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Contemporary Challenge of Chemical Non-Proliferation and International Law

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Introduction

Chemical weapons, categorised as one type of weapons of mass destruction, remain a threat to human beings even in the twenty-first century. The massive use of chemical weapons was witnessed for the first time in modern history during World War I, when nearly 5,000 combatants suffered from the chemical attacks at Ypre, Belgium, in April 1915. In 2013, almost one hundred years after their first use in war, these hideous weapons were employed again, resulting in a large number of victims. Five incidents, all occurring in the Syrian Arab Republic, were confirmed by the United Nations (UN) mission that was established to investigate the alleged use of such weapons in Syria.¹⁾

Why has history repeated itself? Why has the international community failed to prevent these incidents from occurring? Admittedly, the use of chemical weapons in Syria has undermined the concerted, tireless and enduring efforts of the international community to eradicate them. However, this does not necessarily mean that these efforts have been completely in vain. Rather, the international community has been relatively successful in banning chemical weapons. Except for the chemical attacks by Iraq against Iran during the 1980s, there has been no confirmed use of chemical weapons by States from the end of World War II to mid-2013, though several allegations of such use have been made.

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1) UN Doc. S/2013/735 A/68/663, dated 13 December 2013, p. 2.

In response to the latest incidents in Syria, it would perhaps be more appropriate for the international community to review its past efforts in this area in order to learn lessons from the incidents of proliferation, and to bridge the gap between existing regulatory regimes and their application in reality. In this regard, the author stresses the value of international law, which has played a key role in establishing, maintaining and promoting substantive norms and standards, as well as procedural mechanisms.

Compared to their destruction, the non-proliferation of chemical weapons has assumed greater importance because of the steady progress in destruction measures under the Chemical Weapons Convention (CWC)²). Although the issue of non-proliferation has been tackled by existing multiple international legal regimes in various ways, its realisation remains a difficult task. Non-proliferation requires long-lasting efforts and the striking of a balance between the peaceful use of dual-use chemicals and their security risks. Consequently, multiple non-proliferation regimes should continue to be sound in the long term and at the same time adaptable to possible changes in the international environment.

Against this background, the present article seeks to examine international efforts to achieve the non-proliferation of chemical weapons under multiple international legal regimes. The author first illustrates the status of proliferation throughout the twentieth century, and then discusses the relevant legal developments.

I The Status of Proliferation

Weapons are a means of warfare mainly developed, produced, possessed and, more importantly, in the case of armed conflict, used by States. Until the end of the Cold War, chemical weapons had been no exception. In the early twentieth century, major powers such as Germany, the United Kingdom, France, the United States (US), the Soviet

2) By 1 December 2014, 61,445 tons (or 87%) of declared category I chemical weapons stockpiles had been destroyed (OPCW Doc. C-19/DG.16, dated 1 December 2014, p. 2, paragraph 14).

Union, Italy and Japan were deeply involved in their own chemical programs. During the Cold War, chemical weapons were not only stockpiled by the US, the Soviet Union and several European States, but also proliferated to the Third World. They are technically much easier and financially cheaper to produce than nuclear weapons; thus, they have been described as “the poor man’s atomic bombs.” Proliferation did not stop at the State level but extended to include non-State actors. In several non-international armed conflicts, even insurgents were accused of using chemical weapons. In 1995, the chemical security paradigm changed when chemical attacks conducted by a doomsday cult in Tokyo alerted the world that the proliferation of such weapons had even reached the terrorists.

1. Before World War II: Monopoly of Major Powers

Although chemical agents had been used as a means of warfare since ancient times, it was not until World War I that their employment on a large scale in the battlefield was seen for the first time in modern history. On 22 April 1915, Germany successfully carried out a chlorine attack at Yeper in Belgium. Thereafter, both Germany and the Allied States used chemical weapons against one another, developing and employing several new types of chemical weapons, such as phosgene, chloropicrin and mustard. World War I was literally a chemical war in the sense that chemical warfare agents were *the* most powerful and destructive weapons used at that time. It is estimated that 124,000 tons of chemical agents were employed, which resulted in nearly 90,000 deaths and more than one million victims mainly on the European continent.³⁾ Close ties between its military and industrial sectors enabled Germany to gain a significant advantage over the Allied States in the chemical war in both quantitative and qualitative terms. The United Kingdom and France attempted to catch up with Germany, and used chemical weapons as soon as they were produced. Other major powers, such as the US, the Soviet Union, Italy and Japan, also embarked on the development of

3) Jonathan B. Tucker, *War of Nerves* (2006), p. 20.

chemical weapons and increased their stockpiles.

2. After World War II: Chemical Arms Race and Proliferation

Soon after the end of World War II, the US and the Soviet Union—the two respective leaders of the Western and Eastern political blocs—began a serious confrontation with each other and intensified an arms race mainly in the field of nuclear weapons. Although the emergence of nuclear weapons reduced the value of chemical weapons, the two superpowers did not exclude the chemical option; rather, they both continued to be deeply engaged in the chemical arms race while benefiting from Germany's capacity to produce nerve agents such as tabun and sarin. While the Soviet Union seized German facilities and moved them to its territory for reassembling,⁴⁾ the US made efforts to obtain information on German breakthroughs in close cooperation with the United Kingdom.⁵⁾ By the 1970s, the US had succeeded in developing a new generation of super-toxic nerve agents and shifted its focus to binary chemical weapons with the aim of ensuring their safe handling. In the context of the confrontation between the East and the West, chemical weapons were not only stockpiled in the territories of the two superpowers, but also deployed in those of their allies.⁶⁾ Meanwhile several allegations of chemical weapons use were raised by the opposing blocs, but none of these were confirmed. For instance, in 1951, the Democratic People's Republic of Korea alleged the use of such weapons by the US in the Korean War,⁷⁾ but this allegation was denied by the Unified Command under the US.⁸⁾ The US was also accused of using toxic gas during the Viet Nam War.⁹⁾ In 1982, the US argued that the Soviet Union had

4) Edward M. Spiers, *A History of Chemical and Biological Weapons* (2010), p. 60; Tucker, *ibid.*, pp. 106–107.

5) Tucker, *ibid.*, pp. 83–91.

6) The US maintained stockpiles in Okinawa, Japan and Clausen, Germany (Tucker, *ibid.*, pp. 214–216, 220–222, 295–297).

7) UN Doc. S/2296, dated 14 August 1951.

8) UN Doc. A/2228, dated 10 October 1952, p. 5.

9) United Nations Yearbook 1965, p. 3; UN Doc. S/9651, dated 18 February 1970; S/10450, dated 13 December 1971; see also UN Doc. A/35/71, dated 23 January 1980.

used chemical weapons in Afghanistan.¹⁰⁾

A more serious issue during the Cold War was the proliferation of chemical weapons to developing countries, with their actual use becoming more likely because the production of chemical weapons was relatively easy and incurred less costs than that of nuclear weapons. A number of formal allegations of the use of chemical weapons, as seen below, indicate that the technology and the expertise of producing chemical weapons may have spread to less stable regions of the world.¹¹⁾ In 1967, Saudi Arabia submitted to the UN Secretary-General an allegation of the employment of lethal gas by Egypt in Northern Yemen, resulting in “over a hundred dead and many injured.”¹²⁾ This allegation was denied by Egypt. In the late 1970s and early 1980s, Kampuchea made several allegations regarding Viet Nam’s use of toxic chemicals and poisonous gas,¹³⁾ and the US and Canada also alleged the use of chemical weapons by Viet Nam and Laos.¹⁴⁾ These allegations were investigated by the UN mission, which was unable to obtain any conclusive findings.¹⁵⁾ In the 1980s, Iran submitted a number of communications to the UN, condemning the use of chemical weapons by Iraq.¹⁶⁾ In fact, these allega-

10) UN Doc. A/37/157, dated 22 March 1982; A/C.1/37/10, dated 29 November 1982.

11) In addition, many *informal* allegations have been reported by the media. These include the possible use of chemical weapons in Afghanistan, Angola, Myanmar, Somalia, Sri Lanka and Sudan (*SIPRI Yearbook 1990*, pp. 108–111; *SIPRI Yearbook 1996*, pp. 662–223).

12) UN Doc. S/7793, dated 27 February 1967, pp. 1–2.

13) Approximately 40 letters were submitted. *e.g.* UN Doc. S/12930, dated 17 November 1978; A/34/464 S/13533, dated 10 September 1979; A/35/80 S/13769, dated 29 January 1980; A/36/81, dated 26 January 1981; A/37/72, dated 19 January 1982; A/38/326, dated 4 August 1983; A/39/113, dated 2 February 1984.

14) UN Doc. A/36/509, dated 14 September 1981; A/C.1/36/10, dated 12 November 1981; A/37/102, dated 24 February 1982; A/37/157, dated 22 March 1982; A/37/234, dated 20 May 1982; A/37/308, dated 23 June 1982; A/38/326, dated 4 August 1983; A/39/113, dated 21 February 1984.

15) UN Doc. A/37/259, dated 1 December 1982, p. 50, para. 197.

16) More than 70 letters were sent. *e.g.* UN Doc. S/16128, dated 3 November 1983; S/16998, dated 12 March 1985; S/17782, dated 31 January 1986; S/18553, dated 2 January 1987; S/19193, dated 9 October 1987.

tions were confirmed by the UN investigation team.¹⁷⁾ After the Gulf War, the United Nations Special Commission (UNSCOM) revealed that Iraq had a chemical program and identified 207 companies from 21 States that had contributed to the build-up of Iraq's chemical weapons capability.¹⁸⁾ Further allegations continued to be registered. Thus, in the late 1980s and early 1990s, Israel was condemned for the “[u]sage of toxic gas, which resulted, inter alia, in the killing of many Palestinians.”¹⁹⁾ Libya was also criticised by the US for producing chemical weapons.²⁰⁾ In March 1990, in response to the US allegations, Libya reaffirmed its full commitment to all “international endeavours that have the aim of outlawing the production, stockpiling and use of chemical and other weapons of mass destruction.”²¹⁾ In August 1998, the US destroyed a chemical factory in Sudan, alleging that it was being used to

17) UN Doc. S/15834, dated 20 June 1983; S/16433, dated 26 March 1984; S/17127, dated 24 April 1985; S/17911, dated 12 March 1986; S/18852, dated 8 May 1987; S/19823, dated 25 April 1988; S/20060, dated 20 July 1988; S/20063, dated 25 July 1988; S/20134, dated 19 August 1988.

18) *SIPRI Yearbook 1992*, p. 162.

19) UN Doc. A/RES/43/58A, dated 6 December 1988, paragraph 9(i); A/RES/44/48A, dated 8 December 1989, paragraph 9(i); A/RES/46/47A, dated 9 December 1991, paragraph 9(i).

20) Chemical Weapons Proliferation, Testimony of William H. Webster, Director of Central Intelligence, Hearing of the Senate Foreign Relations Committee, 1 March 1989 (<http://www.c-span.org/video/?7060-1/chemical-weapons-proliferation>); Lou Cannon and David B. Ottaway, New Attack on Libya Discussed, *Washington Post*, 22 December 1988, at A1, col. 1; Editorial, That Libyan Chemical Plant, *Washington Post*, December 27, 1988, at A14, col. 1; Michael R. Gordon, Libya Offers to Allow Inspection of Chemical Plant but U.S. Balks, *New York Times*, 31 December 1988, at A1, col. 1; Stephen Engleberg with Michael R. Gordon, Germans Accused of Helping Libya Build Nerve Gas Plant, *New York Times*, 1 January 1989, at A1, col. 1; Robert Pear, U.S. Will Propose Wide U.N. Powers on Chemical Weapons, *New York Times*, 3 January 1989, at A1, col. 6; James M. Markham, Bonn Sees No Proof Yet of Company's Role in Chemical-Arms Plant, *New York Times*, 3 January 1989, at A6, col. 1. See also Marshall Silverberg, “International Law and the Use of Force: May the United States Attack the Chemical Weapons Plant at Rabta?,” *Boston College International and Comparative Law Review*, volume 13 Issue 1 (1990), pp. 53–89.

21) UN Doc. S/21185 A/45/163, dated 12 March 1990. See also UN Doc. S/1996/342, dated 8 May 1996.

produce chemical weapons.²²⁾ This allegation was denied by Sudan immediately after the US attack.²³⁾ In September 2004, the report of the use of chemical weapons against civilians in Darfur was categorically rejected by the Government of Sudan.²⁴⁾ Finally, as mentioned above, the use of chemical weapons in Syria in 2013 was confirmed by the UN mission, with the Western States arguing that the Assad regime should be held accountable for such chemical attacks.²⁵⁾

It should be recalled that during the period of negotiating the CWC in the second half of the 1980s, many States officially declared their chemical weapons and industrial capacities at the meetings of the Conference on Disarmament. The US, having already been identified as a possessor State, even declared the locations of its stockpiles.²⁶⁾ The Soviet Union publicly acknowledged the possession of chemical weapons and the suspension of their production.²⁷⁾ Canada and the United Kingdom admitted that they had retained chemical weapons in the past but confirmed

22) Press Briefing by Secretary of State Madeleine Albright and National Security Advisor Sandy Berger, 20 August 1998 (<http://www.presidency.ucsb.edu/ws/index.php?pid=48285>). See also Michael Barletta, "Chemical Weapons in the Sudan: Allegations and Evidence," *The Non-Proliferation Review*, Fall 1998, pp. 115–136.

23) UN Doc. S/1998/786, dated 21 August 1998.

24) <http://www.opcw.org/news/article/sudans-official-position-regarding-allegations-of-use-of-chemical-weapons-in-the-darfur-region/>

25) United Kingdom, Letter from the Chairman of the Joint Intelligence Committee (JIC) about reported chemical weapons use in Syria, dated August 29, 2013, (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/235094/Jp_115_JD_PM_Syria_Reported_Chemical_Weapon_Use_with_annex.pdf); United States, Government Assessment of the Syrian Government's Use of Chemical Weapons on August 21, 2013, (<http://www.whitehouse.gov/the-press-office/2013/08/30/government-assessment-syrian-government-s-use-chemical-weapons-august-21>); France, Syrian chemical programme – National executive summary of declassified intelligence (September 2, 2013) (http://www.diplomatie.gouv.fr/en/IMG/pdf/Syrian_Chemical_Programme.pdf).

26) CD Doc. CD/PV.369, dated 10 July 1986, p. 4; CD/PV.458, dated 19 April 1988, p. 9; CD/PV.469, dated 28 July 1988, p. 4. See also National Security Decision Memorandum 35, dated 25 November 1969; *SIPRI Yearbook 1968/69*, p. 112.

27) CD Doc. CD/751, dated 13 April 1987, p. 5. According to the official statement, the stocks of chemical weapons in the Soviet Union do not exceed 50,000 tons of poisonous substances (*SIPRI Yearbook 1988*, p. 108).

their non-possession of such weapons in 1987 and 1988, respectively.²⁸⁾ Almost all States declared their non-possession of chemical weapons,²⁹⁾ including Argentina,³⁰⁾ Australia,³¹⁾ Belgium,³²⁾ Brazil,³³⁾ Bulgaria,³⁴⁾ Burma,³⁵⁾ China,³⁶⁾ Cuba,³⁷⁾ Czechoslovakia,³⁸⁾ Egypt,³⁹⁾ Ethiopia,⁴⁰⁾ France,⁴¹⁾ Federal Republic of Germany,⁴²⁾ German Democratic Republic,⁴³⁾ Hungary,⁴⁴⁾ India,⁴⁵⁾ Indonesia,⁴⁶⁾ Italy,⁴⁷⁾ Japan,⁴⁸⁾ Kenya,⁴⁹⁾ Mexico,⁵⁰⁾ Mongolia,⁵¹⁾ Morocco,⁵²⁾ the Netherlands,⁵³⁾ Nigeria,⁵⁴⁾ Paki-

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- 28) CD Doc. CD/PV.433, dated 25 August 1987, p. 7; CD/PV.474, dated 16 August 1988, p. 9.
- 29) The Federal Republic of Germany took the initiative in circulating a request for voluntary “provision of data relevant to the Chemical Weapons Convention” (CD Doc. CD/828, dated 12 April 1989).
- 30) Mendoza Accord on 5 September 1991 (UN Doc. A/46/463, dated 12 September 1991, Annex).
- 31) CD Doc. CD/907, dated 23 March 1989, p. 2.
- 32) CD Doc. CD/PV.424, dated 23 July 1987, p. 15.
- 33) CD Doc. CD/PV.460, dated 26 April 1988, p. 3; Mendoza Accord on 5 September 1991.
- 34) CD Doc. CD/PV.457, dated 14 April 1988, p. 8; CD/1017, dated 19 July 1990, p. 2.
- 35) CD Doc. CD/PV.452, dated 29 March 1988, p. 9.
- 36) CD Doc. CD/PV.453, dated 31 March 1988, p. 14.
- 37) CD Doc. CD/PV.603, dated 22 August 1991, p. 4.
- 38) CD Doc. CD/878, dated 18 January 1989, p. 3.
- 39) CD Doc. CD/PV.459, dated 21 April 1988, p. 7.
- 40) CD Doc. CD/PV.487, dated 16 February 1989, p. 11.
- 41) CD Doc. CD/PV.484, dated 7 February 1989, p. 33; CD/1141 CD/CW/WP.390, dated 3 March 1992, p. 3.
- 42) CD Doc. CD/PV.437, dated 4 February 1988, p. 27; CD/PV.474, dated 16 August 1988, p. 3.
- 43) CD Doc. CD/871 CD/CW/WP.212, dated 12 September 1988, p. 1.
- 44) CD Doc. CD/PV.437, dated 4 February 1989, p. 13; CD/969 CD/CW/WP.277, dated 19 February 1990, p. 3.
- 45) CD Doc. CD/PV.459, dated 21 April 1988, p. 10; Joint Declaration on the Complete Prohibition of Chemical Weapons on 19 August 1992.
- 46) CD Doc. CD/PV.437, dated 4 February 1989, p. 5.
- 47) *Ibid.*, p. 18.
- 48) CD Doc. CD/PV.424, dated 23 July 1987, p. 7.
- 49) CD Doc. CD/PV.499, dated 30 March 1989, p. 9.
- 50) CD Doc. CD/PV.421, dated 14 July 1987, p. 21.
- 51) CD Doc. CD/PV.442, dated 23 February 1988, p. 5.
- 52) CD Doc. CD/PV.367, dated 3 July 1986, p. 7.

stan,⁵⁵⁾ Peru,⁵⁶⁾ Poland,⁵⁷⁾ Romania,⁵⁸⁾ Sweden,⁵⁹⁾ Yugoslavia,⁶⁰⁾ Austria,⁶¹⁾ Chile,⁶²⁾ Denmark,⁶³⁾ Finland,⁶⁴⁾ Republic of Korea,⁶⁵⁾ New Zealand,⁶⁶⁾ Norway,⁶⁷⁾ Spain,⁶⁸⁾ Switzerland⁶⁹⁾ and Viet Nam⁷⁰⁾. Such voluntary declarations were expected to contribute majorly to the building of the confidence necessary for concluding the negotiations and achieving the entry into force of the Convention. However, their correctness and usefulness were to be tested by the mandatory declaration under Article III of the 1993 CWC, the implementation of which clearly revealed the status of chemical weapons proliferation. Under this Convention, chemical weapons stockpiles were declared by eight States Parties: Albania, India, Iraq, Libya, Republic of Korea, Russia, Syria and the US.⁷¹⁾ In addition, the present and past possessions of chemical weapons production facilities were notified by fourteen States: Bosnia and Herzegovina, China, France, India, Iran, Iraq, Japan, Libya, Republic of Korea, Russia, Serbia, Syria, the United Kingdom and the

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- 53) CD Doc. CD/PV.309, dated 18 April 1985, p. 18.
54) CD Doc. CD/PV.517, dated 13 July 1989, p. 8.
55) CD Doc. CD/PV.339, dated 13 February 1986, p. 9; Joint Declaration on the Complete Prohibition of Chemical Weapons on 19 August 1992.
56) CD Doc. CD/PV.472, dated 9 August 1988, p. 6.
57) CD Doc. CD/PV.419, dated 7 July 1987, p. 18; CD/985 CD/CW/WP.289, dated 17 April 1990, p. 2.
58) CD Doc. CD/PV.440, dated 16 February 1988, p. 13; CD/1014/Rev.1 CD/CW/WP.305/Rev.1, dated 27 July 1990, p. 2.
59) CD Doc. CD/PV.481, dated 13 September 1988, p. 27.
60) CD Doc. CD/PV.550, dated 10 April 1990, p. 11.
61) CD Doc. CD/PV.471, dated 4 August 1988, p. 4.
62) CD Doc. CD/1042, dated 3 December 1990; Mendoza Accord on 5 September 1991.
63) CD Doc. CD/991, dated 25 April 1990, p. 2.
64) CD Doc. CD/PV.441, dated 18 February 1988, p. 4.
65) CD Doc. CD/PV.573, dated 14 August 1990, p. 8.
66) CD Doc. CD/PV.445, dated 3 March 1988, p. 5.
67) CD Doc. CD/PV.448, dated 15 March 1988, p. 5.
68) CD Doc. CD/PV.422, dated 16 July 1987, p. 6.
69) CD Doc. CD/PV.270, dated 5 July 1984, p. 11.
70) CD Doc. CD/PV.498, dated 28 March 1989, p. 11.
71) cf. OPCW Doc. C-19/4, dated 3 December 2014, p. 4, paragraph 1.2.

US.⁷²⁾ The fact that at least three States—India, Libya and the Republic of Korea—retained chemical weapons despite their official announcements of non-possession, shows the degree of effectiveness of the values and challenges of the verification measures under the CWC.

Furthermore, after the end of the Cold War, several allegations that insurgents had used chemical weapons in non-international armed conflicts were made. In 1992, both Mozambique and Armenia requested the UN Secretary-General to investigate the alleged use of chemical weapons. Mozambique's allegation was related to guerrillas of the Mozambican National Resistance,⁷³⁾ while Armenia's request aimed to clarify allegations from Azerbaijan regarding the use of chemical weapons by Armenians in the region of Nagorno-Karabakh.⁷⁴⁾ In both cases, the UN missions were unable to conclude that chemical weapons had been used due to a lack of evidence.⁷⁵⁾ In 1993, during the armed conflict in Bosnia-Herzegovina, the President of the Tuzla region and the Commander of the Second Corps of "the Armed Forces of the Republic of Bosnia-Herzegovina" warned that they had "prepared containers and sufficient amounts of chlorine, as well as other chemical things to neutralize the living forces on the territories of almost all of Europe," but this statement was not endorsed by the Government of Bosnia-Herzegovina.⁷⁶⁾ The Federal Republic of Yugoslavia expressed the most profound concern over the use of chemical weapons in Bosnia and Herzegovina.⁷⁷⁾ In 2007, the insurgents in Iraq were condemned for using chlorine gas against civilians.⁷⁸⁾

72) cf. OPCW Doc. RC-1/S/6, dated 25 April 2003, paragraph 4.6; EC-56/DG.10, dated 21 April 2009, paragraph 5; C-19/4, dated 3 December 2014, p. 9, para.1.31. Chemical Disarmament, Volume 3 No.1/March 2005, p. 9. Of these, one facility was declared by two States Parties (Bosnia and Herzegovina and Serbia). A facility in Japan was constructed by the Aum Shinrikyo cult group, which carried out the Tokyo subway sarin attack in 1995.

73) *SIPRI Yearbook 1993*, p. 262.

74) *Ibid.*, pp. 261–262.

75) UN Doc. S/24065, dated 12 June 1992; S/24344, dated 24 June 1992.

76) UN Doc. S/25994, dated 24 June 1993.

77) UN Doc. S/26672*, dated 2 November 1993.

78) See <http://www.un.org/News/Press/docs/2007/sc8963.doc.htm>; UN Doc. S/

3. Beginning of the Era of Terrorism: Tokyo Subway Chemical Attack

In March 1995, the Tokyo subway chemical attack made headlines throughout the world, being the first case involving a terrorist use of chemicals in modern history. The doomsday cult group, Aum Shinrikyo, targeted five trains of three underground lines scheduled to arrive at the Kasumigaseki station in the heart of the Japanese government district of Tokyo during morning peak hour. The release of sarin resulted in 12 deaths and over 5,500 injuries.⁷⁹⁾ The same group was also involved in another incident that occurred in June 1994 in Matsumoto, where 7 people died and more than 200 were injured.⁸⁰⁾ The subsequent investigation revealed their chemical program. The Japanese police searched the group's facilities in Kamikuishiki at the foot of Mount Fuji and discovered approximately two tons of chemicals, a sophisticated laboratory, protective equipment and sarin degradation products. There were 500 drums of several chemicals, including phosphorus trichloride, hexane, isopropyl alcohol and sodium fluoride, which had been purchased by the group's front company.⁸¹⁾ The members of the group who had advanced knowledge and experience in chemistry played a leading role in synthesising these chemicals into sarin.⁸²⁾ The first incident of chemical terrorism revealed the capability of non-State actors to develop and produce chemical weapons, provided they had access to the requisite personnel and technical, financial and other resources.

4. Perspectives on Proliferation

The status of proliferation throughout the twentieth century indicates several perspectives on proliferation. First, possessor States—*traditional*

PV.5635, dated 23 February 2007, pp. 3–4; OPCW Press Release PR9/2007 (<http://www.opcw.org/news/article/opcw-director-general-condemns-the-chlorine-attacks-in-iraq/>).

79) Tucker, *supra* note 3, pp. 342–348.

80) *Ibid.*, pp. 336–339.

81) *SIPRI Yearbook 1996*, pp. 701–702. See also National Police Agency of Japan, *White Paper on Police in 1996*, section 2 (in Japanese).

82) Tucker, *supra* note 3, pp. 332.

proliferators—can contribute to proliferation. A lack of stability in a possessor State can cause the loss of its chemical weapons to another State or other actors. This was true of Germany during the post-war occupation, with both the US and the Soviet Union benefiting from Germany's capacity to produce nerve agents. In the case of Syrian chemical weapons, there was a fear that terrorists might obtain them amid the chaos. It may even be possible for a possessor State to strike an agreement with another State on the transfer of its chemical weapons. Such an agreement possibly occurred in the Albanian chemical weapons incident, in which Albania, although one of the eight possessor States under the CWC,⁸³⁾ did not declare the possession of any chemical weapons production facilities.⁸⁴⁾ Second, non-State actors—*contemporary* proliferators—can also, intentionally or unintentionally, contribute to proliferation. The more States that subscribe to the norm of a comprehensive ban on chemical weapons, the more important the roles of non-State actors, such as the chemical industry, in preventing the misuse or diversion of toxic chemicals and their precursors should be. In fact, many private companies in developed States intentionally helped Iraq and Libya to develop their chemical weapons production capacities. In the case of the Aum Shinrikyo, private companies were unintentionally involved in the transfer of a large amount of chemical precursors to the group's front company. In addition to the supply-side proliferators mentioned above, it is also important to focus on the demand side. The international community should learn the lessons from the first incident of chemical terrorism in Tokyo in 1995. At that time, there was no domestic penal law dealing with the *possession* of chemical weapons in Japan and perhaps even in other States. Admittedly, the CWC had

83) In reality, Albania did not know that there were chemical weapons stockpiles in its territory. After discovering the legacy of the internationally isolated Hoxha regime, they notified the OPCW of chemical weapons in November 2002 (OPCW Doc. C-8/5, dated 22 October 2003, p. 1, paragraph 3. See also Matthew V. Tompkins, "Albania's Chemical Weapons Con," *The Nonproliferation Review*, Volume 16, Issue 1, 2009, pp. 65–77.

84) Media reports speculated that the apparent supplier was China (Washington Post, dated 10 January 2005, p. A01).

already been adopted two years before the subway attack; however, this treaty dealt with disarmament rather than anti-terrorism. In the contemporary era of terrorism, those who attempt to acquire toxic chemicals and their precursors for the purpose of producing and using chemical weapons should be punished.

As discussed in the next section, the international community has adopted and implemented multiple legal regimes relevant to non-proliferation at both the treaty and the universal levels by accommodating these perspectives.

II Legal Developments in the Non-Proliferation of Chemical Weapons

The issue of the non-proliferation of chemical weapons has been addressed by international law via two different approaches. One is the humanitarian approach, according to which the international community agreed to introduce an international norm that obliges States not to use chemical weapons in war. This approach may not directly contribute to non-proliferation as such, but the ban on their use should logically result in the non-possession of chemical weapons. In this connection, the no-use norm should be sound and comprehensive enough to cover all aspects of their use. It should also be reinforced by procedural mechanisms that deal with an alleged violation.

The other is the non-proliferation approach. In contrast to the approach adopted for nuclear weapons, the international community accommodated non-proliferation elements in a comprehensive non-discriminatory treaty ban regime—the 1993 Convention on the Prohibition of Development, Production, Stockpiling and Use of Chemical Weapons and their Destruction (CWC)—and subsequently agreed upon supplemental universal measures under the UN Security Council Resolution. Taking into account the importance of the non-proliferation norm as well as the need to strike a balance between the peaceful use of chemicals and the international security circumstances, the multiple non-proliferation regimes should be sound and adaptable.

1. Humanitarian Approach

(1) Treaty ban on the use of chemical weapons in war

Having recognised the threat of chemical weapons during World War I, the international community explored various ways to prohibit their use in war.⁸⁵⁾ First, among the obligations imposed under the Peace Treaties on the States that had lost the war was the prohibition of “[t]he use of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices.”⁸⁶⁾ Second, in Article 5 of the Treaty relating to the Use of Submarines and Noxious Gases in Warfare, adopted at the Washington Conference on 6 February 1922, the five major Allies—the British Empire, France, Italy, Japan and the US—agreed to prohibit “[t]he use in war of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices.” However, this treaty never entered into force due to the objection of France to the submarine provisions. Third, a multilateral treaty banning “the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices” (Geneva Protocol)⁸⁷⁾ was concluded at the margin of the Conference for the Supervision of the International Trade in Arms and Ammunition and in Implements of War at Geneva on 17 June 1925. At this Conference, the US tabled an original proposal for the prohibition of the export of poisonous gases for use in war. However, no consensus was

85) Admittedly, the chemical weapons issue had already been addressed by international law before World War I. At the first Hague Peace Conference on 29 July 1899, the Contracting Powers adopted the Hague Declaration (IV, 2), in which they agreed to “abstain from the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases.” However, this proved ineffective to prevent the chemical attacks on the battlefields of World War I. Although 28 States ratified or acceded to this Declaration by the end of 1907, the inclusion of the famous Martens clause, as well as a loophole in the interpretation of the term “projectiles,” significantly undermined its applicability. See also Catherine Jefferson, “Origins of the norm against chemical weapons,” *International Affairs*, Volume 90, Issue 3 (2014), pp. 649–653.

86) Article 171 of the Versailles Treaty of Peace with Germany; Article 135 of the St Germain Treaty of Peace with Austria; Article 82 of the Neuilly Treaty of Peace with Bulgaria; Article 119 of the Trianon Treaty of Peace with Hungary; and Article 176 of the Sèvres Treaty of Peace with Turkey.

87) League of Nations Treaty Series, Volume XCIV, 1929, No. 2138.

reached on this proposal due to the general feeling that it is practically difficult to ban their export.⁸⁸⁾ Despite this deadlock, the participating States were able to share the understanding that the use of poison gases is or should be prohibited by international law. Consequently, the US submitted a proposal for the prohibition of the use of poisonous gases incorporating Article 5 of the Treaty relating to the Use of Submarines and Noxious Gases in Warfare. The text was later revised to accommodate another proposal made by Poland to prohibit the use of bacteriological weapons, and was finally adopted.⁸⁹⁾ From a terminological perspective, these three treaties used an almost identical phrase that was interpreted as being comprehensive enough to cover not only chemical weapons produced in the past, such as choking agents, blister agents and blood agents, including riot control agents,⁹⁰⁾ but also those that would be developed in the future. The majority of the States ratified the Geneva Protocol, with the US and Japan being the rare exceptions.

Logically, the States that adhere to the Geneva Protocol do not need chemical weapons, because their use will violate their obligations under the Protocol. However, the Protocol was not sufficient to prevent chemi-

88) A.13.1925.IX., League of Nations, Proceedings on the Conference for the Supervision of the International Trade in Arms and Ammunition and in Implements of War, held at Geneva, May 4th to June 17th, 1925, pp. 739–740 and 745.

89) *Ibid.*, pp. 161–162, 339–342 and 364–365.

90) J. M. Spaight, *Air Power and War Rights*, 3rd edition (1947), pp. 190–191; Henri Meyrowitz, “Les armes psychochimiques et le droit international,” *Annuaire Français de Droit International* (1964), pp. 94–95; Richard R. Baxter and T. Buergenthal, “Legal Aspects of the Geneva Protocol of 1925,” *American Journal of International Law*, vol. 63, no. 5 (1970), pp. 866–867; SIPRI (Stockholm International Peace Research Institute), CBW and the Law of War, *The Problem of Chemical and Biological Warfare: A Study of the Historical, Technical, Military, Legal and Political Aspects of CBW, and Possible Disarmament Measures*, Volume III (1973), pp. 54 and 65; Wil D. Verwey, *Riot Control Agents and Herbicides in War: Their Humanitarian, Toxicological, Ecological, Military, Polemological, and Legal Aspects* (1977), pp. 225–255; Michael Bothe, “Chemical Warfare,” *Encyclopedia of Public International Law*, volume one (1992), pp. 566–567; H. McCoubrey, “The Regulation of Biological and Chemical Weapon,” in Hazel Fox and Michael A. Meyer (eds.), *Effecting Compliance* (1993), p. 125; Ingrid Detter, *The Law of War*, 2nd edition (2000), p. 256. See also League of Nations, Documents of the Preparatory Commission for the Disarmament Conference (Series X): Minutes of the Sixth Session (Second Part), 1931, pp. 311–314

cal weapons from being developed and even stockpiled. First, the Geneva Protocol only prohibited their use; their possession fell outside its scope and was therefore lawful. Second, many States made reservations to the Geneva Protocol, according to which they maintained the right to use chemical (or biological) weapons if they faced chemical (or biological) attacks from a Party adherent to the Geneva Protocol that failed to comply with the prohibitions.⁹¹⁾ They therefore prepared chemical weapons in response to chemical attacks in warfare. As a result, a large amount of chemical weapons was stockpiled by the end of World War II by the major powers, both Parties and non-Parties to the Geneva Protocol. Among these, Germany was successful in developing and producing more powerful chemical weapons such as nerve agents. It is reported that more than a dozen States were engaged in their own chemical weapons programs,⁹²⁾ although in reality, States generally refrained from using them, unlike in World War I.⁹³⁾ It is somewhat strange that chemical weapons were not used by the major powers against one another during World War II in spite of their development, production

91) The States that made reservations before World War II were Australia (22 January 1930), Belgium (8 November 1928), the British Empire (13 June 1930), Bulgaria (12 February 1933), Canada (3 July 1929), Chile (2 July 1935), Czechoslovakia (21 June 1938), Estonia (17 January 1931), France (9 May 1926), India (13 June 1929), Iraq (7 April 1931), Ireland (18 August 1930), New Zealand (22 January 1930), the Netherlands (17 October 1930), Portugal (30 May 1930), Romania (26 July 1929), Spain (15 July 1929), the Union of South Africa (22 January 1930), the USSR (9 March 1928) and Yugoslavia (27 March 1929). The States that did so after World War II were Algeria (8 January 1992), Angola (2 March 1990), Bahrain (20 October 1988), Bangladesh (6 January 1989), China (13 July 1952), Fiji (26 March 1973), Israel (22 January 1969), Jordan (10 October 1976), the Democratic People's Republic of Korea (8 December 1988), Republic of Korea (26 December 1988), Kuwait (3 January 1971), Libya (17 October 1971), Mongolia (18 November 1986), Nigeria (23 September 1968), Pakistan (13 April 1960), Papua New Guinea (2 September 1980) and the US (22 January 1975). Of the above, Australia, Belgium, Bulgaria, Canada, Chile, Czechoslovakia, Estonia, France, Ireland, Mongolia, New Zealand, the Netherlands, Portugal, Romania, Russia, South Africa, Spain and the United Kingdom have already withdrawn their reservations. See <http://www.diplomatie.gouv.fr/traites/affiche traite.do?accord=TRA19250001> (accessed on 4 January 2015).

92) *SIPRI Yearbook 1982*, p. 323.

93) Spiers, *supra* note 4, pp. 57–60.

and stockpiling. Several reasons have been advanced for this. First, it might have been technically difficult to use them. Second, the enemy's chemical weapons capability might have been overestimated. Third, both sides might have wished to avoid reprisals. Fourth, Hitler may have hated chemical weapons based on his personal experience. Fifth, although the adoption of the Geneva Protocol was almost overlooked, the statement of the US President Franklin Roosevelt on 8 June 1943, outlawing the use of poisonous or noxious gases,⁹⁴⁾ suggests that its normative force may have had an influence on the non-use of chemical weapons during World War II. This legal norm was to be strengthened after World War II, though it took a long time.

The underlying principle of the Geneva Protocol remains valid today. The US and Japan acceded to the Protocol in the 1970s, though they maintained the position that riot control agents fell outside its scope.⁹⁵⁾ The United Kingdom changed its traditional views and argued that chlorobenzylidenemalononitrile (CS), one of the contemporary riot control agents, is not covered by the Geneva Protocol.⁹⁶⁾ This interpretation issue remains unresolved. In the meantime, the Geneva Protocol has been relatively well observed, except when the use of chemical weapons was alleged several times as indicated above, and when Iraq was in flagrant violation of the prohibition against their use during the Iran-Iraq War in the 1980s.

(2) Universal ban on the use of chemical weapons in armed conflicts

During the Cold War, the non-use norm became more consolidated because the Geneva Protocol was widely recognised as customary inter-

94) <http://www.presidency.ucsb.edu/ws/?pid=16407>.

95) The United States, Executive Order 11850-Renunciation of certain uses in war of chemical herbicides and riot control agents (40 FR 16187, 3 CFR, 1971-1975 Comp., p. 980); Japan, statement of Mr Masahiro Nishibori, Director of the United Nations Bureau, Ministry of Foreign Affairs, Minutes of the Foreign Affairs Committee of the House of Representatives, No. 13, dated 6 May 1970, pp. 17, 20 and 26.

96) Parliamentary Debates (Hansard), fifth series—volume 795, House of Commons, official report, Written Answers to Questions, 2 February 1970, pp. 17-18.

national law and thus binding on all States.⁹⁷⁾ In 1969, the UN General Assembly adopted Resolution 2603A (XXIV), in which the existence of the customary rule on the prohibition of the use of chemical (and biological) weapons was confirmed. Although Australia, Portugal and the US voted against this Resolution, their reason for opposing it was not to deny the existence of the customary rule but to question its material scope. The situational scope of the customary rule regarding the prohibition of chemical weapons use expanded further. In response to the Saddam Hussein regime's chemical attacks against Kurdish peoples, several States cited such use as a violation of customary international law,⁹⁸⁾ and the European Court of Human Rights also considered the attacks a violation of a customary rule.⁹⁹⁾ Those international practices implied that the customary rule also applies to the situation of *non-international* armed conflicts. This understanding was reaffirmed by the case of the Syrian chemical weapons. The exact same arguments have been made by several States,¹⁰⁰⁾ and in its Resolution 2118, the UN Security Council not only adopted a general position that “the use of chemical weapons

97) L. Oppenheim, *International Law: a treatise*, Volume II, 7th edition, Hersh Lauterpacht ed. (1952), p. 344; Robert W. Tucker, *The Law of War and Neutrality at Sea* (1957), p. 52; Myres S. McDougal and Florentino P. Feliciano, *Law and Minimum World Public Order* (1961), p. 634; George Bunn, “Banning Poison Gas and Germ Warfare: Should the United States Agree?,” *Wisconsin Law Review*, Vol. 1969, No. 2 (1969), pp. 381–389; Jozef Goldblat, *Arms Control: The New Guide to Negotiations and Agreements*, 2nd ed. (2002), p. 137; Stefan Oeter, “Means of Combat,” in Dieter Fleck, *The Handbook of International Humanitarian Law*, 2nd ed. (2008), p. 171; William H. Boothby, *Weapons and the Law of Armed Conflict* (2009), p. 137.

98) UN Doc. A/C.1/43/PV.31, dated 9 November 1988, p. 23 (Greece, on behalf of the twelve Member States of the European Community); United States Department of State, Press Guidance, dated 9 September 1988 (United States); CD Doc. CD/PV.452, dated 29 March 1988, p. 12 and UN Doc. A/S-15/PV.2, dated 1 June 1988, paragraph.89 (Sweden).

99) Third Section Decision as to the Admissibility of Application no. 65389/09, by Frans Cornelis Adrianus van Anraat against the Netherlands, July 6, 2010, paragraph 92.

100) OPCW Doc. RC-3/NAT.50, dated 8 April 2013 (European Union); RC-3/NAT.28, dated 9 April 2013 (Germany); RC-3/NAT.36, dated 8 April 2013 (Luxembourg); RC-3/NAT.23, dated 9 April 2013 (Belgium); RC-3/NAT.31, dated 10 April 2013 (Mongolia); RC-3/NAT.51, dated 9 April 2013 (Ireland).

constitutes a serious violation of international law” (preamble paragraph 8), but also “[c]ondemn[ed] in the strongest terms any use of chemical weapons in the Syrian Arab Republic, in particular the attack on 21 August 2013, in violation of international law” (operative paragraph 2). The fact that the chemical attack took place in the course of a non-international armed conflict in Syria, a non-Party State to the CWC, indicates that customary international law is understood to be applicable to this situation.

In addition to the emerging universal norm, a new procedural mechanism in response to the allegations of the use of chemical weapons was also established and made available to all UN Member States. Following two similar procedures—the *ad hoc* procedure for the alleged use of chemical weapons¹⁰¹⁾ and the *provisional* procedure for the alleged use of both biological and chemical weapons,¹⁰²⁾ the UN General Assembly introduced the standing UN Secretary-General mechanism in 1987.¹⁰³⁾ It allows any UN Member State, regardless of whether it is a victim, to submit a request to the UN Secretary-General to investigate an alleged use of chemical weapons.

The UN Secretary-General mechanism has so far been invoked three times, as noted above. The positive result of the investigation in Syria proved its validity from a technical point of view, though the process of implementation also revealed that its non-enforceable nature undermined the timely investigation, and that the absence of a mandate to identify those who used chemical weapons left the issue of accountability unresolved.¹⁰⁴⁾

101) UN Doc. A/RES/35/144C, dated 12 December 1980, adopted by a vote of 78 to 17 with 36 abstentions.

102) UN Doc. A/RES/37/98D, dated 13 December 1982, adopted by a vote of 86 to 19 with 33 abstentions.

103) UN Doc. A/RES/42/37C, dated 30 November 1987, adopted by consensus.

104) The CWC accommodates the challenge inspection through which any State Party can request the OPCW Technical Secretariat to conduct an on-site inspection in another State Party in order to clarify and resolve any questions concerning possible non-compliance with the Convention (Article IX, paragraph 8). The requested State Party has the obligation to receive the inspection (Article IX, paragraph 10). At the time of the allegations, this mechanism was not applicable to Syria because Syria was

(3) Treaty ban on the use of chemical weapons *under any circumstances*

The absolute prohibition of the use of chemical weapons was cemented by the CWC, under which each State Party agreed never to use chemical weapons under any circumstances (Article I, paragraph 1(b)). At the initial negotiation stage, this element was not incorporated into any of the draft texts, an omission seemingly inspired by the Biological Weapons Convention, which contains no explicit provision banning the use of biological weapons. Although this stance was adopted to avoid a duplication of the 1925 Geneva Protocol, several delegations were in favour of a more comprehensive treaty and proposed that the prohibition of the use of chemical weapons be included in a draft text.¹⁰⁵⁾ This proposal received no strong objections. This inclusion has since clarified the situational scope of the prohibition under international law as not being limited to war or armed conflicts, whether international or domestic, but applicable *under any circumstances*.

In addition, the CWC adopted the general purpose criteria for the definition of chemical weapons. In light of their dual-use nature, toxic chemicals and their precursors are regarded as chemical weapons as long as their activities are not compatible with “purposes not prohibited under this Convention” (Article II, paragraph 9).¹⁰⁶⁾ This criterion is comprehensive enough to cover the possible types of toxic chemicals and their precursors in the future.¹⁰⁷⁾

not a State Party to the CWC. The only available procedure was the non-enforceable UN Secretary-General mechanism.

105) CD Doc. CD/49, dated 9 August 1979 (The Netherlands). See also CD Doc. CD/102, dated 19 June 1980 (China); CD/114, dated 9 July 1980 (Australia); Walter Krutzsch, Eric Myjer and Ralf Trapp (eds.), *The Chemical Weapons Convention: A Commentary* (2014), p. 66.

106) “Purposes Not Prohibited Under this Convention” means: (a) Industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes; (b) Protective purposes, namely those directly related to protection against toxic chemicals and to protection against chemical weapons; (c) Military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare; and (d) Law enforcement, including domestic riot control purposes.

107) Krutzsch, Myjer and Trapp (eds.), *supra* note 105, p. 77.

(4) Treaty criminalisation of the use of chemical weapons in armed conflicts

The humanitarian approach has continued to develop up to the present. In the context of international crime, the 1998 Rome Statute of the International Criminal Court identifies the use of chemical weapons—more precisely “employing asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices”—as one of the war crimes in international armed conflict (Article 8, paragraph 2(b)(xviii)). Moreover, the 2010 Review Conference of the ICC States Parties adopted an amendment proposal submitted by Belgium that enables the same crime to apply to non-international armed conflict as well (Article 8, paragraph 2(e)(xiv)).¹⁰⁸ Because the Rome Statute relies on the traditional formulation of the concept of chemical weapons, the issue of material scope remains unresolved. In view of these conflicting interpretations, the definition is to be interpreted in favour of the person being investigated, prosecuted or convicted in accordance with Article 22 of the Rome Statute.

2. Non-Proliferation Approach

(1) Treaty non-proliferation of chemical weapons

The 1993 CWC is the first multilateral treaty aimed at imposing a comprehensive ban on chemical weapons under international verification. The issue of non-proliferation is addressed in this wider context. The Convention contains not only provisions on the prohibition of transfer and possession of chemical weapons and their destruction, but also regu-

¹⁰⁸ Resolution RC/Res.5, Annex I (ICC Doc. RC/11, p. 15); Resolution RC/Res.5, Annex II (ICC Doc. RC/11, p. 16). Although it is said that the amendment proposal gained support among States Parties, there was almost no substantive discussion on it (David Kaye, “The First Review Conference of the Rome Statute of the International Criminal Court,” *ASIL Insight*, Volume 14, Issue 11, dated 14 May 2010). The amendment will enter into force in regard to a State Party to the Rome Statute of the ICC one year after the deposit of its instrument of ratification in accordance with Article 121(5) of the Rome Statute. The number of States Parties that ratified the amendment reached 21 by 26 September 2014 (https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XVIII-10-a&chapter=18&lang=en).

lations on peaceful activities related to toxic chemicals and their precursors that could be misused or diverted for chemical weapons. A fully-fledged international organisation, the Organisation for the Prohibition of Chemical Weapons (OPCW), has played a monitoring role since its establishment in 1997.

(a) Non-proliferation from a State Party

(i) Prohibition of the transfer of chemical weapons

Each State Party is prohibited from transferring, directly or indirectly, chemical weapons to anyone (Article I, paragraph 1(a)).

In contrast to the Anti-Personnel Mine Treaty and the Cluster Munitions Convention, the transfer of weapons for the purpose of destruction is not permitted. In the case of the Syrian chemical weapons, the UN Security Council adopted an exceptional measure that authorised the transfer of chemical weapons by Member States in order to ensure the elimination of the Syrian Arab Republic's chemical weapons program within the shortest possible time and in the safest manner (paragraph 10 of the UN Security Council Resolution 2118).¹⁰⁹⁾ Denmark, Norway and the US were the States involved in the transfer.¹¹⁰⁾

(ii) Prohibition of the possession of chemical weapons

Non-possession of chemical weapons guarantees their non-proliferation. Each State Party is therefore prohibited from developing, producing, otherwise acquiring, stockpiling or retaining chemical weapons (Article I, paragraph 1(a)).

(iii) Destruction of chemical weapons¹¹¹⁾

The destruction of chemical weapons also contributes to their non-proliferation. Each State Party therefore undertakes the destruction of the chemical weapons that it owns or possesses, or are located in any place under its jurisdiction or control (Article I, paragraph 2). The entire process of destruction is verified through stringent declarations¹¹²⁾

109) Krutzsch, Myjer and Trapp (eds.), *supra* note 105, p. 699.

110) OPCW Doc. EC-76/DG.16, dated 4 July 2014, pp. 3–4, paragraphs.13–16.

111) Krutzsch, Myjer and Trapp (eds.), *supra* note 105, pp. 119–150.

112) One of the items to be declared is the past transfers of chemical weapons (Article III, paragraph 1(a)(iv)).

and inspections.

Since the implementation of the relevant provisions of the CWC, two issues have arisen. The first involved the deadline for the destruction. Albania missed the deadline of 29 April 2007, but redressed the situation within a short period,¹¹³⁾ while Libya, Russia and the US were unable to meet the final extended deadline of 29 April 2012.¹¹⁴⁾ Destruction activities have since been carried out after the final extended deadline within the framework of the decision adopted at the seventeenth OPCW Conference of the States Parties in December 2011.¹¹⁵⁾ The second issue involved incomplete declarations. After the fall of the Gaddafi regime, the Libyan National Transitional Council informed the OPCW of the discovery of non-declared chemical weapons in its territory.¹¹⁶⁾ This means that the previous regime was successful in concealing chemical weapons stockpiles. It follows that there is some room for the OPCW to improve the effectiveness of the verification system in terms of declarations.¹¹⁷⁾ However, the OPCW policy-making organs have taken no

113) Albania completed the destruction on 11 July 2007 (<https://www.opcw.org/news/article/albania-the-first-country-to-destroy-all-its-chemical-weapons/>).

114) OPCW Doc. EC-68/3, dated 4 May 2012, p. 3, paragraph 6.1.

115) OPCW Doc. C-16/DEC.11, dated 1 December 2011. See also Daniel Horner, "Accord Reached on CWC's 2012 Deadline," *Arms Control Today*, January/February 2012 (http://legacy.armscontrol.org/act/2012_01-02/Accord_Reached_on_CWCs_2012_Deadline). The current planned completion dates are December 2016 for Libya; December 2020 for Russia; and September 2023 for the US. See Masahiko Asada, "The OPCW's Arrangements for Missed Destruction Deadline," *American Journal of International Law*, Volume 108, Number 3 (2014), pp. 448–474.

116) On 22 September 2011, it was reported that the National Transitional Council found a depot of chemical weapons materials (The Guardian <http://www.theguardian.com/world/2011/sep/22/libyan-rebels-gaddafis-chemical-weapons>; see also UN Doc. S/PV.6622, dated 26 September 2011, p. 3). Libya submitted a declaration on previously undeclared chemical weapons to the OPCW in November 2011 (OPCW Doc. C-16/NAT.24, dated 29 November 2011; S/1042/2012/Rev.2, dated 19 December 2012, paragraph 3.15). The OPCW policy-making organs did not take punitive measures.

117) In the case of the International Atomic Energy Agency (IAEA) safeguard agreements under Article 3 of the Nuclear Non-Proliferation Treaty, the IAEA learned lessons from the non-declared activities of Iraq and introduced an additional protocol under which the IAEA has the right to complementary access in order to confirm the correctness and completeness of declarations.

action in this area.

(b) Non-proliferation from non-State actors¹¹⁸⁾

Because of the dual-use nature of toxic chemicals and their precursors, the CWC seeks to strike a balance between promoting their peaceful usage¹¹⁹⁾ and preventing their misuse or diversion.¹²⁰⁾ For this reason, the Convention establishes a very complex industry verification, the primary targets of which are supply-side non-State actors involved in relevant activities, i.e. the chemical industry. Toxic chemicals and their precursors that are categorised as Schedule 1, 2 and 3 chemicals,¹²¹⁾ together with the relevant facilities, are subject to an industry verification system.

While industry verification is neither aimed at detecting a violation of obligations under the Convention nor supportive of the criminal investigation of chemical terrorism, its implementation helps to ensure that toxic chemicals and their precursors are used for peaceful purposes only, thereby preventing them from being proliferated. In this sense, the industry verification builds confidence among States Parties in the activities of the chemical industry. The success of industry verification lies in its full and effective implementation, as well as its adaptability to a changing environment of the chemical industry and international security. With respect to the latter, the CWC accommodates several mecha-

118) Krutzsch, Myjer and Trapp (eds.), *supra* note 105, pp173–194.

119) Each State Party has the right to develop, produce, otherwise acquire, retain, transfer and use toxic chemicals and their precursors for purposes not prohibited under the Convention (Article VI, paragraph 1).

120) Each State Party shall adopt the necessary measures to ensure that toxic chemicals and their precursors are only developed, produced, otherwise acquired, retained, transferred or used within its territory or in any other place under its jurisdiction or control for purposes not prohibited under this Convention (Article VI, paragraph 2).

121) Schedule 1 chemicals pose a high risk to the object and purpose of the CWC and have little or no use for purposes not prohibited under the CWC; Schedule 2 chemicals pose a significant risk to the object and purpose of the CWC and are not produced in large commercial quantities for purposes not prohibited under the CWC; Schedule 3 chemicals pose a risk to the object and purpose of the CWC and may be produced in large commercial quantities for purposes not prohibited under the CWC. For more details, see the Annex on Chemicals.

nisms, such as changes to Annexes (Article XV, paragraphs 4 and 5),¹²²⁾ decisions or guidelines of the Conference of the States Parties (Article VIII, paragraphs 19 and 20) and a Review Conference (Article VIII, paragraph 22 and Verification Annex Part IX, paragraph 26).

(i) Regulations on the transfer of toxic chemicals from non-State actors to anyone abroad¹²³⁾

Regulations on the transfer of toxic chemicals and their precursors¹²⁴⁾ depend on each Schedule. Schedule 1 chemicals must not be transferred to non-Party States. Their transfer to another State Party is permitted for research, medical, pharmaceutical or protective purposes (Verification Annex Part VI, paragraph 3), though their re-transfer to a third State is prohibited (Verification Annex Part VI, paragraph 4). Schedule 2 chemicals must not be transferred from and to non-Party States three years after the entry into force of the Convention (Verification Annex Part VII, paragraph 31). Schedule 3 chemicals may be transferred to non-Party States subject to the condition that each State Party shall adopt the necessary measures to ensure that the transferred chemicals shall only be used for purposes not prohibited under the Convention and obtain an end-user certificate from the recipient State to that effect (Verification Annex Part VIII, paragraph 26). In addition to these substantive obligations and requirements, each State Party also needs to submit declarations on the transfer of Scheduled chemicals. Transfers of

122) See Ralf Trapp, “The CWC—Multilateral Instrument with a Future,” in *The Chemical Weapons Convention: Implementation, Challenges and Opportunities*, Ramesh Thakur and Ere Hatu (Eds.) (2006), pp. 23–24.

123) Krutzsch, Myjer and Trapp (eds.), *supra* note 105, pp. 189–191.

124) The regulation or prohibition of the transfer of Scheduled chemicals to non-Party States is also aimed at encouraging universal adherence (The White House, Office of the Press Secretary, Statement by the President on Chemical Weapons Initiative, dated 13 May 1991, in “Letter dated 22 May 1991 from the Acting Representative of the United States of America addressed to the President of the Conference on Disarmament transmitting a statement issued by the President of the United States of America concerning the United States initiative for completing the negotiations on a Chemical Weapons Convention, and a White House Fact Sheet on the initiative”, CD Doc. CD/1077, dated 23 May 1991, p. 3; CD/1108, dated 27 August 1991, p. 32, footnote 4; CD/1116, dated 20 January 1992, p. 27, footnote 4).

Schedule 1 chemicals require a 30-day prior notification and a detailed annual declaration for the previous year (Verification Annex Part VI, paragraphs 5 and 6). Annual declarations on the transfer of Schedule 2 and 3 chemicals must include aggregate national data for the previous calendar year on the quantities imported and exported, as well as a quantitative specification of import and export for each country involved (Verification Annex Parts VII and VIII, paragraph 1).

The implementation of these provisions has not only shown general trends in the transfers¹²⁵⁾ but also revealed discrepancies in declarations between the transferring and the transferee States Parties,¹²⁶⁾ as well as a few cases of violating the obligation of not transferring to non-Party States.¹²⁷⁾ Discrepancies and violations do not necessarily mean that the transfers concerned have contributed to the proliferation of chemical weapons, but undeclared transfers should be minimised and illegal transfers prevented.

Since the entry into force of the CWC, transfer regimes have been modified. First, the 30-day prior notification rule on the transfer of

125) In the last five years (2008–2012), 41–54 States Parties transferred 3,500–5,800 tons of Schedule 2 chemicals, while 116–123 transferred 275,000–345,500 tons of Schedule 3 chemicals (OPCW Doc. S/869/2010, dated 24 September 2010, paragraph 6.11; S/963/2011, dated 22 September 2011, paragraph 6.11; S/1042/2012/Rev.2, dated 19 December 2012, paragraph 6.6; S/1124/2013, dated 9 September 2013, paragraph 6.7; and S/1207/2014, dated 8 August 2014, paragraph 6.6).

126) Approximately 68% of the Schedule 2 and 3 transfer data between the importing and exporting States Parties had discrepancies since the entry into force of the CWC until the end of 2012 (OPCW Doc. S/1207/2014*, dated 8 August 2014, paragraph 7.14). The ratio decreased from 76% by the end of 2007 (OPCW Doc. S/784/2009, dated 7 August 2009, paragraph 7.13) and was thus improved by eight points.

127) In 2002, three States Parties reported Schedule 2 chemical transfers to three non-Party States in the two preceding years. Some of the transfers declared by two of these States Parties violated the prohibition (OPCW Doc. C-8/5, dated 22 October 2003, paragraph 2.18). One State Party informed the Secretariat of the export of a Schedule 2 chemical to a non-Party State in 2005 (OPCW Doc. S/784/2009, dated 7 August 2009, paragraph 6.9). In the period between the Second Review Conference in April 2008 and the end of year 2012, two cases of transfers of Schedule 2 chemicals (amounting to a total of 6.16 tons) to non-Party States were reported to the Secretariat by the State Party from which the chemicals were exported (OPCW Doc. RC-3/S/1, dated 12 March 2013, paragraph 3.204).

Schedule 1 chemicals has been relaxed for Schedule 1 chemical saxitoxin; a newly introduced paragraph 5bis of the Verification Annex Part VI enables a State Party to transfer 5 milligrams or less of saxitoxin for medical/diagnostic purposes with notification by the time of transfer.¹²⁸⁾ Second, the prohibition of the transfer of Schedule 2 chemicals to non-Party States has ceased to apply to products that contain a low concentration of a Schedule 2 chemical or are identified as consumer goods packaged for retail sale for personal use or packaged for individual use.¹²⁹⁾ Third, an end-user certificate in the case of the transfer of Schedule 3 chemicals to non-Party States is no longer required if products contain a low concentration of a Schedule 3 chemical and are identified as consumer goods packaged for retail sale for personal use or packaged for individual use.¹³⁰⁾

(ii) Regulations on peaceful chemical facilities

Regulations on peaceful chemical facilities are categorised into four classes: Schedule 1 facilities, Schedule 2 facilities, Schedule 3 facilities, and Other Chemical Production Facilities (OCPFs). Facilities engaged in the production of Schedule 1, Schedule 3 and other chemicals, as well as those used in the production, processing or consumption of Schedule 2 chemicals, are subject to declaration and inspection. While any Schedule 1 facility is subject to inspection, Schedule 2 and 3 facilities and OCPFs are inspected only if their activities are above certain established inspection thresholds.

As of 31 December 2013, 26 Schedule 1 facilities, 417 Schedule 2 facilities, 427 Schedule 3 facilities and 4,389 OCPFs had been declar-

128) OPCW Doc. C-IV/1, EC-MV/2, dated 4 June 1999, paragraph 3.35. See also EC-XVII/DG.6, dated 10 November 1999, paragraph 1; cf. C.N.916.1999.TREATIES-7 of 11 October 1999. Krutzsch, Myjer and Trapp (eds.), *supra* note 105, pp. 577–578.

129) OPCW Doc. C-V/DEC.16, dated 17 May 2000. The threshold is one percent or less for a Schedule 2A or 2A* chemical and 10 percent or less for a Schedule 2B chemical. Krutzsch, Myjer and Trapp (eds.), *ibid.*, p. 605.

130) OPCW Doc. C-VI/DEC.10, dated 17 May 2001. The threshold is 30 percent or less. The CWC envisages the Conference of the States Parties to undertake possible measures to strengthen the regulation of the transfers of Schedule 3 chemicals to non-Party States (Verification Annex Part VIII, paragraph 27). However, no action has so far been taken in this regard. Krutzsch, Myjer and Trapp (eds.), *ibid.*, p. 608.

able, while 22 Schedule 1 facilities, 192 Schedule 2 facilities, 399 Schedule 3 facilities and 4,284 OCPF's had been subject to inspection.¹³¹⁾ The annual status is illustrated in Annex 1 below. From the date of entry into force of the CWC to the end of 2013, the OPCW Technical Secretariat has conducted 2,599 industry inspections: 248 for Schedule 1 facilities, 657 for Schedule 2 facilities, 394 for Schedule 3 facilities and 1,300 for OCPF's.¹³²⁾ As the year-by-year breakdown in Annex 2 indicates, the number of inspections for Schedule 1, 2 and 3 facilities since 2007 has remained stable while that for OCPF's has gradually increased.

In practice, the Conference of the States Parties decides the number of inspection in a calendar year based on the annual program and budget. The Executive Council at its Sixty-Sixth Session adopted a decision entitled "Policy Guidelines for Determining the Number of Article VI Inspections" in October 2011. Since then, the Technical Secretariat has reported the results of the implementation of these guidelines.¹³³⁾ With almost 3,000 OCPF's yet to be inspected, an increase in the number of inspections and an overall greater allocation of the inspections to OCPF's are required.

(c) Non-proliferation to non-State actors: national implementation measures¹³⁴⁾

Other targets of the non-proliferation of chemical weapons are demand-side non-State actors that could use toxic chemicals for non-peaceful purposes such as terrorism. In this regard, the prevention and punishment of illegal chemical activities are essential. The CWC obliges each State Party to adopt the necessary measures to implement its obligations under the Convention (Article VII, paragraph 1). These measures must cover the prohibition of relevant activities, including the development, production, acquisition, stockpiling, retention, transfer or

131) OPCW Doc. S/1207/2014, dated 8 August 2014, p. 16, Table 5.

132) OPCW Doc. RC-2/S/1*, dated 31 March 2008, paragraphs 3.132 and 3.150; RC-3/S/1, dated 12 March 2013, Chart 5, paragraphs 3.231, 3.239 and 3.244; and S/1207/2014, dated 8 August 2014, Table 1.

133) OPCW Doc. EC-72/DG.4, dated 5 April 2013; EC-76/DG.3, dated 3 April 2014.

134) Krutzsch, Myjer and Trapp (eds.), *supra* note 105, pp. 195–233.

use of chemical weapons, by natural and legal persons, as well as the enactment of penal legislation based on territorial and personal jurisdictions (Article VII, paragraph 1 (a) and (c)).

Since the September 11 attacks, national implementation measures under Article VII have been linked to anti-terrorism efforts. Following the agreement of the First Review Conference in 2003,¹³⁵⁾ the Conference of the States Parties at its eighth session in the same year adopted a plan of action regarding the implementation of Article VII obligations with the objective of fostering the full and effective implementation of the Convention by all States Parties.¹³⁶⁾ The action plan has been implemented since then and extended several times by further decisions.¹³⁷⁾

The OPCW policy-making organs have monitored the status of implementation based on the reports submitted by the Technical Secretariat.¹³⁸⁾ As of the end of 2012, only 90 States Parties (48%) had enacted legislation covering all key areas.¹³⁹⁾ The slow progress implies that it would take a long time for the remaining States Parties, the majority of which are developing countries, to fulfil their obligations under Article VII. The OPCW should continue to provide assistance to them,¹⁴⁰⁾ though political momentum appears to have been lost in the last few years. The Conference of the States Parties has not adopted any decision since its fourteenth session in 2009; in 2013 and 2014, it only “noted” the reports on the implementation of the plan of action submitted by the Director-General.¹⁴¹⁾

135) OPCW Doc. RC-1/5, dated 7 May 2003, paragraph 7.83(h).

136) OPCW Doc. C-8/DEC.16, dated 24 October 2003.

137) OPCW Doc. C-10/DEC.16, dated 11 November 2005; C-11/DEC.4, dated 6 December 2005; C-12/DEC.9, dated 9 November 2007; C-13/DEC.7, dated 5 December 2008; C-14/DEC.12, dated 4 December 2009.

138) OPCW Doc. C-10/DG.4/Rev.1, dated 2 November 2005; C-13/DG.6, dated 11 November 2008; C-14/DG.9, dated 21 October 2009; C-17/DG.6 EC-70/DG.3, dated 28 August 2012; C-17/DG.7 EC-70/DG.4, dated 28 August 2012; C-17/DG.8 EC-70/DG.5, dated 28 August 2012.

139) OPCW Doc. RC-3/S/1, dated 12 March 2013, p. 55, Table 4.

140) OPCW Doc. RC-3/3*, dated 19 April 2013, paragraph 9.103 (c), (e), (i) and (j).

141) OPCW Doc. C-18/5, dated 5 December 2013, paragraph 9.1; C-19/5, dated 5 December 2014, paragraph 9.1.

(2) Universal non-proliferation of chemical weapons to non-State actors

In addition to the treaty approach, the international community has not delayed in taking universal enforcement measures to address a new threat posed by non-State actors. In April 2004, the UN Security Council adopted Resolution 1540 under Chapter VII of the UN Charter. Affirming, “proliferation of nuclear, chemical and biological weapons, as well as their means of delivery, constitutes a threat to international peace and security,” the Security Council obliged all States to:

- refrain from providing any form of support to non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery (paragraph 1);
- adopt and enforce appropriate effective laws that prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use weapons of mass destruction and their means of delivery, in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them (paragraph 2); and
- take and enforce effective measures to establish domestic controls to prevent the proliferation of weapons of mass destruction and their means of delivery (paragraph 3).

A subsidiary body—the 1540 Committee—was established to monitor the implementation of this resolution (paragraph 4). In this connection, all UN Member States were called upon to submit their first reports within six months on the steps they had taken or intended to take to implement this resolution (paragraph 4).

The UN Security Council Resolution 1540 regime was strengthened through three subsequent resolutions in 2006, 2008 and 2011. These resolutions extended the mandate of the 1540 Committee to 2008, 2011 and 2021, respectively,¹⁴²⁾ encouraging UN Member States to submit

142) UN Doc. S/RES/1673, dated 27 April 2006, paragraph 4; S/RES/1810, dated 25 April 2008, paragraph 6; S/RES/1977, dated 20 April 2011, paragraph 2.

additional information on their implementation¹⁴³⁾ and prepare national implementation action plans.¹⁴⁴⁾

The 1540 Committee has reported the status of implementation between 2004 and 2011 before or after the end of each mandate¹⁴⁵⁾ and annually since 2012.¹⁴⁶⁾ By December 2013, 171 States had submitted their national implementation reports; 28 more States had provided additional information; and eight States had prepared national implementation action plans.¹⁴⁷⁾ The latest comprehensive review conducted in September 2011 revealed the relatively slow progress in State legislative measures.¹⁴⁸⁾ For example, the number of States that prohibit the use of chemical weapons under their domestic legislation increased from 109 in 2008 to 150 in 2011, with approximately 30-40 more States adopting necessary measures for other items. The next comprehensive review report will be published by December 2016.¹⁴⁹⁾ The low frequency of the publication of comprehensive reports makes it difficult to ascertain the current status of implementation.

Nine and a half years since the adoption of Resolution 1540, the opportunity to strengthen it arose in connection with the international efforts to eliminate chemical weapons from Syria. In Resolution 2118, the Security Council included both substantive and procedural paragraphs regarding the non-proliferation of weapons of mass destruction to non-State actors. As regards substance, the Security Council reaffirmed, “all Member States shall refrain from providing any form of support to

143) UN Doc. S/RES/1673, dated 27 April 2006, paragraph 3; S/RES/1810, dated 25 April 2008, paragraph 3; S/RES/1977, dated 20 April 2011, paragraph 7.

144) UN Doc. S/RES/1810, dated 25 April 2008, paragraph 4; S/RES/1977, dated 20 April 2011, paragraph 8.

145) UN Doc. S/2006/257, dated 25 April 2006; S/2008/493, dated 8 July 2008; and S/2011/579, dated 12 September 2011.

146) UN Doc. S/2012/79, dated 1 February 2012; S/2012/963, dated 27 December 2012 and S/2013/769, dated 24 December 2013.

147) UN Doc. S/2013/769, dated 26 December 2013, p. 3, paragraphs 4–6.

148) UN Doc. S/2011/579, dated 12 September 2011, pp. 40–49. See Johan Bergenäs, “The Slippery Slope of Rational Inaction: Resolution 1540 and the Tragedy of the Commons,” *The Nonproliferation Review*, Volume 15, No. 2, July 2008, pp. 373–380.

149) UN Doc. S/RES/1977, dated 20 April 2011, paragraph 3.

non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery” (paragraph 18). This text is almost identical to paragraph 1 of resolution 1540¹⁵⁰⁾ and addresses the supply side of the non-proliferation issue. It also demands non-State actors not develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery (paragraph 19). This paragraph addresses the demand side and thus makes the non-proliferation substantive norm more comprehensive. With respect to procedures, the Security Council introduced a new reporting obligation under which Member States are required to inform immediately the Security Council of any violation of Resolution 1540, including the acquisition by non-State actors of chemical weapons, their means of delivery and related materials, so that the Council may take the necessary measures (paragraph 14). All Member States, in particular those neighbouring the Syrian Arab Republic, were also called upon to report any violation of paragraph 18 and any actions that were inconsistent with paragraph 19 to the Security Council immediately (paragraphs 18 and 19). The emphasis on “Member States neighbouring the Syrian Arab Republic” reflected the situation in Syria at the time with the on-going armed conflict between the government and the opposition.

These new measures have strengthened the non-proliferation regime in both aspects of substance and procedure. In fact, there was a Member State, i.e. Syria, that informed the Chair of three committees established pursuant to Resolutions 1267, 1373 and 1540 about the alleged violations of Resolution 1540.¹⁵¹⁾ Syria also claimed that Saudi Arabia was sending explosive and toxic materials to armed groups in Syria, though Saudi Arabia strongly denied the claims and allegations.¹⁵²⁾ Although the 1540

150) The term “Member” was added to the formulation established by the Security Council in Resolution 1540.

151) UN Doc. S/2013/769, dated 26 December 2013, p. 4, paragraph 12; S/2014/195, dated 17 March 2014; S/2014/217, dated 27 March 2014; A/68/846-S/2014/271, dated 16 April 2014.

152) UN Doc. S/2014/462, dated 3 July 2014.

Committee could benefit from such reports of violation, it has apparently been hesitant about taking the next steps.

Conclusion

The international community has dealt with the issue of the non-proliferation of chemical weapons through international law by imposing substantive norms on States and making relevant procedures applicable and available to them. It should be stressed that neither an obligation of act or omission nor that of result alone addresses non-proliferation. An obligation of act or omission *and* an obligation of ever-lasting result are required. Furthermore, States' compliance with such obligations should be internationally verified or monitored mainly because a compliance with unilateral obligations is more difficult to detect at the international level without a verification or monitoring mechanism than a compliance with reciprocal obligations. These complicated substantive and procedural features are deeply rooted in multiple non-proliferation regimes and their implementation is thus very challenging.

The analysis above reveals the involvement of both States and non-State actors in the proliferation of chemical weapons. States used to be primary and even exclusive actors with a monopoly over the production and use of chemical weapons. In this regard, the 1925 Geneva Protocol and the 1993 CWC are essential in addressing the issue of non-proliferation at the level of States. The Protocol is widely recognised as customary international law and thus universally binding on all States, while the Convention has been acceded to by 190 States, with only six States¹⁵³⁾ left to join. The standing or systematic verification mechanisms have contributed to a full and effective implementation of these legal instruments. Due to these developments, it could be argued that the *traditional* issue of State-involved proliferation has become increasingly less important. However, there remains some room to improve the effectiveness and efficiency of the verification and monitoring mechanisms. The

153) Angola, Egypt, Democratic People's Republic of Korea, Israel, Myanmar and South Sudan have not ratified or acceded to the CWC.

international community should also take a more proactive approach towards cases of non-compliance.

In the twenty-first century, more attention should be paid to the *contemporary* problem of proliferation involving non-State actors. Two elements need to be taken into consideration for this purpose: the demand side and the supply side. From the supply perspective, the dual-use nature of toxic chemicals and their precursors has made international efforts somewhat complicated. In fact, the chemical industry is not only identified as one of the most important stakeholders of the CWC, but also recognised as a possible contributor to proliferation, whether intentional or unintentional. A balance between the prevention of the misuse or diversion of chemicals and the need to ensure their use for peaceful purposes has been explored. Industry verification under the CWC is the approach that has so far been adopted to achieve this objective. It should be strengthened further.¹⁵⁴⁾ From the demand perspective, the criminalisation of specific acts is essential to addressing the emerging threat of the proliferation of chemical weapons to non-State actors, including terrorists. Both the CWC and the UN Security Council Resolution 1540 oblige States to take the necessary national measures in this regard. These obligations may overlap with one another; however, the international community seems to prioritise universal actions under the Security Council Resolution 1540 taken by all States over the coordination among the overlapping obligations. Perhaps these two non-proliferation regimes have enjoyed synergy and complemented each other.

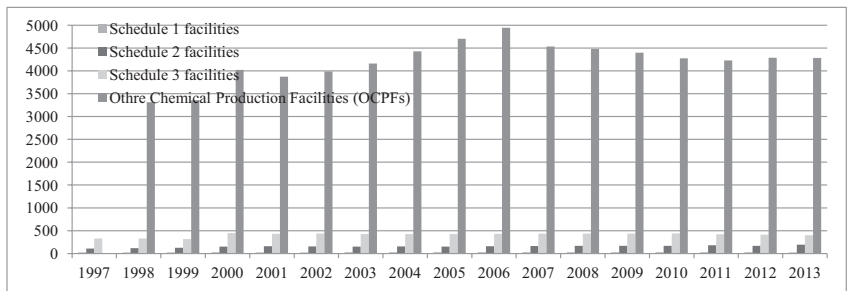
The conclusion that emerges from the above discussion is that the persistent issue of non-proliferation needs to be addressed through a full and effective implementation of sound and adaptable multiple non-proliferation regimes as well as the collaboration among States, the chemical industry and international bodies. To this end, on the one hand, States and the chemical industry should commit themselves to such regimes and comply with non-proliferation norms in good faith; on the other

154) The Third Review Conference adopted several recommendations (OPCW Doc. RC-3/3*, dated 19 April 2013, paragraphs 9.79 and 9.95). Their implementation will contribute to more effective and efficient industry verification.

hand, the international bodies should fulfil their monitoring functions and, when necessary, assist States to implement the relevant rules and procedures. These asymmetrical roles and functions are indispensable for achieving the goal of universal non-proliferation.

Annex 1: Number of Inspectable Facilities¹⁵⁵⁾

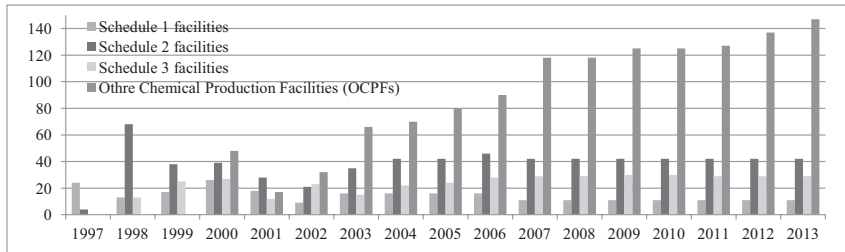
Facilities	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Schedule 1	24	24	24	27	26	26	27	27	27	27	28	27	27	27	27	28	26
Schedule 2	108	119	126	152	161	156	153	155	153	161	165	169	167	170	179	169	192
Schedule 3	328	329	316	446	432	437	426	425	426	430	434	435	434	438	421	412	399
OCPFs	n/a	3314	3355	4020	3872	3990	4161	4427	4702	4947	4533	4478	4400	4275	4228	4289	4284



155) OPCW Doc. C-III/3, dated 20 November 1998, paragraphs 5.23, 5.27, 5.30 and 5.32, Annex 7; C-IV/5, dated 2 July 1999, paragraphs 3.14, 3.16, 3.19, 3.20 and 3.28; C-V/5, dated 17 May 2000, paragraphs 3.16, 3.18, 3.20, 3.21 and 3.28; C-6/5, dated 17 May 2001, paragraphs 3.15, 3.17, 3.19, 3.20 and 3.28; C-7/3, dated 10 October 2002, paragraphs 2.8 and 2.40; C-8/5, dated 22 October 2003, paragraphs 2.8 and 2.35; C-9/5, dated 30 November 2004, paragraphs 1.4 and 1.27; C-10/4, dated 8 November 2005, paragraphs 1.4 and 1.30; C-11/4, dated 6 December 2006, paragraphs 1.4 and 1.26; C-12/6, dated 6 November 2007, paragraphs 1.4 and 1.34; C-13/4, dated 3 December 2008, paragraphs 1.21 and 1.27; RC-3/S/1, dated 12 March 2013, p. 48, CHART 4 and p. 49, CHART 5; C-19/4, dated 3 December 2014, paragraph 1.38

Annex 2: Number of Inspections¹⁵⁶⁾

Facilities	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Schedule 1	24	13	17	26	18	9	16	16	16	16	11	11	11	11	11	11	11
Schedule 2	4	68	38	39	28	21	35	42	42	46	42	42	42	42	42	42	42
Schedule 3	n/a	13	25	27	12	23	15	22	24	28	29	29	30	30	29	29	29
OCPFs	n/a	n/a	n/a	48	17	32	66	70	80	90	118	118	125	125	127	137	147



156) *Ibid.*