

II. Chemical arms control

JOHN HART

The 1993 Chemical Weapons Convention (CWC) is the principal international legal basis for the prohibition of chemical warfare.¹ In 2015 Angola and Myanmar acceded to the convention. As of December 2015, 192 states parties were party to the regime.²

By the end of 2015, 27 states parties had implemented the Secure Information Exchange (SIX) system—launched in June 2014—for the transmission of declarations and related documentation.³ This represents a continuing shift away from a paper-based declaration system, which, in principle, should lead to a more streamlined and focused verification process.

The Organisation for the Prohibition of Chemical Weapons (OPCW), which is tasked with verifying compliance with the CWC, continued to broaden its engagement with a variety of stakeholders and implemented a range of technical and legal activities. The OPCW spent over €4.6 million (approximately \$5.3 million) in 2015 to facilitate more than 130 training courses, workshops and seminars to support the full implementation of Articles VII, X and XI of the CWC.⁴ The OPCW's Open-Ended Working Group on Terrorism established a subworking group to help formulate concrete recommendations to combat the threat of non-state actors. This group met for the first time in November 2015.⁵ As part of efforts to engage with the chemical industry and the scientific community, the OPCW established the Chemical Industry Coordination Group (CICG), which held its first meeting in November 2015.⁶ In 2016 the OPCW's Technical Secretariat will establish a Capacity-Building and Contingency-Planning Cell within the Inspectorate Division to strengthen planning and operational effectiveness.⁷

¹ Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (Chemical Weapons Convention, CWC), opened for signature 13 Jan. 1993, entered into force 29 Apr. 1997.

² Israel has signed (but not ratified) the CWC, while Egypt, North Korea and South Sudan remain non-signatories.

³ OPCW, Conference of the States Parties, 20th session, 'Opening statement by the Director-General', Note by the Director-General, OPCW Document C-20/DG.17, 30 Nov. 2015, para. 26. There is a long-held view among governments and other institutions that paper declarations are more secure. The OPCW's Technical Secretariat scans the paper declarations.

⁴ OPCW Document C-20/DG.17 (note 3), para. 28. Article VII provisions concern the structure and function of the OPCW, Article X provisions concern assistance and protection against chemical weapons, and Article XI provisions concern economic and technological development.

⁵ OPCW Document C-20/DG.17 (note 3), para. 24.

⁶ OPCW Document C-20/DG.17 (note 3), para. 32.

⁷ OPCW Document C-20/DG.17 (note 3), para. 23.

The OPCW's Scientific Advisory Board (SAB) endorsed the final report of a temporary working group (TWG) on verification published in June 2015.⁸ The TWG's recommendations will be further considered by the states parties.⁹ The OPCW also issued an ethical code of conduct and a handbook on the medical management of chemical warfare casualties.¹⁰

The 20th Conference of the States Parties

The 20th Conference of the States Parties (CSP) to the CWC, held in The Hague from 30 November to 4 December 2015, approved a programme and budget for 2016 totalling €67 075 500 (approximately \$77 million), of which €29 645 800 (\$34 million) will be used for verification-related costs, and €37 429 700 (\$43 million) will cover administration and 'other' costs.¹¹ The CSP reiterated a longstanding principle of maintaining zero-growth budgets. The assessed annual contributions by all the states parties for 2016 amounts to €65 529 600 (\$75 million); the CSP estimates that the amount to be contributed by parties inspected under Articles IV and V of the CWC will total €1 450 900 (\$1.7 million).¹² However, it is uncertain whether all the Article IV and V reimbursements will materialize. These costs consist of reimbursements for the direct costs of inspection of chemical weapon-related facilities, including verification of the destruction of chemical weapons.

There was a potential shortfall in the OPCW's operating budget, the nature of which was described in a note circulated by the OPCW's Director-General, Ambassador Ahmet Üzümcü, on 4 November 2015. The note stated that it would not be known whether there was a deficit until January 2016.¹³ This problem was caused by: (a) the expenses of Syrian-related activities, (b) the underpayment and late reimbursement for inspections under Articles IV and V of the CWC by some member states possessing chemical weapons or programme infrastructure, and (c) non-payment of assessed contributions by a substantial number of the states parties.¹⁴ One state party was €5.9 mil-

⁸ OPCW, *Verification: Report of the Scientific Advisory Board's Temporary Working Group* (OPCW: The Hague, June 2015).

⁹ OPCW, Scientific Advisory Board, 'The impact of developments in science and technology in the context of the Chemical Weapons Convention', OPCW Document EC-80/DG.7, 28 Aug. 2015.

¹⁰ OPCW, The Hague Ethical Guidelines, <<https://www.opcw.org/special-sections/science-technology/the-hague-ethical-guidelines/>>; and OPCW, *Practical Guide for Medical Management of Chemical Warfare Casualties* (OPCW: 2016).

¹¹ OPCW, Conference of the States Parties, 20th session, 'Decision, programme and budget of the OPCW for 2016', OPCW Document C-20/DEC.6, 3 Dec. 2015, para. 5(c).

¹² OPCW Document C-20/DEC.6 (note 11), para. 5(d).

¹³ OPCW Document C-20/DG.17 (note 3), para. 41. See also OPCW, Executive Council, 'Statement by the external auditor of the OPCW at the eightieth session of the Executive Council', OPCW Document EC-80/2, 8 Oct. 2015.

¹⁴ The inspected party reimburses the Technical Secretariat with the direct costs of inspection. Government budget cycles and reimbursement practice do not necessarily coincide with the

lion in arrears for the period 2013-15 and risked losing its voting privileges in accordance with paragraph 8 of Article VII of the CWC.¹⁵ For the first time the CSP authorized the OPCW to access its entire Working Capital Fund. It also approved the adoption of a two-year budget cycle and decided to establish a fund for OPCW special missions (such as those carried out in Syria). In addition, the CSP authorized the OPCW to apply surplus 2013 funds to expenses incurred in 2015.¹⁶

In his statement to the CSP, the Director-General noted that he had overseen further efforts towards achieving universal treaty membership. The Director-General sent letters in 2015 to the remaining non-member states—Egypt, Israel, North Korea and South Sudan—encouraging them to engage in dialogue on eventual treaty accession.¹⁷

The United Kingdom stated at the CSP that the OPCW's seven-year tenure policy should be revisited in the interest of maintaining institutional expertise.¹⁸ It also expressed support for the OPCW's knowledge management system, emphasizing the desirability of sharing information and experience across branches.¹⁹

Taking into account the work of the SAB on biomedical sampling and analysis and its relevance in the light of the continuing armed conflict in Syria and neighbouring regions, the CSP issued guidelines for the conduct of biomedical proficiency tests and designation of laboratories for the analysis of authentic biomedical samples.²⁰ The CSP also authorized the establishment of an advisory board on education and outreach.²¹ In addition, the OPCW laboratory at Rijswijk launched a training course on aspects related to participation in the OPCW proficiency tests with a view towards expanding the network of designated laboratories.²²

OPCW's annual programme and budget. Until the states parties established the Working Capital Fund, the OPCW had been precluded from carrying over budget surpluses from year to year.

¹⁵ OPCW official, Communication with author, The Hague, Dec. 2015.

¹⁶ OPCW, Conference of the States Parties, 20th session, 'Decision, establishment of a special fund for OPCW special missions and withholding of the distribution of the cash surplus for 2013', OPCW Document C-20/DEC.11, 3 Dec. 2015.

¹⁷ OPCW Document C-20/DG.17 (note 3), para. 7.

¹⁸ OPCW, Conference of the States Parties, 20th session, United Kingdom, 'Statement by H. E. Ambassador Sir Geoffrey Adams, Permanent Representative of the United Kingdom of Great Britain and Northern Ireland', 30 Nov. 2015, p. 2.

¹⁹ OPCW, Conference of the States Parties, 20th session, United Kingdom, (note 18), p. 2.

²⁰ OPCW, Conference of the States Parties, 20th session, 'Decision, designation of laboratories for the analysis of authentic biomedical samples and guidelines for the conduct of biomedical proficiency tests', OPCW Document C-20/DEC.5, 2 Dec. 2015.

²¹ OPCW, Conference of the States Parties, 20th session, 'Decision, establishment of an advisory board on education and outreach', OPCW Document C-20/DEC.9, 3 Dec. 2015.

²² OPCW Document C-20/DG.17 (note 3), para. 141. Since the entry into force of the CWC, laboratory proficiency tests have not been geographically balanced. Test scores for some laboratories in certain instances have fallen below national expectations, and the suspension of some laboratories' accreditation has caused embarrassment to some governments. The qualifications of OPCW accredited laboratories, particularly those that receive top scores, have not been questioned. The

The future of the CWC regime

In March 2015 the OPCW's Director-General issued a concept note on how the regime should appear in 2025 with respect to: (a) verification for continued confidence in compliance; (b) capacity development to prevent the hostile use of toxic chemicals and to foster international cooperation; and (c) engagement to leverage others' capabilities.²³

There were further reports in 2015 of the use of new or refined methods of dispersing toxic chemicals, particularly by law enforcement bodies. Some of these uses appeared to fall within the scope of the CWC. In April 2015 it was reported that the police in Lucknow, India, successfully tested drones for the dispersal of pepper spray. The police were reportedly equipped with five such drones costing 600 000 rupees (\$8900) each. The drones have high-resolution cameras, can carry 2 kilograms of the riot-control agent and fly within a 1 kilometre radius of the operator.²⁴ In the United States, the North Dakota state police acquired drones that are capable of tasing targets and dispersing tear gas.²⁵ Analysts, governments and other relevant parties continued to consider the implications of such developments with a view towards ensuring that the legal prohibition against chemical warfare is not undermined. In December 2015, 23 parties to the CWC issued a joint paper that provides a framework for how a discussion on the aerosolization of chemicals affecting the central nervous system for law enforcement purposes could be structured in order to help ensure that their development or use does not violate or undermine CWC prohibitions.²⁶

Chemical weapon destruction

As of 31 October 2015, the OPCW had verified the destruction of 64 437 tonnes (91.4 per cent) of all declared category 1 chemical weapons.²⁷ Since the

lists of all accredited laboratories and suspended laboratories (which are generally part of national defence establishments), together with their test scores, are publicly available on the OPCW's website, <<https://www.opcw.org/>>.

²³ OPCW, Technical Secretariat, 'The OPCW in 2025: ensuring a world free of chemical weapons', Note by the Technical Secretariat, OPCW Document S/1252/2015, 6 Mar. 2015.

²⁴ Agence France-Presse, 'Pepper-spraying drones could be used on unruly crowds by Indian police', *The Guardian*, 8 Apr. 2015. For a summary of non-lethal weapon industry trends see Wong, K., 'Mob busters: non-lethal weapons seek prime time', *Jane's International Defence Review*, vol. 48 (June 2015), pp. 34–39.

²⁵ Peterson, A., 'Police drones with tasers? It could happen in North Dakota', *Washington Post*, 27 Aug. 2015.

²⁶ OPCW, Conference of the States Parties, 20th session, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, Cyprus, Estonia, Germany, Finland, Ireland, Japan, New Zealand, Norway, Poland, Portugal, Republic of Korea, Spain, Switzerland, Turkey, the United States and the United Kingdom, 'Aerosolisation of central nervous system-acting chemicals for law enforcement purposes', Joint paper, OPCW Document C-20/NAT.2/Rev.2, 3 Dec. 2015.

²⁷ OPCW Document C-20/DG.17 (note 3), para. 20. The CWC's Annex on Chemicals comprises 3 'schedules' or categories. Schedule 1 consists of chemicals and their precursors judged to have few,

convention's entry into force, a total of eight states have declared chemical weapon stocks to the OPCW: Albania, India, Iraq, South Korea, Libya, Syria, Russia and the USA.²⁸ Chemical weapon stockpiles remain in Iraq, Libya, Russia and the USA. Elements of the Syrian chemical weapon programme still await destruction under OPCW verification.

Libya

Libya made limited progress towards completing the destruction of its category 2 chemical weapons. However, the unstable security situation in the country continued to hamper destruction efforts.

Russia

By the end of 2015, Russia had completed the destruction of 92 per cent of its stockpile.²⁹ In 2015 destruction operations at facilities in Leonidovka, Maradykovsky, Pochep and Shchuchye were completed. Russia now has only one remaining chemical weapon destruction facility, which is located in Kizner.³⁰

The United States

By the end of 2015, the USA had destroyed approximately 89.8 per cent of its category 1 chemical weapons and was scheduled to complete its destruction operations by September 2023.³¹ The final two destruction facilities at Pueblo, Colorado, and Blue Grass, Kentucky, are still being scaled up. The Pueblo Chemical Agent-Destruction Pilot Plant began trials in 2015, while construction of the Blue Grass Chemical Agent-Destruction Pilot Plant was 98 per cent complete as of November 2015.³²

Syria

The OPCW Mission in the Syrian Arab Republic continued its work in 2015. The mission's main focus in 2015 was to verify the destruction of chemical weapon production facilities (CWPFs), and to establish and operationalize

if any, peaceful applications. Chemicals listed in schedules 2 and 3 have wider peaceful, including commercial, applications.

²⁸ In 2009 Iraq declared to the OPCW remnants from the time of Saddam Hussein that were judged by international inspectors (from the United Nations Special Commission on Iraq and then the United Nations Monitoring, Verification and Inspection Commission) as being inactivated or otherwise unusable. For further details of the declarations see Hart, J. and Clevestig, P., 'Reducing security threats from chemical and biological materials', *SIPRI Yearbook 2010*, p. 412; and Hart, J. and Clevestig, P., 'Reducing security threats from chemical and biological materials', *SIPRI Yearbook 2011*, pp. 396–98.

²⁹ OPCW Document C-20/DG.17 (note 3), para. 21.

³⁰ OPCW Document C-20/DG.17 (note 3), para. 21.

³¹ OPCW Document C-20/DG.17 (note 3), para. 51.

³² OPCW Document C-20/DG.17 (note 3), paras 52–54.

a special remote monitoring system at five underground structures.³³ As of March 2015, the OPCW had 12 staff members working in the OPCW Mission in the Syrian Arab Republic.³⁴ This mission was also supported by the United Nations Office for Project Services and the UN Department for Safety and Security. The OPCW's Director-General was also assisted by a special advisor on Syria, Ambassador José Artur Denot Medeiros of Brazil.

The last of Syria's declared chemical weapons were destroyed on 4 January 2016 after a US firm had completed the destruction of 75 cylinders of hydrogen fluoride.³⁵ Eleven of Syria's 12 declared CWPFs had been destroyed under OPCW verification as of December 2015.³⁶

The OPCW's Declaration Assessment Team (DAT) and Fact-Finding Missions (FFM) continued their work in 2015 to clarify the completeness and accuracy of Syria's declarations (see section III). The OPCW also began to participate in the work of the Joint Investigative Mechanism (JIM) established in accordance with UN Security Council Resolution 2235 (2015), which became operational in November 2015.

Samples were taken by the DAT in Syria in December 2014–January 2015. The analytical results of these samples were received by OPCW from two designated laboratories on 3 and 4 March 2015. The OPCW provided Syria with a summary of these results on 10 March.³⁷ The DAT conducted consultations and interviews with 'key principals from the Syrian chemical weapons programme'.³⁸ The DAT also visited Syria on 22 March–3 April 2015.³⁹

In addition, the OPCW carried on with its implementation of so-called special monitoring measures agreed in July 2014, including (a) the use of a 'vault monitoring system', (b) the installation and testing of fibre-optic cables at three underground structures, and (c) the construction of base monitoring stations for the underground structures.⁴⁰

Old or abandoned chemical weapons

The OPCW continued to verify declarations and destruction operations of old and/or abandoned chemical weapons (OACWs) in 2015.⁴¹ It conducted inspections of ACWs in Belgium, France, Germany, Italy, Switzerland and the UK.⁴²

³³ OPCW, Executive Council, 'Progress in the elimination of the Syrian chemical weapons programme', OPCW Document EC-79/DG.1, 23 Mar. 2015, para. 16.

³⁴ OPCW Document EC-79/DG.1 (note 33), para. 8.

³⁵ OPCW, 'Destruction of Syrian chemical weapons completed', Press release, 4 Jan. 2016.

³⁶ OPCW Document C-20/DG.17 (note 3), para. 11.

³⁷ OPCW Document EC-79/DG.1 (note 33), para. 11.

³⁸ OPCW Document EC-79/DG.1 (note 33), para. 12.

³⁹ OPCW Document EC-79/DG.1 (note 33), para. 12.

⁴⁰ OPCW Document EC-79/DG.1 (note 33), para. 13.

⁴¹ For further details of chemical weapon and old or abandoned chemical weapon (ACW) stockpiles and the status of their destruction see previous editions of the *SIPRI Yearbook*.

⁴² OPCW Document C-20/DG.17 (note 3), para. 63.

ACW destruction operations also continued in China.⁴³ Destruction and recovery operations at six sites of chemical weapons abandoned by Japan in China during World War II have been ongoing for several years.⁴⁴ As of 2 December 2015, 39 240 ACWs of a total of 52 675 declared ACWs had been destroyed.⁴⁵ Operations at Nanjing and Wuhan were completed in 2013 and 2015 respectively.⁴⁶ Excavation, recovery and test destruction operations continued to be conducted at Haerbaling where an estimated 300 000–400 000 ACWs remain buried. Destruction operations at Haerbaling could continue until at least 2020.⁴⁷

International verification and destruction operations: lessons learned

In 2015 the UN Office for Disarmament Affairs (UNODA) published its lessons learned findings on the work of the UN Secretary-General's investigative mechanism for alleged use of chemical and biological weapons (SGM), which was invoked in 2013 at the request of the Syrian Government.⁴⁸ This investigation was then transformed into an international maritime chemical removal operation during September 2013–July 2014 (the OPCW–UN Joint Mission). The SGM conclusions, which are also relevant to OPCW verification work, were divided according to: (a) activation of the mechanism, (b) strategic partnerships, (c) training and information sharing, (d) unity and consistency of the mission, and (e) legal aspects. The findings identified areas for improvement, including enhancing communication channels and updating the roster of national experts the UN Secretary-General may call upon to implement the SGM.

On 9–11 March 2015 the OPCW hosted a workshop to review the lessons learned from the OPCW–UN Joint Mission. The meeting concluded that such operations require: (a) 'clear conceptualization and common understanding' of the operation, (b) 'clarity of roles, responsibilities and expecta-

⁴³ ACWs are weapons abandoned by a state after 1 Jan. 1925 on the territory of another state without the consent of the latter. Article II of the CWC, para. 6.

⁴⁴ Mobile destruction facility operations have been (or will be) conducted at Nanjing, Wuhan, Shijiazhuang, Harbin and Guangzhou. Excavation and recovery operations continue to be carried out at Haerbaling and, periodically, at various field and underwater locations (e.g. at construction sites).

⁴⁵ OPCW, Conference of the States Parties, 20th session, Japan, poster no. 1, ('Abandoned chemical weapons in China: progress in 2015'), Poster session, The Hague, 30 Nov.–4 Dec. 2015.

⁴⁶ OPCW, Conference of the States Parties, 20th session, Japan, poster no. 1 (note 45).

⁴⁷ OPCW, Conference of the States Parties, 20th session, Japan, poster no. 4, ('Operations in Haerbaling: 4.3 test destruction'), Poster session, The Hague, 30 Nov.–4 Dec. 2015.

⁴⁸ For further details of the UN Secretary-General's investigative mechanism see United Nations Office for Disarmament Affairs (UNODA), 'Relating to the Secretary-General's mechanism for investigation of alleged use of chemical and biological weapons', Key documents, [n.d.]. See also Hart, J. and Clevestig, P., 'Reducing security threats from chemical and biological materials', *SIPRI Yearbook 2014*, pp. 389–401; and Hart, J. and Clevestig, P., 'Reducing security threats from chemical and biological materials', *SIPRI Yearbook 2015*, pp. 582–85.

tions', (c) capacity to cope with 'limited opportunity for operational foresight and planning', (d) 'clear channels of communication for all stakeholders', and (e) 'early attention to public messaging and communication strategy'.⁴⁹ A number of the parties involved in the operation also undertook their own national evaluations.⁵⁰

Chemical safety and security

In June 2015 a delivery driver, who is believed to have been inspired by militant Islamist groups, beheaded his supervisor and then detonated an explosive at a US-owned chemical plant near Lyon in France. Firefighters prevented the individual from causing further damage to the plant.⁵¹

On 12 August an explosion occurred at chemical storage warehouses in the Chinese port city of Tianjin. One report states that the explosion killed at least 160 people, while another estimates the death toll at 100, including 21 fire fighters, with more than 700 injured.⁵² Rui Hai International Logistics owned the chemical storage warehouses, which contained, among other items, approximately 700 tonnes of sodium cyanide (70 times the legal limit), 1300 tonnes of ammonium nitrate and potassium nitrate, 500 tonnes of magnesium, and unspecified quantities of sodium metal and calcium carbide.⁵³

These publicly visible incidents underline the continuing importance of maintaining and strengthening chemical safety and security not only in terms of operations but also in terms of policy (including relevant legal aspects).

⁴⁹ OPCW and United Nations Office for Disarmament Affairs (UNODA), Workshop on the Lessons Learned from the International Maritime Operation to Remove and Transport the Syrian Chemical Materials in Furtherance of Security Council Resolution 2118 (2013) and Relevant OPCW Executive Council Decisions, OPCW Headquarters, The Hague, 9-11 Mar. 2015, Summary document, p. 14.

⁵⁰ See e.g. 'Operation RECSYR—lessons learned: a Norwegian perspective', Non-paper, 2 July 2015.

⁵¹ Breeden, A. and Rubin, A. J., 'French authorities hold suspect in beheading and explosion at chemical plant', *New York Times*, 26 June 2015.

⁵² Peplow, M., 'After Tianjin', *Chemistry World*, 17 Sep. 2015; and Oppenheimer, A., 'The heartlands of chemical warfare', *Military Technology*, vol. 39, no. 11 (Nov. 2015), p. 50.

⁵³ Peplow (note 52).