar before allocating money to support it.⁸⁵ The exercise was also viewed as useful in promoting closer cooperation between the two countries. A technical report was issued in March 1996 following a review of test results by a six-member Peer Review Committee composed of three Americans and three Russians.⁸⁶ Further activities related to the optimization of the technology for scaled-up destruction at Shchuchye were continued in 1996. The criteria for successful evaluation of the technology were to demonstrate the effectiveness of the technology in irreversibly destroying both Russian and US nerve agents,⁸⁷ the safety of the technology and the 'scientific credibility of the technology'.⁸⁸ All criteria were met or exceeded. A destruction efficiency of 99.999 per cent or higher, for example, was achieved.⁸⁹ Another result of the joint evaluation was the provision by the USA of approximately \$4.7 million worth of analytical equipment.⁹⁰

CW destruction in the United States

The US chemical weapon stockpile is stored at nine locations (see table 13.2). In January 1996 the USA declassified additional information about its stock-

vol. 88, no. 579 (Aug./Sep. 1996), p. 12; and 'Parsons selected for Russian chemical weapons destruction facility', *San Marino Tribune* (California), 19 Dec. 1996.

⁸⁴ US Army, 'Corps awards contracts for projects in Russia, Egypt', *Contract Announcement*, no. 96-17 (21 Oct. 1996), pp. 1-2.

⁸⁵ US GAO (note 69), p. 5.

⁸⁶ The technology for destruction of G-agents (sarin and soman) consists of, first, mixing them with monoethanolamine and water. Second, the reaction products are combined with calcium hydroxide and bitumen. For V agents, the first step is to treat the agent with a mixture known as RD-4. Bitumen is then added to the initial reaction products. The bitumenized final product has a level IV toxicity (the lowest level) on the Russian toxicity scale. Bechtel National, Inc. and US Army Program Manager for Cooperative Threat Reduction (PM-CTR), *Joint Evaluation of the Russian Two-Stage Chemical Agent Destruction Process, Final Technical Report: Phases 1 & 2* (Bechtel National, Inc. and US Army Program Manager for Cooperative Threat Reduction, July 1996 revision).

⁸⁷ The CWC requires that each destruction technology be 'essentially irreversible', para. 12, Part IV (A) of the Verification Annex. A single-stage chemical reaction would not meet this requirement because, in principle, such reactions are reversible. Using a 2-stage process helps to address this requirement.

⁸⁸ Bechtel National, Inc. and US Army Program Manager for Cooperative Threat Reduction (note 86), p. xiv.

⁸⁹ One of the original criteria was to achieve a destruction efficiency of 99.99%. The CWC does not provide a quantitative standard of destruction efficiency. Bechtel National, Inc. and US Army Program Manager for Cooperative Threat Reduction (note 86), p. 77. The Expert Group on Chemical Weapon Destruction Facilities was unable to reach agreement on the issue of completeness of destruction. Expert Group on Chemical Weapons Destruction Facilities, Interim Report, PrepCom document PC-V/B/WP.17, 3 Dec. 1993, para. 13, p. 8.

⁹⁰ Lajoie (note 82), p. 5.

Table 13.2. The US chemical weapon stockpile

Facility	Type of munition	Total (tonnes)
JACADS	H, HD (C,P), sarin (P), VX (P, M, TC)	1 001
Edgewood, Maryland	HD (TC)	1 624
Anniston, Alabama	HD (C, P, TC), GB (C, P, R) VX (P, R, M)	2 254
Blue Grass, Kentucky	H, HD (P), GB (P, R), VX (P, R)	523
Newport, Indiana	VX (TC)	1 269
Pine Bluff, Arkansas	HD (TC), GB (R), VX (R, M)	3 850
Pueblo, Colorado	HT and HD (C, P)	2 611
Tooele, Utah	H, HT, and HD (C, P, TC), GB (C, P, R, B, TC), VX (P, R, M, ST, TC)	13 616
Umatilla, Oregon	HD (TC), GB (P, R, B), VX (P, R, M, ST)	3 717

C = projectiles, B = bombs, GB = sarin, H = form of undistilled mustard, HD = distilled sulphur mustard, HT = runcol mustard (mixture of (bis-(2-chloroethylthioethyl) and bis-(2-chloroethyl) sulphide), M = mine, R = rocket, ST = spray tank, TC = ton container and P = projectile.

Source: Lajoie, R. (Maj.-Gen.), 'US support to the Russian CW destruction program', Paper presented at Conference on Dismantlement and Destruction of Nuclear, Chemical and Conventional Weapons, Bonn, Germany, 19–21 May 1996.

pile. The amount of unitary CW agents is 30 599.55 tonnes; binary components 680.19 tonnes; research, development, test and evaluation inventory 4 363.88 kilograms (kg); and recovered munitions and similar 'non-stockpile' items 6 133.55 kg.⁹¹

Large-scale destruction operations were begun at Tooele, Utah, on 22 August 1996. A federal judge overruled a request for an injunction against destruction operations and allowed the facility to start work.⁹² As of 13 January 1997, the facility had destroyed 53 997.75 kg of GB (sarin) agent and 11 472 M55 GB rockets.⁹³ Destruction of all mustard agent stored in ton containers, sarin stored in rockets, bombs and ton containers, and VX stored in rockets was completed at the Johnston Atoll Chemical Agent Disposal System (JACADS), located south-west of Hawaii.⁹⁴ As of 5 November 1996,

⁹¹ Private communication (telefacsimile) with US delegation to the CWC PrepCom, 6 Feb. 1996. See also 'US chemical weapon stockpile declaration', *Trust & Verify*, no. 65 (Apr. 1996), p. 2.

⁹² Associated Press, 'US to destroy toxic weapons', 21 Aug. 1996, URL: <<http://www.boston.com/globe/cgi-bin/waisgate.cgi?WAICdocID=0570828876+1+0+0&WAIAction=retrieve>>.

⁹³ Program Manager for Chemical Demilitarization, 'Tooele processed munition total'. Version current on 15 Jan. 1997, URL <<http://www-pmcd.apgea.army.mil/TOTAL/tocdf.html>>.

⁹⁴ Lajoie (note 82).

99 8604.41 kg and 180 796 munitions had been destroyed.⁹⁵ A total of \$672 250 were allocated for CW destruction for FY 1996.⁹⁶ The total cost of destroying the US stockpile is estimated at \$12.4 billion.⁹⁷

While incineration continues to be the US Army's 'baseline' destruction technology, the process of choosing possible alternative destruction technologies continued in accordance with Public Law 102-484, which requires the army to consider alternative destruction technologies for destruction of bulk agent.⁹⁸

All but three of an original 23 external proposals were eliminated by the army. Prior industrial application of the proposed destruction technology was one of the key considerations, as was the requirement that the destruction technology be sufficiently developed to allow destruction of the stockpiles in Aberdeen (Maryland) and Newport (Indiana) to be completed no later than 31 December 2004.⁹⁹ The three proposals, plus two developed by the army, were then evaluated by the National Academy of Sciences.¹⁰⁰ The five technologies are: stand-alone neutralization, neutralization followed by biodegradation, molten metal catalytic extraction process, high-temperature gas phase reduction and Silver II electrochemical oxidation.¹⁰¹

Both the army and the National Research Council recommend that the technology for neutralization followed by the biodegradation of reaction products, which was developed by the army, be used to destroy the mustard stored in bulk at Aberdeen.¹⁰² They also recommend use of the technology for neutralization followed by mineralization of resulting hydrolysates to destroy the VX stored in bulk at the Newport Chemical Depot.¹⁰³

⁹⁵ Program Manager for Chemical Demilitarization, 'Processed munitions totals at Johnston Island'. Version current on 15 Jan. 1997, URL <<http://www-pmcd.apgea.army.mil/TOTAL/jitotal.html>>.

⁹⁶ 'Defense spending', *Congressional Quarterly*, vol. 54, no. 27 (6 July 1996), p. 1928.

⁹⁷ US GAO, *Chemical Weapons and Materiel, Key Factors Affecting Disposal Costs and Schedule*, GAO/NSIAD9718 (US General Accounting Office: Washington, DC, Feb. 1997), p. 4.

⁹⁸ *Technical and Economic Analysis Comparing Alternative Chemical Demilitarization Technologies to the Baseline: US Army Material Systems Analysis Activity, Summary Report*, special publication no. 75, vol. 1 (US Army: Aberdeen Proving Ground, Md., July 1996), p. 1.

⁹⁹ *Technical and Economic Analysis Comparing Alternative Chemical Demilitarization Technologies to the Baseline: US Army Material Systems Analysis Activity* (note 98), pp. 2, 5.

¹⁰⁰ Panel on Review and Evaluation of Alternative Chemical Disposal Technologies, Board on Army Science and Technology, Commission on Engineering and Technical Systems, and National Research Council, *Review and Evaluation of Alternative Chemical Disposal Technologies* (National Research Council: Washington, DC, 1996).

¹⁰¹ 'Alternative technologies identified for further review', *Chemical Demilitarization Update*, vol. 4, issue 1 (Mar. 1996), p. 3.

¹⁰² US Army Chemical Stockpile Disposal Program, 'Neutralization/biodegradation of mustard agent HD', information sheet. Version current on 15 Jan. 1997, URL <<http://www-pmcd.apgea.army.mil/alltech/neutbio.html>>.

¹⁰³ US Army Chemical Stockpile Disposal Program, 'Neutralization/mineralization of nerve agent VX', information sheet. Version current on 15 Jan. 1997, URL <<http://www-pmcd.apgea.army.mil/alltech/neutmin.html>>.

Old and abandoned chemical weapons¹⁰⁴

The *Soviet Union* has reportedly dumped 'small quantities' of chemical weapons into the Black Sea.¹⁰⁵ Ukraine said that dumping of CW by the Soviet Navy during or just after World War II caused \$20 billion worth of damage to the environment. Ukraine's Ministry of Defence asked the Russian Government to investigate the matter.¹⁰⁶

On 14 May–3 June, a Japanese delegation conducted its sixth fact-finding mission to China to investigate CW abandoned there by Japan after World War II. The delegation, which included representatives from the Ministry for Foreign Affairs and the Defence Agency, as well as non-governmental experts, visited the Haerbaling district in Tongyu, Jilin Province.¹⁰⁷ Evidence of the presence of 770 000 chemical munitions was found.¹⁰⁸ This is less than a previous Chinese estimate of 1.8–2 million.¹⁰⁹ Approximately 90 per cent of the weapons are said to be located in the Haerbaling area.¹¹⁰ Japan is apparently prepared to construct one or more destruction facilities to eliminate these weapons, and destruction could begin in 1998.¹¹¹ The multi-billion dollar project will run for 10–15 years.¹¹² In Japan, government sources described a plan to build an offshore chemical demilitarization facility in Japanese territorial waters close to a port in north-eastern China which will reportedly cost approximately \$5.5 billion.¹¹³ On 17 December 1996 officials from the Chinese and Japanese ministries for foreign affairs met in Beijing for a fourth

¹⁰⁴ The CWC defines 'abandoned chemical weapons' as 'chemical weapons, including old chemical weapons, abandoned by a State after 1 Jan. 1925 on the territory of another State without the consent of the latter' (art. II, para. 6). It defines 'old chemical weapons' as '(a) chemical weapons which were produced before 1925, or (b) chemical weapons produced in the period between 1925 and 1946 that have deteriorated to such an extent that they can no longer be used as chemical weapons' (art. II, para. 5). An abandoning state party has an obligation to destroy chemical weapons it abandoned on the territory of another state party (art. I, para. 3). Each state party is also obliged to destroy CW which are located in any place under its jurisdiction (art. I, para. 2). The regime for destruction of old and/or abandoned CW is in Part IV(B) of the Verification Annex of the CWC.

¹⁰⁵ 'Russian admiral objects to US presence in Black Sea', *OMRI Daily Digest*, vol. 2, no. 161 (20 Aug. 1996).

¹⁰⁶ 'Soviet chemical dumping', *Jane's Defence Weekly*, vol. 25, no. 6 (17 Apr. 1996), p. 6.

¹⁰⁷ 'Japan sets chemical-arms hunt', *International Herald Tribune*, 9 May 1996, p. 4.

¹⁰⁸ 'China arms dump is surveyed', *International Herald Tribune*, 4 June 1996, p. 4; and Karniol, R., 'Japan set to clean up its chemical hangover', *Jane's Defence Weekly*, vol. 26, no. 9 (28 Aug. 1996), p. 17.

¹⁰⁹ 'Some information on discovered chemical weapons abandoned in China by a foreign state', Conference on Disarmament document CD/1127, CD/CW/WP.384, 18 Feb. 1992; 'China arms dump is surveyed' (note 108); and Stock, Haug and Radler (note 62), p. 665.

¹¹⁰ Kyodo (Tokyo), 0840 GMT 14 Dec. 1996 (in English), in 'Japan, China: Japan to propose disposal of chemical weapons in China', Foreign Broadcast Information Service, *Daily Report—East Asia (FBIS-EAS)*, FBIS-EAS-96-242, 17 Dec. 1996.

¹¹¹ 'Yaponiya izbavit Kitai ot svoego khimoruzhiya' (Japan will free China of chemical weapons), *Krasnaya Zvezda*, 4 Jan. 1996, p. 3; and Karniol (note 108). For information on choice of destruction technologies, see 'M4's molten metal process selected by Japanese firm for chemical weapons cleanup, M4 limited partnership', *Press Release*. Version current on 15 Jan. 1997, URL: <<http://m4web.m4lp.com:80/newsris/MITSUBIS.html>>.

¹¹² 'Yaponiya izbavit Kitai ot svoego khimoruzhiya' (note 111).

¹¹³ '17–28 September', *Chemical Weapons Convention Bulletin*, no. 34 (Dec. 1996), pp. 23–24.

round of intergovernmental talks.¹¹⁴ The Japanese delegation reportedly planned to request China to allow construction of a CW destruction facility approximately 1000 km north-east of Beijing.¹¹⁵ While Japan prefers to construct a CW destruction facility on Chinese territory, citing the risk of moving chemical weapons in dangerously poor condition, China reportedly prefers that Japan construct a destruction facility outside Chinese territory.¹¹⁶

IV. Biological weapon control

In 1996 there was intensive diplomatic activity in the area of biological weapon disarmament. Work was continued in the Ad Hoc Group, which was established by a Special Conference of States Parties in September 1994. The Fourth Review Conference of the parties to the BTWC was held in Geneva on 25 November–6 December 1996 and endorsed further intensification of the discussions in the Ad Hoc Group.

Work of the Ad Hoc Group

The Ad Hoc Group established by the 1994 Special Conference has a mandate to consider verification measures and other proposals to strengthen the BTWC treaty regime to be included in a legally binding instrument. In order to facilitate the negotiations four Friends of the Chair (FoC) were appointed to preside over each of the mandated topics.¹¹⁷ The Ad Hoc Group held three sessions in 1995 and two in 1996.¹¹⁸ The group completed its fifth session on 27 September without finalizing its mandated work. Believing that it none the less had made substantial progress, it submitted its report to the Fourth Review Conference for further consideration and endorsement.¹¹⁹

In the FoC group dealing with measures to promote compliance, some ideas on declaration of biological defence facilities or programmes, investigations to address a non-compliance concern and on-site investigatory measures appeared to be moving to the centre of a future regime. Another, but less developed, section of the FoC report deals with other mandatory non-challenge visits to facilities to strengthen confidence in the accuracy of declarations and to deter non-compliance. The section on declarations contains a preliminary list of types of biological defence and other relevant facilities, although their definitions will be the subject of future negotiations. In particu-

¹¹⁴ Kyodo (Tokyo), 0737GMT 13 Dec. 1996 (in English), in 'Japan: talks with PRC over chemical arms disposal set for 17 Dec.', FBIS-EAS-96-241; and Kyodo (note 110).

¹¹⁵ United Press International (UPI), 'Japan wary of moving WWII China weapons', 14 Dec. 1996, URL <http://biz.yahoo.com/upi/96/12/14/international_news/japanchina_1.html>.

¹¹⁶ The principle of on-site destruction may have been agreed to following the Dec. bilateral discussions. Platkovskii, A., 'Khimarsenali unitchtozhat na meste' [Chemical arsenals to be destroyed on-site], *Izvestiya*, 20 Dec. 1996, p. 3.

¹¹⁷ Stock, Haug and Radler (note 62), pp. 688–89.

¹¹⁸ United Nations Information Service, 'Working group on strengthening of Biological Weapons Convention completes session without finalising work', DC/2561 (27 Sep. 1996), extracted in *Disarmament Diplomacy*, no. 9 (Oct. 1996), pp. 42–43.

¹¹⁹ BWC/AD HOC GROUP/32, 27 Sep. 1996, p. 3.

lar, the bracketing of parts of the text in the Procedural Report of the fifth session indicates that the negotiators have begun to suggest language for a legally binding document.¹²⁰ Broad agreement exists that on-site verification provisions are the key to strengthening the BTWC treaty regime. Some caution has been voiced regarding the modelling of the challenge and non-challenge on-site visits on the CWC without giving due regard to the fundamentally different nature of biological weapons.¹²¹

By the end of the September session the FoC group on terms and definitions had set up several lists of terms and criteria that require further defining. The first list consists of terms with elements that might need to be discussed in considering the definitions. The second list contains definitions of terms and commentaries that were dealt with in informal consultations and which require further consultation. Other lists itemize human, animal and plant pathogens considered relevant to the development of a list of BW agents. Criteria for each of these groups were also discussed. The FoC group also held preliminary discussions on the potential role of threshold quantities for specific measures to strengthen the BTWC.¹²² Much work remains, but agreement 'that it would be useful to have certain terms defined to assist the work of the Compliance Measures Group'¹²³ demonstrated that at least these two FoCs moved towards consolidating their work into proposals for a legally binding framework.¹²⁴

The FoC group on confidence and transparency measures considered propositions that 'would be voluntary and non-mandatory, and . . . could be included, as appropriate, into a legally binding instrument'.¹²⁵ Several lists of measures were proposed: surveillance of publications, surveillance of legislation, and collection of data on transfers and transfer requests and on production, multilateral information sharing, exchange visits and confidence-building visits.¹²⁶ This group proceeded with little controversy partly because uncertainty still exists regarding the final application of the confidence-building measures (CBMs) and partly because of the agreement that, even if they were incorporated into a future protocol, they would not—with one possible exception—be mandatory.

The FoC group on Article X, which encourages international cooperation for peaceful purposes, produced a set of elements for structured discussions, comprising 'Scope and content of possible scientific and technical exchanges', 'Greater multilateral cooperation in international public health and disease control', 'Scientific areas which could be promising for cooperation under Article X', 'Institutional, legal and financial arrangements', 'Modalities, safe-

¹²⁰ BWC/AD HOC GROUP/32, 27 Sep. 1996, pp. 7–18.

¹²¹ Pearson, G. S., 'Addendum to agenda item 12: consideration of the work of the Ad Hoc Group established by the Special Conference in 1994', eds G. S. Pearson and M. R. Dando, *Strengthening the Biological Weapons Convention: Key Points for the Fourth Review Conference, Addendum to Agenda Item 12* (Quaker United Nations Office: Geneva, 1996), p. 5.

¹²² BWC/AD HOC GROUP/32, 27 Sep. 1996, pp. 9–38.

¹²³ BWC/AD HOC GROUP/32, 27 Sep. 1996, p. 19.

¹²⁴ Pearson (note 121), p. 3.

¹²⁵ BWC/AD HOC GROUP/32, 27 Sep. 1996, p. 39.

¹²⁶ BWC/AD HOC GROUP/32, 27 Sep. 1996, pp. 39–52.

guards and limitations', 'Reporting, administrative and review procedures' and 'Role of Article X within a compliance assurance regime'.¹²⁷ As noted in the introductory part of several sections, the range of views is still wide, and the text does not necessarily represent agreement among delegations. The section also contains an annexe, in which *inter alia* some highly contentious issues are discussed such as the relationship between Article X and the other BTWC provisions and the relevance of export control measures to the implementation of Article X. On the whole, it was assessed that:

the FoC on Article X measures has shown a move . . . towards focusing on potential measures relevant to the BTWC and away from measures which could duplicate unnecessarily measures being undertaken by other fora such as Agenda 21 and the Convention on Biological Diversity. There appears to be promise in measures that will implement Article X of the BTWC whilst at the same time improving transparency and building confidence.¹²⁸

Despite the progress to date, questions remain as to whether the Ad Hoc Group will be able to complete its work by 1998.¹²⁹ It must be kept in mind that all the papers prepared by the FoC group state that they are without prejudice to the positions of the delegations on the issues under consideration in the Ad Hoc Group and that they do not imply agreement on the scope or content of the papers.¹³⁰ The target date of 1998 has also met with opposition, and at the Fourth Review Conference delegates agreed that the enforcement protocol should be ready before the next review conference, in 2001.¹³¹ However, one useful outcome of the Ad Hoc Group meeting in September 1996 was agreement to intensify the work of the Ad Hoc Group in 1997.¹³² This decision was supported by the Fourth Review Conference, which encouraged the Ad Hoc Group to review its method of work and to move towards a negotiating format.¹³³ There is hope that substantial progress will be made towards the development of a verification protocol to the BTWC in 1997.

The Fourth Review Conference

The endorsement of the work of the Ad Hoc Group may be one of the most significant outcomes of the Fourth Review Conference. Although the importance of confidence-building measures was reaffirmed, the Final Document noted that participation in the CBMs since the Third Review Conference in September 1991 has not been universal and that not all responses have been

¹²⁷ BWC/AD HOC GROUP/32, 27 Sep. 1996, pp. 51–60.

¹²⁸ Pearson (note 121), p. 6. Agenda 21 comprises a series of aspirations relating to the environment and development.

¹²⁹ This objective was proposed, among others, by the USA. 'Remarks by the President in address to the 51st General Assembly of the United Nations', White House Press Release, 24 Sep. 1996, White House Virtual Library, URL <<http://library.whitehouse.gov/>>.

¹³⁰ BCW/AD HOC GROUP/32, 27 Sep. 1996, p. 5.

¹³¹ Final Declaration of the Fourth Review Conference BWC/CONF.IV/9, Part II, p. 29.

¹³² Meetings are scheduled for 3–21 Mar., 14 July–1 Aug. and 15 Sep.–3 Oct. 1997. BCW/AD HOC GROUP/32, 27 Sep. 1996, p. 4.

¹³³ Final Declaration of the Fourth Review Conference (note 131).

prompt or complete. In addition, it recognized that some states parties experienced difficulties regarding the preparation of CBM responses.¹³⁴ However, the Final Document contained no modifications to the modalities of the existing CBMs or clarifications of the existing CBMs to address these issues.¹³⁵ In view of the potential of BW terrorist threats the delegates included language in the Final Document that under Article III, which bans the transfer of items covered under the BTWC for prohibited purposes, states parties should ensure that individuals or subnational groups should be prevented from acquiring biological and toxin weapons.¹³⁶ The conference emphasized the increasing importance of Article X in view of recent scientific and technological developments and also stressed that the measures to implement this article had to be consistent with the objectives and purposes of the BTWC.¹³⁷ It also reiterated that the provisions of Article III should not be used to impose restrictions or limitations on the transfer for permitted purposes of scientific knowledge, technology, equipment and materials under Article X.¹³⁸

On the opening day of the review conference Iran submitted an unannounced proposal to amend the BTWC by inserting the word 'use' both in the title and in Article I of the convention.¹³⁹ The Iranian representative argued that the BTWC, as it stands, relies on the 1925 Geneva Protocol to cover the prohibition of use. The latter agreement, however, is subject to reservations by some contracting parties so that instead of a complete ban on use it only prohibits first use. In addition, Article VIII of the BTWC rejects an interpretation of the convention that may detract from the commitments of states parties under the Geneva Protocol, so that states with reservations to it may consider the use of BW to be legitimate under certain circumstances.¹⁴⁰ Second, Iran doubted the assumption that the prohibition of development, production and stockpiling precludes the use of BW under all circumstances. Several neutral and non-aligned countries supported the request for amendment.

South Africa, referring to preambular paragraphs 9 and 10 of the BTWC, stated that prevention of use was the ultimate goal of the convention. It proposed language for the final declaration of the Fourth Review Conference that the use of microbial or other biological agents or toxins for other than peaceful purposes would constitute a violation of Article I of the BTWC.¹⁴¹ France and the Netherlands, on the other hand, submitted language for Article VIII acknowledging that by prohibiting bacteriological methods of warfare the Geneva Protocol forms an essential complement to the BTWC and calling for

¹³⁴ Final Declaration of the Fourth Review Conference (note 131), p. 19.

¹³⁵ These issues are discussed in Pearson, G. S., 'Article V: consultation and cooperation', eds Pearson and Dando (note 121), pp. 59–75; and Hunger, I., 'Article V: confidence-building measures', Pearson and Dando (note 121), pp. 77–92.

¹³⁶ Final Declaration of the Fourth Review Conference (note 131), p. 17.

¹³⁷ Final Declaration of the Fourth Review Conference (note 131), pp. 23–24.

¹³⁸ Final Declaration of the Fourth Review Conference (note 131), p. 17.

¹³⁹ BWC/CONF.IV/CRP.1, 25 Nov. 1996; and BWC/CONF.IV/COW/WP.2, 28 Nov. 1996.

¹⁴⁰ For parties to the Geneva Protocol (including indication of states with reservations) see Annexe A in this volume.

¹⁴¹ 'The use of BTW: a violation of Article I of the BTWC, Working Paper by South Africa', BWC/CONF.IV/COW/WP.1, 27 Nov. 1996.

the withdrawal of all reservations to the Geneva Protocol.¹⁴² All states parties universally condemned the use of BW in war.¹⁴³

According to Article XI of the BTWC any state can submit an amendment. The article had not been invoked before. The amendment can enter into force upon its acceptance by a majority of states parties and thereafter for each remaining state party on the date of acceptance by it. At the Third Review Conference it was agreed that ‘the provisions of Article XI should in principle be implemented in such a way as not to affect the universality of the Convention’.¹⁴⁴ Under Article 40 of the 1969 Vienna Convention on the Law of Treaties any proposal to amend a multilateral treaty must be notified to all the contracting states. The Fourth Review Conference therefore requested the states parties to convey their views to the depository states (Russia, the UK and the USA), which will take any measures requested—including the convening of a special conference to consider the Iranian proposal at the earliest possible date, if a majority of states parties so decides.¹⁴⁵ Several delegates, however, expressed the fear that adoption of this amendment might lead to other proposals, which may ultimately weaken the BTWC regime, and that, in view of the required ratification procedures by states parties, states that do not accept the amendment would appear to condone BW use.¹⁴⁶

At the Fourth Review Conference delegates also welcomed the lifting of reservations to the Geneva Protocol by France and South Africa. During the plenary session on 29 November, the Belgian ambassador also announced that Belgium was close to withdrawing its reservations.¹⁴⁷

V. CBW proliferation concerns

UNSCOM: chemical and biological weapon-related activities

In 1996 the Iraqi Government was again unable to convince UNSCOM that it had dismantled all its programmes for developing ballistic missiles and weapons of mass destruction. It also remained unclear when sanctions would be lifted. In March, however, UNSCOM chairman Rolf Ekéus suggested that the UN’s ongoing monitoring and verification programme may have to be continued for up to 15–20 years.¹⁴⁸ Approximately 115 facilities were being monitored for possible CW-related activities and 86 sites for BW-related activities.¹⁴⁹ Later, in July, Ekéus also said that 6–16 long-range missiles capable of carrying chemical or biological warheads remained unaccounted for.¹⁵⁰ On 20 May the UN Security Council and the Iraqi Government signed

¹⁴² BWC/CONF.IV/COW/WP.3, 28 Nov. 1996.

¹⁴³ Report of the Committee of the Whole, BWC/CONF.IV/9, Part III, p. 39.

¹⁴⁴ Final Declaration of the Third Review Conference, BWC/CONF.III/23.

¹⁴⁵ Final Declaration of the Fourth Review Conference (note 131), p. 27.

¹⁴⁶ Report of the Committee of the Whole, BWC/CONF.IV/9, Part III, p. 39.

¹⁴⁷ Zanders, J. P., participating for SIPRI in the Fourth Review Conference, 29 Nov. 1996.

¹⁴⁸ Black, I., ‘UN monitor says Iraqi checks will continue’, *The Guardian*, 13 Mar. 1996, p. 7.

¹⁴⁹ UN Security Council document S/1996/848, 11 Oct. 1996, pp. 21, 23.

¹⁵⁰ ‘UN arms envoy is provoking trouble, Iraq asserts’, *International Herald Tribune*, 28 Aug. 1996, p. 8. In all, up to 85 missiles with ranges above the 150-km range limit set by the UN Security Council

an agreement allowing UN-supervised sale of oil with proceeds to go towards war reparations and the purchase of humanitarian supplies for Iraq.¹⁵¹

Iraq continued to hinder or prevent UNSCOM inspections (table 13.3 lists inspections in 1996).¹⁵² On 12 June the UN Security Council adopted Resolution 1060 which stated that the Iraqi refusal to allow unimpeded inspections was unacceptable and called upon the Iraqi Government to stop hindering inspections.¹⁵³ Ten days later Iraqi Deputy Foreign Minister Tariq Aziz signed an agreement confirming the right of UN inspectors to visit any area suspected of containing information or materials which would indicate a violation of UN resolutions.¹⁵⁴ On 19 July, however, an UNSCOM team was withdrawn after being denied the use of roads leading to inspection sites.¹⁵⁵ Following high-level talks on 26–28 August 1996, subsequent inspections were conducted in September without incident.¹⁵⁶

Destruction of a biological weapon research and production facility at Al Hakam, approximately 60–80 km south-west of Baghdad, as well as BW-related equipment from two BW facilities at Al Manal and Al Safah, was completed in June 1996.¹⁵⁷ Although UNSCOM believed that it has destroyed the major part of Iraq's BW-related facilities, it said that significant gaps of information on Iraq's BW programme remained.¹⁵⁸ Iraq reportedly weaponized (prepared the agents to be delivered as weapons) at least 25 missile warheads and 166 air bombs with BW agents.¹⁵⁹ Before the Persian Gulf War, Iraq reportedly produced 2500 litres of aflatoxin, 8500 litres of anthrax and 19 000 litres of botulinum.¹⁶⁰

may still be unaccounted for. Associated Press, 'UN inspector: Iraq may still be holding long-range missiles', 21 Oct. 1996, URL <<http://www1.trib.com/NEWS/HEAD/un18.html>>.

¹⁵¹ Bruce, J., 'USA to keep close watch on Iraqi oil money', *Jane's Defence Weekly*, vol. 25, no. 23 (5 June 1996), p. 16.

¹⁵² In Mar. 1996, e.g., an UNSCOM team was delayed for several hours before being allowed to enter a total of 5 sites. On 11–12 June another inspection team was denied access to sites at Abu Ghurib. 'UN demands access to Iraqi sites', *International Herald Tribune*, 20 Mar. 1996, p. 1; UN Security Council document S/1996/258, 11 Apr. 1996, pp. 6–7; and 'Iraq: some relief but renewed tensions', *Disarmament Diplomacy*, no. 6 (June 1996), pp. 52–53. For a chronology of events see UN Security Council document S/1996/182, 12 Mar. 1996. See also UN Security Council document S/PRST/1996/11, 19 Mar. 1996.

¹⁵³ UN Security Council document S/RES/1060, 12 June 1996.

¹⁵⁴ UN Security Council document S/1996/463, 24 June 1996.

¹⁵⁵ Medeiros, E., 'Iraq denies UNSCOM access to suspect sites despite pledge', *Arms Control Today*, vol. 26, no. 5 (July 1996), p. 21.

¹⁵⁶ '13–20 September', *Chemical Weapons Convention Bulletin*, no. 34 (Dec. 1996), p. 23.

¹⁵⁷ UN Security Council document S/1996/848, 11 Oct. 1996, p. 7; and Bruce, J., 'Iraqi BW plant levelled, but UN mission goes on', *Jane's Defence Weekly*, vol. 25, no. 25 (19 June 1996), pp. 28–29. In 1995 Iraq admitted that it had an offensive BW programme. Ekéus, R., 'Iraq's biological weapons programme', Memorandum from Executive Chairman of the United Nations Special Commission to the 4th BTWC Review Conference, 20 Nov. 1996, p. 4. Further information on the programme was provided by Saddam Hussein's son-in-law, Hussein Kamel al-Majid, who defected in Aug. 1995. Bruce (see above in this note). Kamel al-Majid was Iraq's Industry Minister and head of the Military Industrialization Corporation at the time of his defection. 'Beware Iraq's biowar legacy', *Jane's International Defence Review*, vol. 29 (June 1996), p. 104. In Feb. Kamel al-Majid was killed after returning to Baghdad. Rathmell, A., 'Oil sales bring respite for Saddam', *Jane's Intelligence Review*, vol. 8, no. 6 (June 1996), p. 259.

¹⁵⁸ UN Security Council document S/1996/848, 11 Oct. 1996, p. 7.

¹⁵⁹ 'Iraq, just saying no', *The Economist*, vol. 339, no. 7971 (22 June 1996), p. 48.

¹⁶⁰ Finnegan, P. 'Limited US action may boost Iraqi biological threat', *Defense News*, vol. 11, no. 38 (1996), pp. 3, 42.

In February 1996 Iraq submitted a draft full, final and complete disclosure (FFCD) of its CW development programme.¹⁶¹ Yet questions concerning the accounting for VX precursors, which Iraq said it unilaterally destroyed, for example, were not answered to the satisfaction of UNSCOM officials. On 22 June Iraq provided its third FFCD of its chemical and its sixth FFCD of its biological programmes.¹⁶²

In January 1996 Jordanian authorities confiscated Russian-made missile guidance components sent to Iraq in violation of UN sanctions.¹⁶³ UNSCOM officials also believed that Iraq took delivery of components for missiles with ranges of 'over thousands of kilometres'.¹⁶⁴ UNSCOM confirmed the delivery of missile components to Iraq in July 1995.¹⁶⁵ The United Nations also continued efforts to remove 130 missile motors for analysis in the USA in order to determine, in part, whether Iraq had upgraded them with domestically produced components.¹⁶⁶ On 27 March 1996 the UN Security Council adopted Resolution 1051, providing for the monitoring of exports and imports of materials and technologies by Iraq.¹⁶⁷ The UN export/import monitoring system for Iraq entered into effect on 10 October 1996.

Other proliferation allegations

Iran has allegedly received and is producing chemical weapons. A report on the US Department of Defense GulfLINK web site on Gulf War Syndrome stated that chemical and biological weapons as well as nuclear material had been transported on lorries from Iraq to Iran during the Gulf War.¹⁶⁸ The documents were removed when US intelligence officials expressed concern that they revealed internal methods and sources. Certain parts were also said to be classified. Access to the disputed section was restored after the documents had been reviewed and changed.¹⁶⁹ Written responses by the CIA to questions by the Senate Select Committee on Intelligence stated that Iran has 'several

¹⁶¹ UN Security Council document S/1996/258, 11 Apr. 1996, p. 16.

¹⁶² UN Security Council document S/1996/848, 11 Oct. 1996, pp. 11, 19, 22.

¹⁶³ 'Jordan seizes missile parts bound for Iraq', *Defense and Disarmament Review*, Feb. 1996, p. 297. The equipment was part of a shipment consisting of 10 crates which arrived at an Amman airport from Moscow on 10 Nov. and included 115 gyroscopes. Bruce, J., 'Jordan confirms parts were Iraq-bound', *Jane's Defence Weekly*, vol. 25, no. 1 (3 Jan. 1996), p. 3.

¹⁶⁴ UN Security Council document S/1996/258, 11 Apr. 1996, p. 13.

¹⁶⁵ UN Security Council document S/1996/258, 11 Apr. 1996, p. 14.

¹⁶⁶ Blanche, E., 'Iraq says missile dig will prove it has no "Scuds"', *Jane's Defence Weekly*, vol. 27, no. 3 (22 Jan. 1997), p. 5.

¹⁶⁷ UN Security Council document S/RES/1051, 27 Mar. 1996. The resolution states in part that information on imports of sensitive items should be provided to the joint UNSCOM-International Atomic Energy Agency unit. It remained unclear when Iraq would begin taking steps to implement national legislation to conform to the resolution's reporting requirements. The verification mechanism cannot take effect without the enactment of such legislation. UN Security Council document S/1996/258, 11 Apr. 1996, p. 5. For a compendium of terms to the Handbook for Notification of Exports to Iraq, Security Council Resolution 1051 (1996), see UN Security Council document S/1996/303, 18 Apr. 1996.

¹⁶⁸ The GulfLINK URL is <<http://www.dtic.dla.mil/gulflink>>.

¹⁶⁹ Associated Press, Rothberg, D., 'Iraq said to have secreted chemical, biological weapons in Iran', 3 Nov. 1996, URL <<http://www1.trib.com/NEWS/HEAD/iraqchemical1.html>>.

Table 13.3. UNSCOM inspections, 1 January–16 December 1996 (country dates)^a

Type of inspection/date	Team
<i>Chemical</i>	
16 Aug. 1995–15 Jan.	CG 4
15 Jan.–15 Apr.	CG 5
24 Feb.–12 Mar.	CW 26/UNSCOM 129B
2 Apr.–30 June	CG 6
13–22 May	CW 28/UNSCOM 138
1 July–18 Dec.	CG 7
3–13 Aug.	CW 29/UNSCOM 140
18–22 Sep.	CW 30/UNSCOM 161
29 Nov.–11 Dec.	CW 27/UNSCOM 135
2–6 Dec.	CW 33/UNSCOM 170
18 Dec.–[into 1997]	CG 8
<i>Biological</i>	
2 Nov. 1995–27 Jan.	BG 3
12–18 Jan.	BW 30/UNSCOM 133
23–30 Jan.	BW 32/UNSCOM 136
28 Jan.–3 Apr.	BG 4
24 Feb.–1 Mar.	BW 33/UNSCOM 139
3 Apr.–30 June	BG 5
30 Apr.–7 May	BW 34/UNSCOM 142
11–20 May	BW 35/UNSCOM 145
19 May–30 June	BW 31/UNSCOM 134
11–13 June	BW 37/UNSCOM 151
1–8 July	BW 36/UNSCOM 146
1 July–28 Sep.	BG 6
25 July–3 Aug.	BW 38/UNSCOM 152
29 July–7 Aug.	BW 39/UNSCOM 154
13–20 Sep.	BW 40/UNSCOM 157
29 Sep.–7 Jan. 1997	BG 7
14–23 Oct.	BW 41/UNSCOM 159
11–18 Nov.	BW 43/UNSCOM 163
2–8 Dec.	BW 42/UNSCOM 160
12–17 Dec.	BW 44/UNSCOM 167
<i>Ballistic missile</i>	
16 Nov. 1995–13 Feb.	MG 6
14–18 Jan.	BM 35/UNSCOM 120
1–5 Feb.	FFCD/M 1 Mission
14 Feb.–11 Mar.	MG 7
5–7 Mar.	Expert Mission
8–17 Mar.	BM 39/UNSCOM 143
10 Mar.–15 May	MG 8
20–23 Mar.	FFCD/M 2 Mission
25 Mar.– 2 Apr.	BM 37/UNSCOM 137
2–6 Apr.	BM 40/UNSCOM 144
22–27 Apr.	BM 38A/UNSCOM 141
5–10 May	Special Mission 1
15 May–9 Aug.	MG 9
28 May–1 June	FFCD/M 3 Mission
10–16 June	BM 41/UNSCOM 150
15–19 July	BM-42/UNSCOM 155
19–22 July	Special Mission 2
20 July–3 Aug.	BM 38B/UNSCOM 141B
3–7 Aug.	MG 9A

Type of inspection/date	Team
9 Aug.–22 Nov.	MG 10
13–17 Aug.	Special Mission 3
19 Aug.–4 Sep.	BM 38C/UNSCOM 141C
20–24 Sep.	BM 43/UNSCOM 162
21–28 Oct.	BM 45/UNSCOM 161
4–6 Nov.	BM 47/UNSCOM 168
6–16 Nov.	BM 44/UNSCOM 158
11–16 Nov.	MG 10/B
18–30 Nov.	BM 38D/UNSCOM 141D
22 Nov.–[into 1997]	MG 11
27 Nov.–2 Dec.	MG 11A
<i>Nuclear</i>	
12 Dec. 1995–4 Jan.	NMG 95-19
4–27 Jan.	NMG 96-01
27 Jan.–12 Feb.	NMG 96-02
12 Feb.–5 Mar.	NMG 96-03
5–25 Mar.	NMG 96-04
26 Mar.–15 Apr.	NMG 96-05
15 Apr.–6 May	NMG 96-06
6–27 May	NMG 96-07
13–19 May	IAEA 30/UNSCOM 147
27 May–17 June	NMG 96-08
17 June–8 July	NMG 96-09
8–30 July	NMG 96-10
30 July–20 Aug.	NMG 96-11
20 Aug.–15 Sept.	NMG 96-12
10 Sep.–1 Oct.	NMG 96-13
1–22 Oct.	NMG 96-14
22 Oct.–12 Nov.	NMG 96-15
12 Nov.–3 Dec.	NMG 96-16
3–19 Dec.	NMG 96-17
19 Dec. 1996–9 Jan. 1997	NMG 96-18
<i>Export/import missions</i>	
30 Apr.–9 May	UNSCOM 128 (EXIM-2)
20–22 May	Special Mission
20 May–2 Aug.	EG-1
3 Aug.–20 Nov.	EG-2
14–25 Nov.	UNSCOM 165 (EXIM-3)
21 Nov.–8 Jan. 1997	EG-3
<i>Technical support missions</i>	
11–20 May	OST 9B
6–26 June	PM2-96
5–28 Aug.	OST 8J
30 Sep.–22 Oct.	OST 9C

^a In addition, special missions were conducted on 7–10 Mar., 18–19 Apr., 19–22 June, 26–28 Aug., 19–21 Oct., 21–25 Nov. and 6–11 Dec.

BM = ballistic missiles, BW = biological weapons, CG = Chemical Monitoring Group, CW = chemical weapons, IAEA = International Atomic Energy Agency, MG = Missile Monitoring Group, NMG = Nuclear Monitoring Group.

Source: Information provided by UNSCOM spokesman.

thousand tons' of chemical warfare agents, including cyanide, phosgene and sulphur mustard. The CIA alleged that Iran has an annual CW production capacity of 1000 tonnes and is currently pursuing a nerve agent production capability.¹⁷⁰ US intelligence also said that Chinese and Indian companies were supplying Iran with complete pesticide production facilities, including glass-lined vessels and air filtration units, which US officials were concerned could also be used for the production of chemical weapons.¹⁷¹ Iranian officials denied that Iran was developing chemical weapons and that technology or materials for their manufacture were shipped through Italy.¹⁷²

During a visit to Cairo in April US Secretary of Defense William Perry stated that Libya was constructing an underground CW production facility at Tarhunah, approximately 65 km south-east of Tripoli.¹⁷³ Work reportedly began in 1990.¹⁷⁴ Perry said that the USA would take the steps necessary to prevent the facility from becoming operational.¹⁷⁵ Libyan leader Colonel Muammar Qadhafi responded by saying that the facility is part of the Great Man-Made River Project, an irrigation scheme to divert water from aquifers in the south of the country to the Mediterranean coast.¹⁷⁶ Partly in an attempt to forestall possible US military action and with the agreement of Qadhafi, Egyptian President Hosni Mubarak sent investigators to visit Tarhunah. The team reported seeing tunnels but no equipment. At a press interview Mubarak expressed his belief that US officials also realized that 'no activity' was currently taking place inside the tunnels.¹⁷⁷ During the same period French President Jacques Chirac was quoted as saying that he was unable to confirm US allegations.¹⁷⁸ The US Department of State responded by reaffirming the US claim.¹⁷⁹ German intelligence reportedly possesses blueprints of the site.¹⁸⁰ The CIA estimated that the facility could become operational in 1997 or

¹⁷⁰ Starr, B., 'Iran has vast stockpiles of CW agents, says CIA', *Jane's Defence Weekly*, vol. 26, no. 7 (14 Aug. 1996), p. 3.

¹⁷¹ Smith, R. J., 'Chinese exports fuel Iran effort on poison gas', *International Herald Tribune*, 9–10 Mar. 1996; and 'India helping to make poison gas', *Asian Recorder*, 29 July–4 Aug. 1996, p. 25796.

¹⁷² IRNA (Tehran), 1021 GMT 12 Nov. 1995 (in English), in 'Foreign ministry denies PRC chemical warfare aid', Foreign Broadcast Information Service, *Daily Report–Near East and South Asia (FBIS-NES)*, FBIS-NES-95-218, 13 Nov. 1995; and Unattributed report: 'Iran: victims of chemical weapons', *Il Giorno* (Milan) 11 Oct. 1995, p. 6 (in Italian), in 'Officials deny chemical weapons allegations', FBIS-TAC-95-006, 6 Dec. 1995.

¹⁷³ 'Cairo and Paris want proof against Libya', *International Herald Tribune*, 8 Apr. 1996, p. 7; and 'Libya–US chemical weapons dispute', *Disarmament Diplomacy*, no. 4 (Apr. 1996), p. 44.

¹⁷⁴ Rosenthal, A., 'America to Gaddafi: stop poison gas plant or face an attack', *International Herald Tribune*, 20–21 Apr. 1996, p. 6.

¹⁷⁵ 'Cairo and Paris want proof against Libya' (note 173).

¹⁷⁶ 'Gaddafi tunnels into trouble both within and without', *Jane's Defence Weekly*, vol. 26, no. 11 (11 Sep. 1996), p. 24.

¹⁷⁷ Lancaster, J., 'Libyan arms factory a myth, Mubarak says', *International Herald Tribune*, 31 May 1996, p. 2.

¹⁷⁸ 'Cairo and Paris want proof against Libya' (note 173).

¹⁷⁹ 'USA stands by Libya CW claim', *Jane's Defence Weekly*, vol. 25, no. 23 (5 June 1996), p. 16.

¹⁸⁰ 'Huge chemical arms plant near completion in Libya, US says', *New York Times News Service*, 24 Feb. 1996.

1998.¹⁸¹ However, work at Tarhunah apparently stopped after the US accusations.¹⁸²

Allegations of German involvement in the construction of the Tarhunah facility in early 1996 became more credible when, on 9 August 1996, two German businessmen, suspected of supplying Libya with equipment for the production of chemical weapons from 1990 to 1993, were arrested in Germany.¹⁸³ Prosecutors in Mönchengladbach alleged that they had purchased chemical process control equipment from Siemens and adapted it for nerve-agent production before exporting it to Libya via Antwerp through a Belgian front company owned by Berge Balanian. It was later revealed that Balanian, who is originally from Lebanon, had previously worked as an informant for the German intelligence service.¹⁸⁴ The total value of the computerized equipment was estimated at 3.2 million DM. The equipment may have been supplied by two German companies.¹⁸⁵ Other German companies are reported to have sold equipment for drilling Tarhunah's system of tunnels.¹⁸⁶

South Africa's Office for Serious Economic Offences (OSEO) continued to investigate apparent financial irregularities connected with Project Coast (also known as Project B, or Jota¹⁸⁷), the code-name for that country's secret CBW research programme started in 1980 by the South African Defence Force (SADF).¹⁸⁸ In the autumn of 1994 the OSEO delivered a report to South Africa's Justice Minister Dullah Omar which suggested that when Roodeplaat Research Laboratories (RRL)¹⁸⁹ and Delta G. Scientific,¹⁹⁰ companies involved in the project, were privatized before the 1994 general elections company

¹⁸¹ 'US claims huge Libya chemical weapons plant', *Disarmament Diplomacy*, no. 3 (Mar. 1996), p. 50.

¹⁸² Podlich, M., 'Pentagon says Libya has stopped construction at suspected CW plant', *Arms Control Today*, vol. 26, no. 4 (May/June 1996), p. 26.

¹⁸³ Ulfkotte, U., 'Hilft Deutschland beim Bau einer Libyschen Giftgasfabrik?' [Did Germany help with the construction of a Libyan poison gas factory?], *Frankfurter Allgemeine Zeitung*, 28 Feb. 1996, p. 4; and AP/AFP, 'Affäre um Giftgas-Technologie für Libyen weitet sich aus' [Affair about poison gas technology for Libya broadens], *Süddeutsche Zeitung*, 26 Aug. 1996, p. 2.

¹⁸⁴ 'BND räumt Kontakt zu Hauptverdächtigem der Giftgas-Affäre ein' [BND ends contacts with main suspect of poison-gas affair], *Süddeutsche Zeitung*, 21 Aug. 1996; 'Brüssel weist Bericht über Exporterlaubnis zurück' [Brussels denies report about export permission], *Frankfurter Rundschau*, 15 Oct. 1996; 'Lebanon nabs man suspected of smuggling weapons material to Libya', *Compass*, 15 Oct. 1996, URL <<http://www.compass-news.com/bin/sharchst.cgi?File=10151225.18&Country=Libya>>; and DPA/AFP, 'Justiz bittet um Auslieferung in der Giftgas-Affäre' [Justice department requests extradition in poison-gas affair], *Frankfurter Rundschau*, 16 Oct. 1996.

¹⁸⁵ 'German firms' continued involvement in Libya's plans', *The Independent*, 20 Aug. 1996, p. 11; and 'Germany cracks nerve gas case', *International Herald Tribune*, 20 Aug. 1996, p. 1.

¹⁸⁶ Bonner, R., 'Germany charges 3 in sales to Libya: equipment allegedly intended for manufacture of nerve gas', *International Herald Tribune*, 22 Aug. 1996, pp. 1, 6.

¹⁸⁷ Sole, S. and Seery, B., 'Top team to reopen probe into arms project's missing millions', *Sunday Independent* (South Africa), 19 May 1996.

¹⁸⁸ 'South African CW investigation', *Jane's Defence Weekly*, vol. 25, no. 25 (19 June 1996), p. 29; and Brümmer, S., 'Secret chemical war remains secret', *Weekly Mail & Guardian*, 23 Aug. 1996, URL <<http://wn.apc.org/wmail/issues/960823/NEWS35.html>>. Project Coast was apparently terminated in 1993. 'SANDF asked to explain irregularities', *Star* (South Africa), 18 Aug. 1996.

¹⁸⁹ RRL has since been liquidated. Sole, S. and Seery, B., 'SA's chemical warfare project to be exposed', *Sunday Independent* (South Africa), 5 Dec. 1996. The laboratory was said to have succeeded in developing an infertility shot for use against blacks. Sole, S. and Seery, B., 'SADF wanted to make blacks infertile', *Sunday Independent* (South Africa), 18 Aug. 1996.

¹⁹⁰ Delta G. Scientific was sold to Sentrachem in 1993. Sole, S. and Seery, B., 'SA's chemical warfare project to be exposed' (note 189).

directors may have received up to 18 million Rand. Numerous questions have been raised about the role of personal relationships between company executives and former or current high-ranking government officials, including members of the SADF and the Ministry of Finance, at the time the companies were liquidated.¹⁹¹ On 3 April 1996 the South African cabinet lifted security measures on the project but, apparently, only in so far as was necessary to allow the OSEO to complete its investigation into possible financial mismanagement.¹⁹² The OSEO investigation may take an additional two years to complete.¹⁹³

On 8 April police in Japan arrested Li Chong Chun, a Kobe resident of Korean ancestry, for having purchased 50 kg of sodium fluoride and 50 kg of hydrofluoric acid. Chun, acting for a Pyongyang trading company, shipped the sodium fluoride on 24 January and the hydrofluoric acid on 15 February on *North Korean* cargo ships loaded with rice provided by a Japanese food aid programme.¹⁹⁴ A report based on information from defectors stated that North Korea produced over 20 different chemical agents, including adamsite, chloroacetophenone, chlorobenzylidene malonitrile, hydrogen cyanide, mustard, phosgene, sarin, soman, tabun, VM and VX. North Korea is also said to have weaponized chemical multiple rocket-launcher munitions ranging in size from 80 mm to 240 mm.¹⁹⁵ While acknowledging the difficulties in making accurate estimates, the report suggested that the country has a peacetime production capacity of 4500 tonnes per year which could be expanded to 12 000 tonnes per year in time of war. North Korea is currently believed to have 1000–5000 tonnes of chemical weapons.¹⁹⁶

During the period of the Dayton peace talks on Bosnia and Herzegovina the Granada television company retained three researchers from the Swedish National Defence Research Establishment (FOA) to examine samples taken from an alleged former *Yugoslav* chemical weapon production facility in Mostar. When these samples (e.g., earth and gas mask filters) were tested, isopropyl methylphosphonic acid and methylphosphonic acid were detected. The researchers concluded that sarin had probably been produced at the facility.¹⁹⁷ It has been suggested that Bosnian Serbs removed equipment from the Mostar

¹⁹¹ Sole and Seery (note 187), 19 May 1996; and Sole, S. and Seery, B., 'General faces second grilling on R50m giveaway', *Sunday Independent* (South Africa), 18 Aug. 1996.

¹⁹² A letter by Deputy President Thabo Mbeki to the legislative committee investigating the affair supported head of the SADF, General Georg Meiring, when he refused to provide testimony concerning Project Coast in an open hearing. Le May, J., 'Chemical weapons details under wraps', *Argus* (South Africa), 25 Aug. 1996; and Seery, B., 'South Africa "exported chemical weapons technology to Middle East"', *Sunday Independent* (South Africa), 25 Aug. 1996.

¹⁹³ Brümmer, S., 'Millions missing from chemical weapons project', *Mail & Guardian*, 16 May 1996, URL <<http://www.mg.co.za/mg/news/96may/16may-chemical.html>>.

¹⁹⁴ 'Korean resident arrested for sarin chemical export', *Daily Yomiuri*, 9 Apr. 1996, URL <<http://www.yomiuri.co.jp/index-e.htm>>.

¹⁹⁵ Bermudez, J., 'Inside North Korea's CW infrastructure', *Jane's Intelligence Review*, vol. 8, no. 8 (Aug. 1996), p. 380.

¹⁹⁶ Bermudez (note 195), p. 382.

¹⁹⁷ 'Foa-analys avslöjar, spår av nervgas i f.d. Jugoslavien' [FOA analysis reveals traces of nerve gas in the former Yugoslavia], *FOA Tidningen*, vol. 33, no. 5/6 (Dec. 1995), p. 48 (in Swedish); and Bartholomew, R., 'Will Serbia sign and ratify the CWC????, the Balkans and CW: is it avoidable?', *ASA Newsletter*, 14 June 1996.

facility to Lucani in 1992.¹⁹⁸ In addition to allegations concerning the manufacture of sarin, there continued to be claims that Bosnian Serb forces used BZ, a hallucinogenic agent, against Bosnian Government forces defending Srebrenica in July 1995.¹⁹⁹

Syria is alleged to be constructing a chemical weapon production facility in Aleppo. The USA reportedly gave Germany copies of satellite surveillance photographs of the plant, which apparently has a design similar to that of Libya's Tarhunah facility. The German Government is investigating the possible involvement of German companies.²⁰⁰

In 1996 the continuation of several illicit BW armament programmes was alleged. The USA continued to voice concern in 1996 that *Russia* is not in compliance with the BTWC and may be retaining an offensive BW capability, despite President Boris Yeltsin's April 1992 decree to ban all activities contravening the convention.²⁰¹ Russia persistently denied the allegations.²⁰² During 1996 the United States also claimed that *Egypt, Iran, Iraq, Libya* and *Syria* possibly maintained BW programmes. The Defense Intelligence Agency, in particular, alleged that Russian expertise was flowing to these countries.²⁰³

VI. Other CBW-related issues

Gulf War Syndrome

Gulf War Syndrome is a collective name given to a variety of ailments and disorders suffered by especially US and British veterans of the Persian Gulf War. No single, coherent explanation for the phenomena has yet been provided. Extreme stress in war and its direct physiological effects on health were advanced in November by the Presidential Advisory Committee on Gulf War Veterans' Illnesses as another, but more plausible, potential cause.²⁰⁴

However, no such complaints from veterans appear to have emanated from France or some other allies in the theatre of operations. This seems to confirm the view that CBW pre-treatments, perhaps in combination with insect repellents and insecticides or with the smoke from burning oil wells, may have

¹⁹⁸ Bartholomew (note 197).

¹⁹⁹ Moore, P., 'Did Serbs use poison gas at Srebrenica?', *OMRI Daily Digest*, no. 16, part II (23 Jan. 1996).

²⁰⁰ Lambrecht, R. and Müller, L., 'Giftgas gegen Israel' [Poison gas against Israel], *Stern*, no. 25 (5 June 1996), pp. 16–21.

²⁰¹ Office of the Secretary of Defense, *Proliferation: Threat and Response* (US Government Printing Office: Washington, DC, Apr. 1996), p. 32; and Waller, J. M., 'Natan Sharansky urges West to work with Lebed; ACDA finds Moscow violating arms treaties and manufacturing germ weapons', *Russia Reform Monitor*, no. 172 (American Foreign Policy Council: Washington, DC, 8 Aug. 1996), via International Relations and Security Network <ISN@CC1.KULEUVEN.AC.BE>.

²⁰² At the Fourth Review Conference of the BTWC it declared formally that the Russian Federation has never produced nor stockpiled such weapons and abides by all provisions of the BTWC. Zanders, J. P., participating for SIPRI in the Fourth Review Conference, 27 Nov. 1996.

²⁰³ Starr (note 170); and Starr, B., 'Egypt and Syria are BW capable, says agency', *Jane's Defence Weekly*, vol. 26, no. 8 (21 Aug. 1996), p. 15.

²⁰⁴ Ember, L., 'Stress may be cause of Gulf War Syndrome ailments', *Chemical and Engineering News*, vol. 74, no. 48 (25 Nov. 1996), p. 38.

been a factor.²⁰⁵ It also questions whether Gulf War Syndrome may have been primarily caused by psychological factors or the stress of war.

The political debate surrounding Gulf War Syndrome intensified in the latter half of 1996 with the release of new data. Late in June the US Department of Defense admitted that hundreds of soldiers—a figure that eventually rose to over 20 000—may have been exposed to CW agents after US troops blew up a munition depot at Khamisiyah, north-west of Basra, in March 1991.²⁰⁶ Throughout the autumn new data on the possible exposure of US troops to harmful agents emerged, while the CIA experienced great difficulty to model the nerve-agent cloud drift.²⁰⁷ It was also reported in early December that military logs prepared for General Norman Schwarzkopf in March 1991 showed an unexplained eight-day gap.²⁰⁸

Also in December 1996 British Armed Forces Minister Nicholas Soames apologized for misinforming Parliament of the extent to which British troops had been exposed to organophosphate pesticides.²⁰⁹ Two months earlier the government had admitted for the first time that soldiers had been exposed to the chemicals.²¹⁰ Soames announced a plan to conduct health checks on 18 000 troops, of whom half will be Gulf War veterans. Twenty per cent of the Czech veterans of the war suffer similar symptoms, and in view of the new US information the Czech Defence Ministry ordered fresh medical tests of all veterans to determine the cause of the continuing medical problems.²¹¹

In its final report, published on 6 January 1997, the Presidential Advisory Committee acknowledged the presumption of exposure to CW agents but denied the implication of a presumption of long-term health effects.²¹² The next day the results of another major investigation were published which strongly suggested that the veterans suffered from nervous damage resulting from the synergistic effects of exposure to several chemical compounds, such as pesticides, insect repellents and possibly CW agents.²¹³

²⁰⁵ See also Stock, Haug and Radler (note 62), p. 705.

²⁰⁶ Graham, B. and Brown, D., 'US troops were near toxic gas blast in Gulf', *Washington Post* (22 June 1996), p. A01; and Central Intelligence Agency, *CIA Report on Intelligence Related to Gulf War Illnesses* (2 Aug. 1996). Version current on 11 Dec. 1996, URL <http://www.dtic.dla.mil/gulfink/cia_report/102496_war.html#1>.

²⁰⁷ Aldinger, C., 'Pentagon delays CIA data on Gulf War ills', *Washington Post* (11 Oct. 1996), p. A10.

²⁰⁸ Shenon, P., 'Records on chemical arms in Gulf War are incomplete, Pentagon admits', *International Herald Tribune*, 6 Dec. 1996, p. 3; and 'Transcript: Pentagon spokesman's Thursday briefing Dec. 5', *Wireless File* (United States Information Service, US Embassy: Stockholm, 6 Dec. 1996), URL <<http://www.usis.usemb.se/wireless/500/eur502.htm>>.

²⁰⁹ Butcher, T., 'Soames apology for misleading MPs about war', *Electronic Telegraph*, 11 Dec. 1996, URL <<http://www.telegraph.co.uk/et/access?ac=156216619733&pg=/96/12/11/ngulf11.html>>.

²¹⁰ Butcher, T., 'Gulf troops did face dangerous gases, says MOD', *Electronic Telegraph*, 5 Oct. 1999, URL <<http://www.telegraph.co.uk/et/access?ac=156216619733&pg=/96/10/5/ngulf05.html>>.

²¹¹ Rybavora, N., 'Czechs to re-examine health of Persian War veterans', *Boston Globe*, 26 Oct. 1996, URL <<http://www.boston.com/globe/ap/cgi-bin/retrieve.cgl?%2Fapwir%2Fworld%2F300%2F037>>.

²¹² Brown, D., 'Panel on Gulf War veterans' illnesses affirms most US efforts', *Washington Post*, 7 Jan. 1997, p. A11.

²¹³ Brown, D., 'New studies indicate 6 patterns of Gulf "Syndrome"', *Washington Post*, 9 Jan. 1997, p. A01.

Tokyo nerve gas attack trials

The trials against Aum Shinrikyo members for the 1995 nerve agent attack in the Tokyo underground revealed the extent of the religious sect's preparations to engage in chemical and biological terrorism. By April 1996, 177 cult members had been indicted²¹⁴ and 26 convicted.²¹⁵ The trial of sect leader Shoko Asahara began on 24 April 1996.²¹⁶ Although Asahara refused to plead guilty or not guilty,²¹⁷ a number of cult members testified against him. Prosecutors have gathered over 15 000 pieces of evidence against Asahara, whose trial could take up to 10 years to complete. If convicted, he could be executed. The cult was also accused of manufacturing illegal guns and developing biological agents and laser weapons.²¹⁸

During 1996 scattered incidents attributed to the cult continued to occur. On 7 April unidentified fumes in the Tokyo underground, possibly tear gas, resulted in 13 or 14 commuters being taken to hospital.²¹⁹ On 11 December the police discovered a container with 30–40 ml of VX on the bank of the Tamagawa Aqueduct in Kodaira, a western suburb of Tokyo.²²⁰ The nerve agent had been produced by an Aum Shinrikyo chemist.²²¹ In 1996 two victims of the Tokyo sarin attack remained in coma.²²² Other victims continue to suffer from various ailments including chronic headaches, amnesia and psychological disorders.²²³

VII. Conclusions

The creation of a global, verifiable CW disarmament regime is firmly on course. The strength and relevance of that regime, however, will depend on how some outstanding issues are resolved in the near future. The domestic political, economic and other factors influencing a decision by Russia and the USA on ratification of the CWC are complex, and predictions of when or even whether the two countries will deposit their instruments of ratification cannot be made with any degree of certainty. Restrictions on chemical trade and

²¹⁴ 'Japan, Asahara and O.J.', *The Economist*, vol. 339, no. 7964 (4 May 1996), pp. 58–59.

²¹⁵ Guest, R., 'Cult leader refuses to enter gas deaths plea', *Electronic Telegraph*, 25 Apr. 1996, URL <<http://www.telegraph.co.uk>>.

²¹⁶ Rafferty, K., 'Doomsday cult trial grips Japan', *Guardian Weekly*, vol. 154, no. 18 (5 May 1996), p. 4. Shoko Asahara's original name was Chizuo Matsumoto.

²¹⁷ Ernsberger, R. and Takayama, H., 'The guru goes to court', *Newsweek*, 6 May 1996, p. 23.

²¹⁸ Reuter, 'Japan cult guru evicted from subway gas trial', 7 Nov. 1996, URL <http://www.excite.com/NEWS/961107/17.INTERNATIONAL_SUBWAY.html>.

²¹⁹ 'Tokyo subway fumes sicken 14', *International Herald Tribune*, 8 Apr. 1996, p. 4; and 'Fumes sicken 14 in Japan subway', *Times of India*, vol. 159, no. 83 (8 Apr. 1996), p. 1.

²²⁰ 'Bottle of VX gas found in Tokyo suburb', *Japan Times* 12 Dec. 1996, URL <<http://www.japan-times.co.jp/news/news12-96/news12-12html#story6>>; and 'Cult member leads Japan police to nerve gas', CNN Interactive, 12 Dec. 1996, URL <<http://www.cnn.com/WORLD/9612/12/japan.subway.reut/index.html>>.

²²¹ 'VX gas found buried in Tokyo', *Asahi News*, 13 Dec. 1996, URL <http://www.asahi.com/english/enews.html#enews_5034>.

²²² Garran, R., 'TV station suppressed cult story, MPs told', *The Australian*, 20 Mar. 1996, p. 6.

²²³ Garran (note 222); and Parry, R., 'Cult gas attack haunts sole UK victim', *The Independent*, 20 Mar. 1996, p. 8.

effective implementation of the CWC may, however, play the key role in convincing both countries to ratify. Although it is difficult to predict the content of national declarations to the OPCW, entry into force of the CWC will almost certainly serve as a catalyst to initiate new destruction programmes for chemical weapons and old and abandoned CW and to stimulate the destruction efforts of existing programmes. Finally, as the quantity of chemical weapons is reduced the threat of terrorism and export control and national development issues will probably receive further increased attention.

Implementation of the CWC should also provide insight into how a verification regime under the BTWC could be structured. Although the problems remain formidable, some encouraging signs emerged in 1996 that the BTWC might become a verifiable disarmament treaty early in the next century.