

The future of the CWC in the post- destruction phase

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FOREWORD

The international community can be justifiably proud of the Chemical Weapons Convention. It has banned an entire category of weapons of mass destruction and provided for their verifiable elimination under international supervision. A small but effective intergovernmental organisation, the Organisation for the Prohibition of Chemical Weapons (OPCW), has been created for this purpose.

The Convention does not yet enjoy full universality but the overwhelming majority of UN member states have joined it. Major possessor states have declared their chemical weapons stockpiles and committed to destroy them under international verification. In spite of some delays, the destruction in all categories of chemical weapons (CW) has already been successful and is proceeding with focus and determination, in spite of the considerable costs involved.

In the present international situation it is important to note that the Convention has created a *de facto* legal norm against the production, possession and usage of chemical weapons for military purposes. This prohibition goes beyond the letter of the Convention and stems from the reactions to the tragic experience of World War I and more recent cases of CW usage, including against non-combatants.

Since 2003 the European Union has an effective Strategy against Proliferation of Weapons of Mass Destruction. In accordance with its philosophy of effective multilateralism the EU is at the forefront of supporting the full universalisation and active implementation of treaty instruments such as the CWC. EU member states, both in their national capacity and through EU Joint Actions and Council Decisions, are providing considerable resources to this effect.

This volume features contributions derived from some of the presentations made by world-class experts at the workshop organised by the EU Institute for Security Studies in cooperation with the European External Action Service on 10 September 2012. The workshop offered an opportunity to reflect on some of the challenges facing the CWC over the next decade in preparation of the Third Review Conference at The Hague in April 2013. I am confident that this report presents an invaluable contribution to the debate on the future direction of our joint efforts which aim at the total and irreversible elimination of chemical weapons from the face of the Earth.

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Brussels, March 2013*

Note: The contributions featured in this report derive from presentations made at the workshop on 'The future of the Chemical Weapons Convention: transitioning towards the post-destruction phase', organised by the EUISS in cooperation with the EEAS in Brussels on 10 September 2012. The workshop report is available online on the Institute's website at: http://www.iss.europa.eu/uploads/media/CWC_report.pdf.

I. THE CWC TEN YEARS AHEAD: WHAT IS AT STAKE?

Jean Pascal Zanders

Introduction

At the 17th Conference of the States Parties to the Chemical Weapons Convention (CWC) held in November 2012, the subject generating the most debate concerned the place of non-governmental organisations (NGOs) in CWC meetings and whether their role should be rather passive (i.e. ‘attend’) or be characterised by more active involvement (i.e. ‘participate’). The latter option would allow them to address States Parties at meetings or organise side events within (rather than outside) the conference building. Addressing one of the core functions of the disarmament treaty, Libya, Russia and the United States reported in detail on progress and issues affecting the destruction of their respective chemical weapon (CW) stockpiles. Despite the fact that all three countries had missed the ultimate destruction deadline of April 2012, no state raised its flag to comment, question or protest about the delays. When the negotiators of the CWC concluded their business in September 1992 and decided to forward the treaty text to the UN General Assembly (UNGA) for assent, missing the destruction deadlines was universally viewed as one of the worst possible breaches of the CWC. In practice, a robust verification regime combined with permanent information sharing, voluntary transparency beyond the requirements in the Convention, and dialogue over the years yielded commonly approved decisions to extend the destruction deadlines with strict monitoring and reporting requirements. Confident that the holders of the three largest declared CW stockpiles have no malicious intent, States Parties can continue with the implementation of all dimensions of the CWC without recriminations or deadlock.

Both incidents, and their occurrence at the same conference, illustrate how far the treaty has actually evolved. The verification machinery still testifies to the reciprocal suspicions about intent in the three-way contention among members of NATO, the Warsaw Pact and the Non-Aligned Movement (NAM) during the Cold War. Practice, however, has engendered a more cooperative security regime, even to the point that the States Parties are beginning to seriously reflect on the roles and contributions by stakeholders other than themselves in promoting and upholding the treaty objectives.

The CWC contains many precise deadlines and timeframes for certain actions to be undertaken by either the States Parties or the Technical Secretariat. Most concern the opening and immediate follow-on stages of implementation after entry into force of the CWC or verification procedures. The many intermediate and final destruction deadlines to be met by CW possessors generated much political and academic attention. The first final destruction deadline specified in the treaty fell on the tenth an-

niversary of entry into force (i.e., 29 April 2007), but the CWC allowed for a possible maximal extension of five years (i.e., 29 April 2012). Their immediacy and resulting urgency meant that until recently relatively little attention had been paid to the post-destruction phase. Those parts of the Convention that will acquire more prominence are comparatively less developed with regard to specificity, timeframes and assignment of responsibilities for their implementation. Future expectations of the CWC remain vague and may have to be carefully managed both in terms of perceived drops in concrete benefits for individual States Parties or too high expectations as to what the treaty can achieve under its so-called non-security clauses.

This chapter looks at some of the future challenges of the CWC. It opens with an overview of the current status of the Convention. States Parties generally describe the treaty as a success story. However, ‘success’ has never been defined, nor has ‘failure’. Both concepts are analysed for their implication for the future of the CWC in the next two sections. The final section offers some concluding thoughts.

Chief achievements of an unfinished agenda

On 29 April 2012 the CWC celebrated the 15th anniversary of its entry into force. In April 2013, the States Parties will convene in the Third Review Conference to assess the operation of the Convention over the past five years, consider the future requirements of the treaty and lay out a general work plan until the Fourth Review Conference in 2018. They will assess the status of treaty implementation, progress towards universal adherence and consider reports on future challenges, including those posed by scientific and technological advances.

Universalisation is at an advanced stage. 188 states have ratified or acceded to the Convention, making it the second most successful weapon control agreement after the Nuclear Non-Proliferation Treaty.¹ Eight states are still due to join the Organisation for the Prohibition of Chemical Weapons (OPCW). Israel and Burma/Myanmar both signed the treaty during the opening ceremony in January 1993, but have not yet followed through with ratification. Angola, Egypt, North Korea, Somalia, South Sudan and Syria are non-signatory states. Although the numbers may appear comforting, all countries outside the CWC are either located in areas with deep geopolitical fault lines or suffer internal instability or war. Syria is a case in point. Recent developments in the civil war have raised international concerns that the weakening central government might launch chemical attacks against the insurgents as a measure of last resort, or that Syria’s CW stockpiles might fall into the hands of terrorist entities.

As noted earlier, verified and irreversible destruction of declared weapon stockpiles is one of the Convention’s central goals. Seven states – Albania, India, Iraq, Libya,

1. Statistics in this section taken from the OPCW website at <http://www.opcw.org/our-work>.

South Korea, Russia, and the United States – declared CW stockpiles, representing 71,196 agent tonnes and 8.67 million items (munitions, containers, etc.). As of 23 January 2013, 55,539 agent tonnes (78.01 percent) were destroyed, as well as 3.95 million items (45.56 percent). Albania, India and South Korea are the only three countries to have completed destruction operations. The other countries are in various stages of progression. Iraq has chemical munitions at sites heavily damaged by military operations, making access to the munitions extremely hazardous. Libya's destruction programme was interrupted by equipment failure and the uprising that brought down the old regime. The new government furthermore declared a small additional weapons stash in November 2011 and April 2012. It agreed to a new time schedule, whereby destruction operations are to restart in March 2013 and be completed by December 2016. Financial, political and ecological factors seriously delayed commencement of destruction operations after Russia became a party in December 1997. Its new agreed final destruction date is December 2015. States Parties also recognised the various challenges posed by the public demands for safe destruction technologies and other issues that contributed to serious delays in CW elimination in the United States. They agreed to a new final deadline of September 2023.²

Destruction or conversion to peaceful purposes of former CW production facilities (CWPFs) also continues. Thirteen states declared 70 CWPFs, of which 43 have been destroyed and 21 converted. Although riven by bilateral political tensions unrelated to the CWC, Japan steadily continues to destroy the CW it abandoned in China during the Second World War.³

Parties to the CWC have other treaty implementation requirements too. These include the obligation to adopt national implementation legislation in order to make the treaty prohibitions applicable to all natural and legal persons operating on the territory of the State Party and national entities of that State Party working abroad. Violations must be criminalised and be the subject of penal law. States must also set up a National Authority, which acts as a central focal point for the Technical Secretariat of the OPCW and other States Parties to communicate. The National Authority also plays a central role in the collection of national data to be submitted to the Technical Secretariat to fulfil the reporting requirements and accompanies OPCW inspections. As discussed in detail by Yasemin Balci in this volume, compliance in this respect is patchy at best. Although 186 National Authorities have been established, many are barely a letterbox address or perform minimally. 141 States Parties have adopted legislative and administrative measures to implement the CWC, but only in 89 cases have all key areas been covered. The Technical Secretariat runs a legal assistance programme to help States Parties achieve their goals.

2. OPCW, 'Decision: Final Extended Deadline Of 29 April 2012', OPCW Conference of the States Parties, Sixteenth Session, Document C-16/DEC.11, 1 December 2011; and Opening Statement by the Director-General to the Conference of the States Parties At its Seventeenth Session, OPCW Conference of the States Parties, Seventeenth Session, Document C-17/DG.16, 26 November 2012, pp. 4–6.

3. Opening Statement by the Director-General, *op. cit.* in note 2, pp. 4–6.

Industry verification is up and running. Although the geographical distribution of the chemical industry has shifted markedly since the entry into force of the CWC, a testimony to economic and social progress in previously totally underdeveloped countries, the OPCW seems able to adopt and test new parameters for sharing the verification burden. Nobody, however, is under the illusion that all aspects of industry verification have been resolved. Article VI remains one of the most underdeveloped parts of the Convention, particularly with regard to the transfers of toxic chemicals, and possibly in the future, of emerging technologies underlying new development and production processes. Significant progress has been made in the areas of protection and emergency assistance (Article X) and international cooperation (Article XI). Particularly with regard to the latter article, issues that almost prevented the conclusion of the negotiations in 1992, such as export controls and national responsibilities to prevent deliberate or inadvertent assistance by states or national entities to CW programmes in other countries (or later, by terrorists), have as good as disappeared. Instead, the OPCW has adopted an action plan that supports current activities and lays foundations for future initiatives.⁴

Contrary to expectations when the CWC was under negotiation, the clarification and challenge inspection instruments have never been invoked. The procedures in case of a formal complaint by a State Party and the roles to be played by the Director-General and the Technical Secretariat (inspectors, in particular), the OPCW decision-making bodies, and the accusing and accused State Parties are described at length. These complex procedures also consist of different steps that must be accomplished within their respective timeframes. As both processes are ultimate tools to confirm or refute non-compliance in the event that a State Party has serious concerns, the OPCW must prepare for their execution under duress. Particularly with respect to the challenge inspections, full-scale training exercises designed to test competences and familiarise all parties concerned with the process have become increasingly sophisticated and realistic.

The deeper meaning of success

Given the complexities of multilateral disarmament diplomacy, the CWC is a success story by any measure. As noted in the introduction, cooperation rather than confrontation has characterised its implementation thus far. No other treaty bans a complete category of non-conventional weapons supported by a dedicated international organisation and a detailed verification and compliance enforcement machinery. Various statements, whether by State Parties, senior OPCW officials, or in commissioned reports, testify to the success of the various processes and interactions that make up the treaty regime. Thus, for example, the Advisory Panel on Future OPCW Priorities noted in the opening paragraphs of its consensus report:

4. Jean Pascal Zanders, 'Chemical Weapons Convention (CWC) Article XI and the future of the CWC', in Oliver Meier (ed.), *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (Routledge: Oxford, 2013), forthcoming.

The Chemical Weapons Convention (the Convention) stands out as a successful model of a multilaterally negotiated non-discriminatory treaty that seeks to eliminate, under international verification, an entire category of weapons of mass destruction. Since its entry into force in 1997, the Convention has become a singular success. It is a cornerstone of the global disarmament and non-proliferation architecture and today has 188 States Parties. The Convention complements the 1925 Geneva Protocol and the 1972 Biological Weapons Convention, and works together with other global disarmament and non-proliferation regimes and initiatives.

The Organisation for the Prohibition of Chemical Weapons (OPCW), which is tasked to implement the Convention, is the only genuinely multilateral disarmament body with a global responsibility. It has become a respected international agency and has developed well-functioning partnerships with a number of international organisations and agencies that are working towards curbing the proliferation of weapons of mass destruction. The OPCW Technical Secretariat has successfully and effectively carried out the verification measures provided for under the Convention. It has carried out other functions entrusted to it by the Convention, or delegated to it by the Conference of the States Parties, in such areas as assistance and protection against chemical weapons or fostering the international cooperation between States Parties in the peaceful uses of chemistry. The OPCW is the collective property and responsibility of the States Parties but at the same time has become a global public good.⁵

Most of the characterisation of success has come in the form of statistics regarding the degree of universalisation, progress with the destruction of CW and infrastructure related to former CW programmes. Other tables provide annual numbers of inspections (broken down by type), and report on the status of national implementation measures and availability of a national authority.

However, when trying to envisage the utility of the CWC and the roles and functions of the OPCW in a not too distant future, say in 10–20 years, such statistical information may lose its relevancy. In the most optimal scenario, the treaty will have achieved its goals as laid out in the text: there will be universal membership of the OPCW, all weapons and related equipment and infrastructure will have been destroyed or converted, all states will have met the implementation standards, and verification will have become a routine matter, even in the face of scientific and technological changes. In a less optimal scenario, the numbers will barely move from one year to another, and therefore become less a useful gauge of progress than one of stagnation. Moreover, today the numbers have relevance in absolute terms, but against which standards will their relevance be assessed in future? Will people start to compare the CWC with the performance of other disarmament or arms control treaties? That track, would, of course, demand the weighing of the respective missions, budget allocations, staffing levels, etc. Quite possibly, it would introduce competition among

5. OPCW, 'Note by the Director General: Report of the Advisory Panel on Future Priorities of the Organisation for the Prohibition of Chemical Weapons', OPCW document S/951/2011, 25 July 2011, p. 3.

the respective organisations and its outcomes would not necessarily be beneficial to the goal of disarmament. The OPCW can also score highly in terms of efficacy if measured against Results-Based Budgeting and Results-Based Management standards, which it currently uses, but might prove entirely inadequate if the organisation over time lacks the necessary manpower or equipment resources to fulfil its primary missions in an emergency situation. The fundamental question underlying this issue is whether the States Parties view the OPCW and its Technical Secretariat as just another international bureaucracy, or as a security institution that needs resilience and various response capacities to meet any type of contingency specified in the CWC irrespective of the Gaussian probability that they might occur. Redundant capacities typify a security institution, a characteristic that might conflict with results-based standards. Today, some decisions on staffing levels and budget are motivated by resource optimisation in view of the financial crisis,⁶ but from a longer-term perspective could have some unintended implications for the functioning of the OPCW. In summary, the possibility exists that future perception of success might qualitatively differ significantly from current parameters.

The States Parties and the Technical Secretariat are increasingly preoccupied by future challenges to the CWC. The Director-General established the already mentioned Advisory Panel on Future OPCW Priorities in December 2010, which delivered its report seven months later. It comprised a geographically representative group of 14 independent experts on disarmament, the chemical industry and science and technology. Most of the report analyses the current state of affairs and future trends for each of the major tasks areas in the CWC and suggests a variety of content, structural and procedural ameliorations. The experts identified several challenges for the CWC, with regard to not just science and technology or changes in products and their development and production processes, but also the effects on the CWC of the continuously evolving external international political, social and economic environment. Most proposals appear evolutionary rather than revolutionary, perhaps even incremental, possibly a consequence of the need to obtain consensus among the participating experts about the future in the present. Notwithstanding, in the final section on managing the transition towards the post-destruction stage of the CWC, the panel aptly circumscribes the core prerequisite for the proposed changes to take place:

The adoption of new priorities will require institutional change and managerial adaptation. It is essential for the future of the Convention and the OPCW to find effective and acceptable ways to adapt—the alternative could be institutional fossilisation. The Convention provides sufficient flexibility for institutional change through policy development, decision making by the policy-making organs, gradual modifications of work and operational practices. In doing so, the OPCW should make full use of principles such as its inclusive approach, transparency, non-discrimination and consensus building.⁷

6. See chapter by Cindy Vestergaard in this volume, pp. 51-61.

7. Report of the Advisory Panel, *op. cit.* in note 5, pp. 26-7.

This formidable task will require a clear longer-term vision on the future of the CWC with updated, or even new, sets of top-level goals in order to pursue the suggested gradual modifications. The Third Review Conference should therefore set out the first markers, which can then be developed into more concrete milestones and supplemented with additional proposals to be considered by future Conferences of the States Parties or the Forth Review Conference. As part of this process, the State Parties will also have to determine the new standards against which success will be measured.

Addressing failure

Success, however, is a concept that also needs to be defined in relation to its antonym: failure. Policy makers and implementers may object to the conscious contemplation of failure because of the pessimism it injects into the process. Such objections may even represent an optimistic interpretation of muddling through: a solution to any type of problem will eventually emerge, as long as everybody remains committed to problem solving.

The fact of the matter is that nobody has actually defined ‘failure’. As noted in the previous section, people rate the overall status of the CWC positively, but express frustration with the lack of progress in several key areas, notably with respect to the delays in destruction operations, unmet expectations with national implementation obligations, stagnation of universalisation, the relatively low importance accorded to the promotion of international cooperation for peaceful purposes and organisation of technology transfers, and so on. However, they do not equate their frustration with ‘failure’. Quite on the contrary: they share the firm belief that the objectives can and *must* be achieved, given time and provided sufficient resources can be mustered.

This leaves open the question whether an event or series of events can be envisaged that would irreparably harm the CWC. Would any of the following developments constitute a failure of the Convention?

- A state develops a new CW programme
- A State Party allegedly develops a novel toxic chemical, but does not report those activities to the OPCW as the compound is not listed in one of the Schedules⁸
- A state uses CW in a domestic or international conflict
- People are killed as a consequence of the use of an incapacitating agent in a terrorist incident
- A State Party announces its withdrawal from the CWC.

8. A Schedule is a list of chemicals – known warfare agents and precursors to such agents – developed based on an assessment of their risk to the objectives of the CWC and their relevancy to legitimate industrial activities and commerce. Schedule 1 chemicals pose the highest risk and are deemed to have virtually no legitimate applications (except, for example, in minute quantities for testing chemical defence and protection technologies). The Schedules help to keep routine industry verification (reporting, inspections) within manageable boundaries.

It is clear that each scenario represents a major violation of the CWC or a serious concern for the OPCW. However, it must be borne in mind that violation of the norm or rule is not a failure, but the lack of response by the community of States Parties would be. Furthermore, the mere fact that the above scenarios (and other ones) can be listed, means that the developments are foreseeable and therefore preventable. Many provisions in the treaty text already address such eventualities and training exercises (such as the ones for a challenge inspection) enhance the response capacities of all actors involved. The greatest challenges may lie not in the implementation of the procedures laid out in the Convention, but rather in the political decision-making that precedes the launch of a particular procedure and that which follows the completion of the procedure. As the CWC suggests, but does not limit, possible actions by the decision-making bodies, gaming those highly political decision processes might yield insights on potential consequences of different courses that the States Parties could decide to pursue. Lack of response to a violation or an issue of major concern might indeed not result from inaction, but from insufficient ability to foresee the consequences or accumulation of consequences from decision-making sequences.

If the aforementioned scenarios are foreseeable, then certain events might fall between the folds of the foreseeable. Many analyses try to identify and project trends for a range of issue areas, such as developments in different scientific branches, industrial sectors or society at large. While some studies look into currently emerging dynamics between areas of activity, the future trend analyses remain essentially linear. This is an almost logical outcome as it is difficult to speculate beyond generalities on how the interaction between two or more areas of activity might create enabling platforms for new areas of research and development as yet impossible to foresee. The pace of progress in the area of chemistry (and its accelerating interaction with biology, information sciences, etc.) is so fast, and still accelerating, that prognoses for even five years into the future might amount to little more than educated guesses. The real challenge may therefore be to develop various analytical tools to identify the confluence of otherwise independent trends and assess their impact, including their potential contribution to catastrophic failure. To give one pertinent example from the past: the initiation of modern chemical warfare on 22 April 1915 resulted from the confluence of independent developments in science (the rise of synthetic chemistry), industrialisation (mass production and the ascent of the chemical industry as the motor of the second industrial revolution), and military doctrine (increased mechanisation and mobility of warfare) during the second half of the nineteenth century. The trigger that integrated the three trends was the stagnation of the war on the Western front, the growing advantage of defence of offense (trenches and machine guns) and the imperative need to restore mobility in order to avoid a seemingly endless war. Scientific imagination and available production capacity in the chemical industry suggested a solution that came as a major surprise to the enemy, almost with catastrophic consequences. While the three trends were likely visible to contemporaries, the trigger that fused them to introduce chemical warfare was not. Can such a situation reproduce itself and, more importantly, is the OPCW sufficiently resilient to respond effectively to such an extreme challenge?

Failure by routine might also ruin the CWC. It might result from the standardisation of actions or behaviours within processes, leading to expectations of particular outcomes. As a consequence of such confirmation bias, anomalies might be missed or just be treated as such: a Gaussian insignificant possibility. The CWC has certain features that could actually promote such an outcome. For example, in its post-destruction stage much of the Technical Secretariat's activity will consist of routine inspections. However, what can those routine inspections actually establish? The treaty lays out procedures to follow, and can thus exclude certain types of actions that might be undertaken onsite or after the inspection to probe deeper into a perceived anomaly. The requirement to obtain prior approval by the OPCW (i.e., the States Parties) of inspection equipment may handicap inspection capacity, particularly in the light of the rapid advances in science, technology and production processes. Moreover, the chemical industry is divided into four groups based on the three Schedules plus the OCPFs. The chemicals listed in the Schedules reflect the understanding of past chemical warfare agents. Although the CWC envisages a simplified amendment procedure to add or delete particular compounds from the lists with a view of keeping them updated with trends in the industry, in practice their modification has proved to be politically arduous. This means that without a fundamental review of the function of the Schedules routine, verification will progressively address a CW threat that has little bearing on future challenges. In turn, the trend may contribute to the obsolescence of the Convention, more so as States Parties might be inclined to decrease funding of the OPCW even further as they perceive the verification regime to be offering diminishing security guarantees. They would thus reinforce a trend that has its roots in the treaty text itself.

There are several other areas that might fall under the heading 'unforeseeable futures' (e.g., a fixation on specific types of threats, thus blinding decision-makers to the emergence of other contingencies; or the emergence of an increasingly event-driven decision-making process that loses sight of holistic strategic vision, as seems to be the case with the International Atomic Energy Agency with regard to nuclear safeguard policies). Many 'unforeseeable futures', however, result from a lack of imagination or the exclusion of events whose chance of manifesting themselves are remote from policy consideration. The Fukushima nuclear disaster is a case in point: the earthquake and resulting tsunami may have had a once in several centuries probability, but it did happen in 2011, a mere four decades after start-up of production. The CWC provided for the creation of a Scientific Advisory Board, because the negotiators appreciated the impact of the scientific and technological developments on the operation of the OPCW. A similar type of interdisciplinary organ could provide the Director-General, and therefore the community of States Parties, with well-informed and regularly updated foresighting (not 'forecasting') advice on possible futures for the CWC resulting from the treaty text and decision outcomes. The current outreach to stakeholders in industry, science and academia and other civil society constituencies already lays a foundation for this type of activity, whether in a formal OPCW context or through the encouragement of foresighting studies by external partners.

Conclusions

The CWC is a disarmament treaty. Its backward-looking dimension is due to end within the next decade: within this timeframe all (currently) declared stockpiles of CW and related equipment will have been destroyed and former production installations either demolished or converted to peaceful uses. Its forward-looking dimension comes increasingly into focus: how can future CW armament programmes be prevented? Governance of relevant dual-use technologies will occupy a central position in the pursuit of this overarching goal. To this end the OPCW will have to engage multiple tiers of stakeholders who each from their specific field of activities continuously contribute to the central goal. A critical question is how confidence in compliance can be ensured and, if necessary, enforced under different governance models. The visions States Parties are developing for the OPCW will affect the future responsibilities they will need to assume themselves to protect the integrity of the treaty regime.

Part of the success of the CWC derives from the detailed treaty text, the establishment of a dedicated international organisation and the development of contingency plans to deal with possible violations, and through the inclusion of future social and economic benefits by means of OPCW-steered cooperation and technology exchange activities. The combination of these elements makes the CWC a truly unique enterprise. However, it potentially also deprives the treaty of the necessary flexibility to adapt to ever-evolving circumstances and direct challenges. The OPCW will therefore need to develop the necessary analytical tools not just to monitor and assess changes in science and technology, but also envisage different possible (positive and negative) futures with a view to maintaining a coherent strategic vision. The choice between maintaining an operational bureaucracy or viewing the OPCW as a security institution, with redundant capacities in critical areas, already looms in the immediate future.

If the CWC with its precise CW elimination deadlines offered a sharp transition to the post-destruction phase, current realities ensure a more gradual changeover. In a certain way this will prove to be fortunate, as States Parties now have a period to consider in detail future options without having to undergo a possible shock to the system caused by the break between the backward and forward-looking dimensions of chemical disarmament. It is clear that several issues have today been resolved that were not yet mature for decision-making before 2012; the same incremental and evolutionary process of idea development over the next decade will gradually bring minds together on a joint vision for the CWC.

In this respect, the Report of the Advisory Panel on Future OPCW Priorities provides an excellent departure point, but not the end solutions to a strategic vision on the future. The CWC is of unlimited duration. However, that does not mean it will be perpetual. As a social construct, developments within as well outside the treaty regime will continuously challenge its integrity and ability to respond to emerging situations. Flexibility will contribute to longevity; rigidity to early obsolescence.

II. RESEARCH, DEVELOPMENT AND PRODUCTION: IMPACT AND CHALLENGES FOR FUTURE VERIFICATION UNDER THE CWC

Ralf Trapp

The current CWC context

The Chemical Weapons Convention (CWC) prohibits the development, stockpiling, production, transfer and use of chemical weapons (CW) and requires the elimination of existing CW stockpiles and former CW production facilities by established deadlines. Its prohibitions do not include research – a recognition that the line between activities related to offensive chemical warfare purposes and those related to chemical defence (or other legitimate research) cannot easily be drawn at the level of basic science.

This dual-use nature of chemistry and chemical technology was a challenge for the drafters of the CWC, who had to find principles and methodologies for the routine verification regime that would be technically sound for verification purposes and at the same time not hinder legitimate activities in chemical research, development and manufacturing. The resulting routine verification regime can be described as follows:

- *A combination* of list-based (i.e. referring to activities and facilities involving the chemicals listed in the Convention's three 'Schedules of Chemicals') and open (referring to 'other chemical production facilities' or OCPFs, i.e. plant sites producing unscheduled discrete organic chemicals) verification approaches
- *Within* each of the Schedules, the risk posed by a facility to the object and purpose of the Convention (related to such technical parameters as convertibility for the production of chemical warfare agents or key precursors, capability to handle toxic or corrosive materials, production size and the like) is used as the criterion to determine inspection frequency and intensity
- *Between* the Schedules and OCPFs, verification intensity is modulated from systematic verification (Schedule 1) to routine inspections based on facility agreements, which indicates an intent to undertake regular re-inspection (Schedule 2) and inspection by random selection based on certain weighing factors (Schedule 3 and OCPFs)
- Declarations and inspections are focused on the production of scheduled chemicals or other organic products (all Schedules and OCPFs), while including facilities that are involved with *processing and consumption* of the scheduled chemicals only in the case of Schedule 2 – thus enabling some crude measure of material accountancy verification at the national and facility levels for these materials

- Thresholds are used to distinguish between facilities that need not be declared at all, facilities that need to be declared only, and facilities that need to be declared and that are liable for inspection.

This system was designed on the basis of what was known about the chemical warfare programmes of the Cold War era. Negotiations started from the recognition that 100 percent control was both impossible and unacceptable for the chemical industry, and that the parameters of the verification system had to be set against the objectives of what types of violation the system was expected to detect. During the 1970s, discussions of verification requirements and methods related to what was then called a ‘militarily significant quantity’ of a chemical warfare agent – several thousand tonnes of agent was what mattered in the context of the East-West arms race. Any CWC verification system was expected to detect clandestine production, diversion or stockpiling of CW agents that could affect the military balance at that level.

During the 1980s, this threat level changed significantly as a result of the use of CW in the Iran-Iraq conflict and other proliferation trends. Verification now was expected to also be able to cope with what might be called ‘quantities significant for CW proliferation’ – somewhere between 50 and several hundred tonnes in the context of state programmes. This thinking was eventually reflected in the thresholds included in the CWC, ranging from 30 to 200 tonnes for most declarable and inspectable activities in the chemical industry.

In the wake of September 11, terrorism and other threats have again changed perceptions regarding ‘security-relevant’ amounts of toxic chemical agents. They range today from several tonnes in the case of toxic industrial chemicals to kilogram amounts for (improvised) traditional CW agents as well as certain novel types of agents such as peptides, to grams in the case of toxins – well below the amounts that the current system was designed to detect. At the same time, the range of relevant chemicals differs significantly from the chemical agents known from past CW programmes. These factors act both as drivers *and* constraints when it comes to adapting the CWC verification system to trends in science, technology and industry. This will be discussed later in this chapter. First, however, a brief summary of the key trends in these areas is presented.

Trends in chemical research and development

Chemical research and development (R&D) is essential for advances in many other fields of science and technology, as well as for the provision of goods and services to human society. New materials are being developed for application in fields as far apart as medicine, food production, energy supply and construction. More effective, safer and environmentally friendly means of manufacturing chemical products are

being sought. Chemical R&D tries to find new approaches towards curing disease, protecting the environment and dealing with the effects of global warming. Chemical research contributes to the advancement of the 'life sciences', a multidisciplinary approach to the study of life processes that brings together investigative methodology and theoretical knowledge from many disciplines including biology, chemistry, physiology, medicine and ecology, and increasingly also from the engineering sciences, mathematics and information technology. This convergence in the life sciences, like any other cross-fertilisation between different scientific disciplines, is an enabler of new discoveries and new theoretical understanding.¹

As a consequence of the convergence of chemistry and biology in the life sciences, the borderlines between the two sciences are increasingly becoming blurred.² Biology is used to produce chemical products (use of transgenic plants and animals, biologically mediated processes, combined biological and chemical manufacturing strategies, use of biocatalysts in chemical synthesis) while chemistry is being used to make biological components (DNA, peptides and other biomolecules) or even (re-)create entire organisms (synthetic viruses are state-of-the-art, while work on the chemical synthesis and assembly of more complex systems such as bacteria is under way). The twenty-first century is predicted to become the era of 'grand synthesis' and synthetic biology is seen not merely as a new and exciting way of doing biology but also as an indication that the life sciences may finally begin to evolve from an essentially descriptive discipline to one that works from first principles.³ As part of this evolution, biotechnology is increasingly understood as a form of information business (for example: systems biology providing predictive approaches to finding lead compounds for new medicines and pesticides).

These trends in chemical R&D take place in a new, more globalised environment. Life science research is increasingly globally distributed and the internet has enabled new forms of scientific collaborations and information exchanges leading to the emergence of virtual laboratories and the use of shared databases and open-source software.

There remain roadblocks at the research end. Limits in computing power and the complexity of biological systems require new algorithms and mathematical models. Also, much of the data that is needed to run simulations of complex biological systems is either not yet known or has been measured under conditions that are not

1. For more details, see for example 'Trends in science and technology relevant to the Biological and Toxin Weapons Convention', Report on a workshop held in Beijing from 31 October to 3 November 2010 (sponsored by the InterAcademy Panel on International Issues (IAP), the International Union of Microbiological Societies (IUMS), the International Union of Biochemistry and Molecular Biology (IUBMB), the Chinese Academy of Sciences and the US National Academy of Sciences, The National Academies Press, Washington D.C., 2011.

2. The terminology is still evolving, with some authors describing this convergence as the emergence of a new field ('chemical biology'); see for example Sophie L Rovner, 'Chemistry's liaisons', *Chemical and Engineering News*, 19 March 2012, pp. 49-51.

3. See for example 'Synthetic Biology', Scientific Discussion Meeting Summary, The Royal Society, 2-3 June 2008.

valid in the models. But these are temporary obstacles. Once overcome, progress in the life sciences may truly turn into revolutionary change.⁴

Already, a time compression effect can be observed in the crossing-over from basic research to development and marketing of new biologically-active compounds. When this time measured around a hundred years in the past, it now measures less than a decade. The cost of certain types of experimentation has drastically decreased through automation (sequencing machines, DNA and peptide synthesisers, combinatorial chemistry) and researchers can acquire specialised services, materials (including peptides and DNA oligomers and even entire genomes synthesised to user specification) and information via the internet.

From an economic perspective, biotechnology is regarded as a toolkit for development and today reaches well beyond applications in the health sector. Examples are the industrialisation of synthetic biology, food security, green technologies, technologies to deal with the impact of global warming, and new consumer products.

All these developments in chemical and life science research and development are expected to bring significant benefits for humankind. But they also increase the knowledge base and add new tools that would be available should a state or a non-state actor decide to develop new types of chemical weapons. The question is whether and how this dynamic R&D environment will affect the verification system of the CWC. To answer this question, it is first necessary to analyse how these advances in R&D affect the chemical industry (and other industries), and how that is relevant to the CWC.

Trends in chemicals manufacturing

Trends in chemicals manufacturing are of two kinds: technological and structural. On the technology side, new types of processes and equipment are being used for the manufacturing of chemicals. Biological and biologically-mediated processes have already been mentioned above. Pharming using transgenic plants or animals is becoming a means of industrial-scale synthesis, either by itself or combined with chemical synthesis steps. An example is the biosynthesis of amorpha-4,11-diene (a precursor of the natural anti-malaria product Artemisine usually isolated from sweet wormwood) using an engineered *Escherichia coli* bacterium. This biosynthesis is followed by chemical conversion of the diene into Artemisine.⁵ Such a combined chemical and biological synthesis is more efficient than the traditional extraction from plant material and leads to a product with higher purity. But biological processes are not only used

4. See also Caitríona McLeish and Ralf Trapp, 'The life science revolution and the BWC: Reconsidering the science and technology review process in a post-proliferation world', *Non-Proliferation Review*, vol. 18, no. 3, 2011, pp. 527-43.

5. Vincent J.J. Martin, Douglas J. Pitera, Sydnor T. Withers, Jack D Newman and Jay D Keasling, 'Engineering a mevalonate pathway in *Escherichia coli* for production of terpenoids', *Nature Biotechnology*, vol. 21, no. 7, July 2003, pp. 796-802.

today for the industrial-scale synthesis of certain high-value products that are otherwise difficult to make; they are also used for the conversion of biomass into biofuels or certain platform chemicals (starting points for other chemical products including plastics), thus creating interesting alternatives to the use of fossil materials.⁶

Related to the use of biological systems for chemicals manufacturing is the use of biocatalysts in chemical synthesis. Biocatalysts have a number of advantages over traditional catalysts, primarily because they operate at mild temperatures, are highly selective and function in a water-based reaction environment. They can be attached to inert, unsolvable materials ('immobilised' on supports), which can then be used as column fillers through which the reactants are passed, thus providing a continuous production environment. Alternatively, they can be added to discontinuously-operated reaction vessels to speed up chemical reactions. In either process, the enzymes can be easily separated from the product mixture and reused.

The growing use of biological production methods makes it easier and more economical to produce on an industrial scale molecules that are too complicated to synthesise by chemical means alone. The global industry revenues in this field are expected to grow from €116 billion in 2008 to as much as €450 billion by 2020.⁷ The impact that these developments will have on the verification system of the CWC has yet to be clearly understood.

Another rapidly-evolving technology is the industrial-scale use of microprocessing equipment ('microreactors').⁸ According to the Organisation for the Prohibition of Chemical Weapons (OPCW) Scientific Advisory Board, this technology brings about 'increased efficiency of reaction, resulting from the large area-to-mass ratio and efficient mixing, and the capability of increasing the scale of production simply by increasing the number of parallel microreactors ("numbering up")'. This avoids the considerable effort and some of the problems associated with traditional scaling-up from laboratory to industrial-scale volumes.⁹ In layman's terms, microreactors function by pumping reactants through thin columns or channels. When two such channels connect, the reactants mix instantly and the chemical reaction starts as the mixture flows downstream. This design avoids the high concentrations encountered at the beginning of a chemical reaction in conventional batch reactors where one reactant is added to a solution containing the other. It also enables a much finer control over a chemical reaction by modifying flow rates, channel layout and lengths, and by very efficient heating or cooling given the small equipment sizes. Microreactors

6. Mitch Jacoby, 'Teaming up for biobased chemicals', *Chemical and Engineering News*, 6 August 2012, pp. 37-8.

7. 'Chemistry goes green - Behind the scenes, industrial biotechnology is getting going at last', *The Economist*, 1 July 2010.

8. For an overview see for example W. Ehrenfeld, V. Hessel and H. Löwe, 'Microreactors - New Technology for Modern Chemistry', WILEY-VCH Verlag GmbH, Weinheim, 2000.

9. Report of the Scientific Advisory Board on Developments in Science and Technology for the Third Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention, OPCW document RC-3/DG.1, 29 October 2012, paragraph 60.

tors have yet to find broader application in the industrial production of chemicals but they are already used in the development of new medicines and pesticides.

The most imminent challenge for verification will be to ensure that inspectors are aware of this technology, recognise the equipment and understand its potential for use in the production of toxic chemicals. In the long run, much will depend on how widely this technology will penetrate the industrial landscape, both with regard to the areas of application and geographically.

This leads to the second macro-trend: the structural changes in the chemical industry with the emergence of new production locations, changes in trade patterns and market conditions as a result of globalisation, and a shift from a product-driven to a solution-oriented industry. The OPCW Director-General's Advisory Panel on Future OPCW Priorities characterised this trend thus: 'Whereas chemical industry was traditionally concentrated in North America, Western Europe and Japan, the world is now witnessing a migration of chemical production to new locations. Not only the emerging economic powers China, India and Brazil, but also other developing countries in Asia and Latin America, have seen an increase in investment in chemical industry. The industry's goal is to bring manufacturing closer to the raw materials in the Middle East and the huge markets in Asia and in Latin America. Furthermore increasing investment in chemical industry in Africa should be expected given the need of the African continent for agrochemicals, medicine and chemical products for industrial development.'¹⁰

These trends in the global chemical industry will have significant impact on the operation of the CWC including its verification system. The growing spread of the chemical industry worldwide, the increasing versatility of chemical technology and the convergence between the chemical and biological sciences all lead to an expanding science and technology potential that is more and more globally distributed and interdependent. The immediate challenge will be in the area of national implementation, where significant deficiencies persist with regard to completing the legislative and regulatory work that the CWC requires all States Parties to undertake to ensure that the treaty can be fully enforced. But verification will be equally affected, in terms of changes in the distribution pattern of declarable facilities as well as the encounter of new materials, equipment and technologies. In regard to the latter, the science and technology environment within which verification has to operate is likely to increasingly resemble the one relevant also to the Biological and Toxin Weapons Convention (BTWC), which of course does not presently have an international verification system.

10. Note by the Director General submitting the Report of the Advisory Panel on Future Priorities of the Organisation for the Prohibition of Chemical Weapons, OPCW document S/295/2011, 25 July 2011, paragraph 16.

Other relevant macro-trends

As the declared CW stockpiles are beginning to dwindle and the distance in time to the Cold War-era CW programmes is growing, threat perceptions related to chemical warfare will gradually change. To be sure, as long as there remain significant CW stocks (including in some states not party to the CWC), threat perceptions will have to take these stockpiles into account. With regard to these ‘traditional’ security threats, the current verification approach will remain valid for many years to come.

But in the absence of new CW programmes that make use of the rapid advances in science and technology, threat perceptions will shift from considering actual CW capabilities (chemical warfare agents, delivery systems, production units) to assessing potential threats (such as the dual use risks associated with newly discovered toxic chemicals, the possibility of creating break-out capabilities associated with new technologies, or uncertainties with regard to intentions underlying activities in chemical defence). At the national level we have already seen, to some extent in response to the events of September 11, a stronger focus on measures in the areas of preparedness and response that correspond to non-traditional CW threats posed by non-state actors such as terrorists and criminals. This has not yet made a significant impact on the way the OPCW conducts verification in the chemical industry and it remains to be seen to what extent States Parties will press for (or accept) new approaches so as to address these different security threats.

Other factors that might impact on demands for what the verification system of the CWC is expected to deliver could include, for example, actual use of CW (for example in Syria), another discovery of undeclared CW stockpiles (as was the case in Libya after the fall of the Gaddafi regime), or the acquisition by some States Parties of weapons for purported law enforcement purposes that utilise incapacitating chemical agents (and the reaction by other States Parties in particular if military forces were to be so equipped).

The impact on CWC verification

CWC verification today

The verification system of the CWC has been constructed around a set of clearly-defined objectives. With regard to CW stockpiles and CW production facilities, the approach is systematic and aims at full accountability for each and every item (chemical weapon, specialised equipment etc.) that has been declared. This is combined with verification tools to investigate cases of possible non-compliance (investigations of alleged use of chemical weapons, and challenge inspections to address such possible treaty violations as non-declaration or clandestine opening of new CW programmes). The CWC also provides other tools to address and resolve non-compliance concerns, ranging from bilateral consultations to clarification proce-

dures involving the Executive Council and the Director-General, and in particularly grave circumstances the United Nations Security Council and General Assembly.

This objective of aiming at full accountability is not replicated in the verification regime for the chemical industry. Even the Schedule 1 regime, which is systematic in character, was not designed to provide for full accountability. For example, while the production of Schedule 1 chemicals is declared and subject to verification, their consumption remains largely outside the declared and verified domain of State Party activity. Also, the transfer control system for Schedule 1 chemicals is less stringent and capable of identifying diversions than the tracking system used in nuclear safeguarding.

The rest of the verification regime in the chemical industry is essentially a system to confirm the non-production of chemical weapons. Its main tools are the Schedules which link much of the routine verification regime to the types of CW programmes known from the Cold War and earlier. The stated verification aims emphasise the confirmation of the absence of scheduled chemicals (in particular with regard to Schedule 1 chemicals). The verification system applies a gradual shift from systematic verification (Schedule 1) to risk assessment-based inspections (Schedule 2) to a qualified random selection of facilities to be inspected (Schedule 3).¹¹

In addition, the CWC does contain a safety net for facilities involved with unscheduled chemicals – the regime covering ‘other chemical production facilities’ or OCPFs. This was intended to take account of chemical plants that could be converted for CW production purposes (so-called ‘capable’ facilities), but in effect it reaches much wider into the organic chemical industry of the States Parties; only plant sites that exclusively produce explosives or hydrocarbons are exempted from the declaration requirement. This broad reach comes at a cost: the number of declared facilities measures in the thousands and only some of them are highly relevant for CWC verification purposes.¹² Also, the detail on the activities of these facilities provided in the declarations is fairly limited. As a consequence, the OCPF verification regime lacks focus. The CW negotiators were aware of this and included into the inspection selection mechanism criteria that would allow the Technical Secretariat to use information it has at its disposal to target inspections at plant sites of higher relevance, as well as a nomination procedure that would allow States Parties to propose specific plant sites for selection that they consider worth inspecting. In practice, the former procedure has been reduced to the use of only declared data while the latter remains

11. Mohamed Daoudi and Ralf Trapp, ‘Verification under the Chemical Weapons Convention’, in: R. Avenhaus, N. Kyriakopoulos, M. Richard and G. Stein (eds.), *Verifying Treaty Compliance – Limiting Weapons of Mass Destruction and Monitoring Kyoto Protocol Provisions* (Berlin-Heidelberg: Springer, 2006), pp. 77-106.

12. The Technical Secretariat in its report to the Third Review Conference described this as follows: ‘The OCPF regime covers facilities with a variety of characteristics and activities. Previous inspections showed that some OCPFs are relatively dedicated, equipped with conventional technology, and not suitable to produce any other chemicals than those for which they were originally designed. Others are relatively flexible, equipped with the latest technology, and suitable for producing wider ranges of hazardous chemicals. The capabilities of some OCPFs exceed the capabilities of facilities related to scheduled chemicals.’ See paragraph 3.242 of OPCW document OEWG-3/S/01, 5 October 2012.

controversial and has never been used. Attempts by the States Parties to resolve these issues have so far been superficial, and efforts by the Technical Secretariat to refine its OCPF site selection methodology have quickly run up against the problem of not being able to use information other than what is provided in declarations and constraints due to the uneven distribution of these facilities among States Parties.

The overall industry verification system was constructed to be evolutionary -- capable of taking account of implementation experience as well as new developments including those in science, technology and chemicals manufacturing. Provisions to that effect include the 'change procedure' in Article XV for the adaptation of technical and administrative provisions of the Convention's Annexes including the Schedules (a form of a 'simplified amendment procedure'); the tasking in Part IX of the Verification Annex of the First Review Conference to undertake a comprehensive review of the overall verification regime for the chemical industry (this issue continues to remain on the agenda of the OPCW); and the provisions in Article VIII that require the OPCW to review on a regular basis advances in science and technology and make best use of such advances for verification purposes. The legal framework and the tools for adapting the treaty are there, but is there the political will to use them?

CWC verification – the future

Discussions in the OPCW regarding the adaptation of the industry verification regime have so far largely focused on quantitative aspects: how many inspections in industry are needed to provide adequate confidence in treaty compliance?; what is the desired balance between inspection numbers in the different sub-regimes (Schedules 1, 2 and 3 as well as OCPFs)?; what criteria are to be used in selecting plant sites for inspection (in particular with regard to OCPF inspections) so as to make the overall system equitable as well as effective? At the same time, efforts have been directed at improving the declaration base for verification, and to enhance inspection efficiency.¹³ These efforts should continue, but are unlikely to be sufficient in the longer run to adapt the OPCW verification system to a changing world.

There are essentially two ways of adapting routine industry verification under the CWC to the challenges posed by advances in science and technology: amending the Schedules, or adapting the verification procedures, in particular those under the OCPF verification regime.

States Parties have been reluctant in the past to use the change procedure to amend the Schedules. The CWC makes provision for adding new chemicals to the Schedules after the initial declarations of chemical weapons, as a response to the possibility that hitherto unknown chemical agents were declared. Although there is today information in the public domain about the development of such novel agents (for exam-

13. See the reports of the two previous CWC Review Conferences as well as the report of the Technical Secretariat prepared for the Third Review Conference, OPCW document OEWG-3/S/01, 5 October 2012.

ple the ‘Novichok’ [Newcomer] family of nerve agents developed in the former Soviet Union).¹⁴ no CW with such agent fills were declared by any State Party after the entry into force of the CWC, and no State Party has submitted a proposal for the inclusion of such chemicals into the Schedule. The Scientific Advisory Board (SAB) in its report to the Third Review Conference made reference to the ‘General Purpose Criterion’ as a safeguard against all potential candidate chemicals and limited its comments on the Schedules to the treatment of salts of scheduled chemicals (pointing out again that, from a technical perspective, they should be treated in the same way as the free base) and the ‘Novichoks’ (pointing out that it had insufficient peer-reviewed data to perform a technical assessment of these candidate chemical warfare agents).¹⁵

Otherwise, the generally accepted wisdom seems to be that the Schedules, by and large, should be left as they are. This lack of enthusiasm to amend the Schedules is perhaps understandable. While the inclusion of the currently listed chemicals could be justified with reference to their involvement in past CW programmes, adding new toxic chemicals that have no past association with chemical warfare but which might pose a ‘risk’ to the CWC will always be somewhat problematic. The structure of the Schedules is built around pathways to Schedule 1 chemicals. Listing new candidate chemicals in Schedule 1 merely based on a potential risk would, however, be undesirable in most cases as this would severely hamper those chemicals’ uses in peaceful research, development, production and use, given the restrictions that apply to Schedule 1 chemicals under the CWC. Including new risk chemicals in Schedules 2 or 3 would probably be meaningless unless they are already produced in large quantities, given the thresholds for declaration and inspection that apply. The exception would be if such chemicals were to be included in Schedule 2A* – a sub-schedule that was included in the Convention to cover certain ‘high-risk’ toxic chemicals that could have CW utility similar to Schedule 1 chemicals, but that have been or are being produced for legitimate purposes in amounts that would conflict with the restrictions that apply to the production and uses of Schedule 1 chemicals. But then, new chemicals considered for inclusion in this sub-Schedule would, in the collective assessment of the States Parties, have to pose risks similar to those already listed there: BZ (a psychoactive chemical that was actually weaponised as an incapacitating agent but that is also used as an intermediate in the pharmaceutical industry), amiton (an obsolete pesticide that for all practical purposes today should be considered a nerve agent), and PFIB (an unwanted industrial by-product that has been assessed to have CW utility) – a steep hurdle indeed for a new chemical with no proven association with chemical warfare programmes.

That leaves the option of adapting the OCPF verification regime. Such adaptations have indeed been proposed, albeit outside the realm of the OPCW. For example: in 2008 Jonathan Tucker suggested considering the creation of a separate category of

14. See for example Vil S. Mirzayanov, *State Secrets: an Insider’s Chronicle of the Russian Chemical Weapons Program* (Denver, Colorado: Outskirts Press Inc, 2009).

15. OPCW document RC-3/DG.1, 29 October 2012, op. cit. in note 9, paragraph 9.

inspectable facilities within the OCPF regime for certain bioregulators such as peptides.¹⁶ Such facilities would usually escape declaration and verification given the thresholds of the OCPF regime. Lowering the thresholds, on the other hand, would bring into the verification realm a type of facility rather different from the ones currently liable to inspection – production facilities that are in fact close to the facilities relevant to the BTWC for which efforts to create an international verification system have been frozen for more than a decade. Resistance against subjecting such facilities to on-site inspection under the CWC can be expected on much the same grounds as in the BTWC context: confidentiality, economic impact, technical ‘impossibility’ of conducting meaningful verification, and questionable relevance.

And here is the crux of the problem: what exactly should be the purpose of conducting routine on-site inspections at chemical plants and plant sites in the future?

The answer seems obvious: to confirm that no CW are being produced at the inspected sites. But as previous CW programmes recede further in time, questions need to be asked about what that actually means in technical terms. So far, industry inspections have focused on two objectives: (i) confirming the data submitted in declarations (or resolving uncertainties related to declared data leading into a process of amending/correcting declarations); and (ii) confirming the absence of undeclared schedule chemicals, in particular the absence of Schedule 1 chemicals and their production. Issues related to the verification of compliance in a wider sense are usually addressed with a reference to the ‘General Purpose Criterion’. But how does this play out in practice during an inspection? Here is a series of pertinent questions in this regard:

1. Do inspectors have the ability to detect risk chemicals other than those listed in the Schedules? The answer, at the moment, is more or less ‘no’. The official OPCW analytical database used by inspection teams has been limited to schedule chemicals only by the States Parties. Inspectors can use commercial databases such as the mass spectral library published by the US National Institute of Standards and Technology (NIST) only if the inspected State Party agrees. Inspection teams could of course send samples to Designate Laboratories for off-site analysis. Procedures for this exist and have been tested extensively, but off-site analysis has yet to be done for real.
2. Even if inspectors were able to confirm the presence of a chemical that is not included in the Schedules but considered to pose a risk to the Convention, how would they go about establishing whether the chemical has been produced for legitimate purposes or as part of an undeclared CW activity? Under the OCPF regime, the identities of the chemicals that trigger a declaration are not revealed in the declaration, and neither is the use of the chemical tracked. The inspection aim is focused on confirming the absence of Schedule 1 chemicals. There is of course the general inspection aim to verify that activities are consistent with declarations to be submitted – this

16. Jonathan Tucker, ‘The Body’s Own Bioweapons’, *Bulletin of the Atomic Scientists*, no. 64, March 2008, pp. 16-22.

reaches beyond the Schedules but how can it be accomplished in practical terms? Are inspectors expected to look for indications of diversion of the chemical for military purposes, and can they actually do this in the context of an OCPF inspection as currently implemented?

3. To what extent will inspectors be able to apply verification methods that go beyond the somewhat bureaucratic checks of today, which are geared towards confirming the accuracy of a declaration? Will they be able and allowed to undertake a technical assessment of the risks to the Convention that a given facility may pose, using this assessment as a tool in guiding and informing inspection conduct to collect relevant information that will make it possible to establish whether the site was in compliance?
4. As experience in the OPCW inspectorate concerning the characteristics of CW production operations is dwindling as the combined result of tenure policy and shrinking demand in the field of CW verification, how confident can one be that future inspectors will in fact recognise a facility that is involved in undeclared CW activities?

These questions highlight the need to study more carefully how the qualitative aspects of verification conduct can be strengthened as science and technology make further progress. This is not in itself a matter for the Third Review Conference, which can be expected to aim at incremental progress with CWC implementation. There remain a number of practical implementation issues that need attention at this stage to ensure that the current system will continue to work properly and that the remaining deficiencies are being addressed and resolved. The declaration system, for example, still needs to be improved to ensure that all States Parties do in fact declare all their declarable facilities. The inspection system must be further improved and it is important that the OPCW maintain routine inspection access into all States Parties that have declarable infrastructure. Also, it will be important to maintain the right balance between conducting routine verification and maintaining the capability of the OPCW to conduct investigative types of inspection (challenge inspections and investigations of alleged use).

Furthermore, the OPCW needs to continue to address areas where it needs to further enhance its technical verification capability, for example with regard to sampling and analysis. In all these areas, the Third Review Conference will be an opportunity to take stock of what has been accomplished, and to provide guidance for what needs to be done next.

But in the longer run, it will be important that States Parties engage in a more fundamental conversation about the future of the industry verification regime, its objectives and desired reach. In this context, there needs to be a discussion about the meaning of 'compliance' and the role of verification in the absence of CW programmes – what are acceptable verification baselines against which to assess compliance and what criteria should be applied when assessing information about States Parties' activities in chemicals research, development and manufacturing *vis-à-vis* CWC compliance?

The Third Review Conference is an opportunity to draw attention to some of these issues, and it could initiate a longer-term process to study the requirements of future chemical industry verification. This must be a transparent process involving not only experts from the States Parties, but also from the chemical industry and other actors that can bring relevant experience and knowledge to the table.

III. POST-DESTRUCTION ERA COMPLIANCE UNDER THE CWC

Richard Guthrie

The day when all declared stockpiles of chemical weapons have been destroyed will mark a dramatic change in the regime to control such weapons. It is often said that this will be the point at which the CWC moves from being an instrument of disarmament to one whose major purpose is to prevent the re-emergence of chemical weapons. But what does this mean for the CWC and the wider regime?

This chapter begins by examining the fundamental purpose(s) of the CWC and the impact of the shift from a focus on destruction to a new focus on prevention of the re-emergence of chemical weapons. It goes on to examine the generic threats to a chemical-weapon-free world and the available counters to these. There follows some discussion about the division of responsibilities between the OPCW Technical Secretariat and States Parties, as well as about possible changes in the context within which the regime functions over the coming decade or so. The chapter concludes by posing some key questions and suggesting some priorities for action.

The fundamental purpose of the CWC

The basic aim of the CWC is very simple: to achieve a chemical-weapon-free world. To this end it places some basic obligations on the States Parties. These include: not possessing chemical weapons; not helping anyone else to possess or to use them; making the use of chemical weapons less attractive; and not hindering peaceful uses of chemistry while pursuing the other objectives.

When looking to the long-term future of global efforts to achieve a chemical-weapon-free world it is important not to get too focused on the details of the text in the Convention, but to be mindful of the wider picture. The CWC is the centrepiece of the international regime to control chemical weapons. The intent underpinning the regime is to achieve a chemical-weapon-free world and the provisions within the CWC are simply a set of tools agreed to try and realise this objective. A fundamental issue in all international control regimes is that the nature of international politics means that negotiated texts are a mix of compromises and embody characteristics of the era in which they were agreed, notwithstanding that they are intended to be enacted over an indefinite period.

An end to focus on destruction

The destruction of declared stockpiles of chemical weapons remains the current focus of many CWC States Parties and accounts for a substantial proportion of the OPCW's activities in terms of monitoring and verification. Much of the declared chemical weapons stockpile that is still awaiting destruction could be characterised as hazardous waste rather than usable weapons.

Destruction is only one component of the total obligations contained within the CWC, but it has become a dominant issue for a variety of reasons. Not least among these is the fact that destruction is easy to conceptualise – it is easy to communicate the overall process and there is a clear objective. By comparison, preventing the re-emergence of chemical weapons is a multifaceted issue. While the overall objective – no chemical weapons – is simple, the practical implementation is complicated.

Compared with other OPCW activities, destruction is the easiest to quantify. In general, quantifiable activities and outputs tend to appeal more to modern management systems. Something that is likely to be well managed is more likely to be selected for implementation. In contrast, activities conducted in support of preventing re-emergence are not always so easily measured.

Justification for the range of activities needed to prevent re-emergence in the post-destruction period, such as multilateral verification arrangements and national implementation measures, is harder to communicate than the justification for destruction, notwithstanding that these activities have been carried out for some time.

A particular concern has to be the potential for a 'failure from success' paradox. The demonstrated ability of the regime to reduce chemical threats could mean that resources for such efforts are reduced which, in the long term, weakens the regime to such an extent that future opportunities for re-emergence occur.

The need to move discussion from 'non-proliferation' to 'prevention of re-emergence'

Readers may have noticed that, up to this point, the term 'non-proliferation' has not yet appeared in this chapter. There is a clear reason for this and it relates to terminological and conceptual issues.

All international regimes to control weapons of one sort or another have been described using one or other of the terms 'disarmament', 'arms control', and 'non-proliferation'. There are times when one or other of the terms is used, perhaps inadvertently, as a shorthand for all three types of regime. As the overlaps between these three concepts can be significant, they are often referred to collectively. However, this may, in some cases, confuse the situation.

In the broadest context, the concept underpinning disarmament is that the weapons are the problem and so must be eliminated; underpinning arms control is the view that weapons are a problem to be managed; and the main concern underpinning non-proliferation is about the wrong weapons being in the wrong hands. As such, the term 'non-proliferation' carries with it significant historical baggage.

The basic concept of 'proliferation' is that of spread or development and therefore the concept of non-proliferation is to reduce the possibility of such spread or development. The concept derives from the biological sciences and was later applied to issues relating to the spread of weapons. Moreover, the term 'proliferation' embodies an implicit understanding that the proliferation spreads from something that already exists. When the term was first coming to prominence in its use in relation to nuclear weapons, the proliferation was indeed also spreading from something that existed, whether 'horizontal proliferation' (the spread of nuclear capabilities to new countries) or 'vertical proliferation' (the development of more advanced capabilities within a country that already had nuclear weapons).

When used in relation to chemical weapons the situation is slightly more complicated as there are no declared chemical weapons production programmes being carried out by any government in the world. The concept of proliferation in this context relates as much to new countries acquiring a capability for chemical weapons as to materials and technologies spreading from one country to another.

When examined in this way, it can be seen that historically 'non-proliferation' is a loaded term that perhaps should be used with care. Moreover, the use of the term has resonances with the nuclear field and the nuclear Non-Proliferation Treaty (NPT) with its distinction between nuclear-weapon states and non-nuclear-weapon states. These distinctions within the NPT are deeply controversial. The CWC has no such distinction – all states are equal once destruction is complete. It seems prudent, therefore, to ensure that the CWC does not echo the nuclear divisions through inadvertent use of terminology. For these purposes, it is better to refer to prevention of re-emergence of weapons in the chemical area rather than to non-proliferation.

Threats to a chemical-weapon-free world

The key threat to a chemical-weapon-free world is, ultimately, the use of chemical weapons. Acquisition without use also poses a significant threat. The sources of ongoing threats can be broken down into three broad categories: formal state programmes, non-state programmes and programmes operated by rogue elements within states.

A particular difficulty in dealing with chemical weapons issues is how to quantify any threat. Covert programmes, by their very nature, are extremely difficult to assess.

Historically, there are numerous instances of assessments of weapons programmes of various types being grossly overstated or understated. In addition to the problems of assigning a threat level at any particular time is the fact that the threat level could easily change faster than international arrangements could be recalibrated. There is therefore a need to err on the side of caution, while recognising that overstating the threat can have significant consequences in making the acquisition of chemical weapons more attractive to potential possessors.

State programmes deliberately undertaken by political leaderships at the highest level remain the threat that could produce the greatest quantity of chemical warfare agents. Programmes by states not party to the CWC can undermine the regime, but any covert programme by a State Party, either currently or in the future, has the potential to significantly damage confidence in the regime. There is also a possibility that a previously undisclosed past chemical weapons programme could raise questions about the effectiveness of the regime.

The potential for non-state actors to acquire or use chemical weapons is a subject that has raised concerns that illicit trade in WMD-related materials and technologies could assist non-state actors in acquiring new capabilities. Fears of terrorist or criminal use of chemical, biological or nuclear materials were substantially amplified by the 11 September 2001 attacks in the US and the anthrax letters posted later that year. Much of the concern was not that the criminal or terrorist threat was itself necessarily increasing, but stemmed from a growing realisation of the vulnerabilities of modern societies to disruption. These fears had direct influence on policymaking.

The potential threat of rogue elements within states is difficult to discuss on the international stage. Governments have a natural tendency to present themselves as unified entities while in reality their internal policy-making processes are subject to numerous competing influences, demands for political attention and resources. The legitimate role of officials to examine what is in their country's national interests is a fundamental one. There is a need to ensure that officials across the globe are aware of the implications of examining the possible use of poisons as a method of warfare and that national implementation measures include provisions prohibiting government officials from carrying out activities banned under the CWC.

Counters to the identified threats

The counters to threats to a chemical-weapon-free world are based on existing measures, and it may be expected that there will be a greater political focus on these once destruction is complete.

Preventing re-emergence, through all of the counters referred to in this section, will require an assessment of the levels of activities required in order to reduce potential threats to acceptable levels. As threat levels are not easily assessed through forms

of quantitative analysis, as noted above, it is not possible to quantify increases or a reduction in true threat levels between any particular points in time. In an era when management of resources within governments is increasingly based on measuring effects and impacts of activities, an unquantifiable threat level makes it more difficult to engage with these processes. A legitimate question in most areas of government operations is how much output is achieved for each unit of input. In the unquantifiable realm of threat assessments, is not possible to say that a particular activity has reduced threats by a certain percentage. The nature of this problem makes the case for appropriate resource allocation more difficult.

Controlling the supply of materials and know-how is the most obvious route, but can have the disadvantage of also hindering legitimate trade if application is haphazard. Even when implemented with care to minimise disruption to legitimate trade, there may still be the perception that transfer controls are unfairly put into effect.

On the issue of reducing the possibility of diversion of chemicals for hostile purposes there have been two traditional main areas of interest: industry inspections carried out by the OPCW; and national controls on transfers of chemicals. This has been supplemented in recent times by a new focus on chemical safety and security issues.

The best way for the global regime to ensure supply of chemicals for legitimate purposes while inhibiting diversion for hostile purposes is through industry inspection. Clarity regarding production, transfers and consumption of chemicals provides greater confidence. Much of this clarity requires good recordkeeping. While diligent recordkeeping might not seem as glamorous and exciting as other measures, it is an important contributor to confidence. In most cases it is extremely inexpensive to keep records in relevant formats. If an entity, whether through an individual facility or a government agency, wanted to divert materials, it would have to create a fake set of records to cover its tracks. These false records would have to be internally consistent in order to reduce the chances of detection and so can be time-consuming to produce. This underpins a central feature of successful verification arrangements – they should be cheap to comply with and expensive to cheat under.

Industrial inspection brings with it a number of associated issues, the most prominent of which is probably the inspection of ‘other chemical production facilities’ or OCPFs. When the CWC was negotiated, the greatest risk was seen as coming from the chemicals that could be misused to the deadliest effect, so the chemicals in Schedule 1 are seen as more dangerous than those in Schedule 2 or 3. OCPFs are facilities that could produce toxic materials that could be misused. There is a tension here between the ‘hierarchy of risk’ of the chemicals in the schedules versus geographic distribution of OCPF inspection. Where is the greater danger of re-emergence – a Schedule 2 facility in a country committed to a world free of chemical weapons or an OCPF in a country of concern? That may seem a simple question at first glance, but not only is this a deeply political question but it is one that can be misinterpreted in its applica-

tion in an extremely negative way. Furthermore it raises a host of other questions such as what defines a country of concern? A fundamental principle of international treaties is that all States Parties be treated equally (unless non-compliance has been proven). Finding a workable consensus on the OCPF issue will be key.

The need for national export controls arrangements derives from the obligations in Article I of the Convention to ‘never under any circumstances ... transfer, directly or indirectly, chemical weapons to anyone’ or ‘to assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party under this Convention’. The onus is therefore on all States Parties to ensure not only that all activities within their jurisdiction or control are compliant with the CWC, but also that all transfers of relevant materials or equipment from their jurisdiction are also compliant in that they do not assist others to breach the Convention.

When the potential to manufacture chemical weapons was limited to military programmes run by governments, international controls had to focus on the activities of governments or of large-scale chemical industrial plant that might feed military programmes. Once peaceful civilian activities had advanced – both in terms of scale and technological development – to the extent that non-state actors could utilise them for hostile purposes, the nature of the problem changed fundamentally. This dual-use nature creates a new frame of reference for the security problems of weapons of mass destruction – and in particular of chemical and biological weapons: the issue is no longer just about weapons controlled by states, but also about the regulation of technologies outside of the ownership of governments that have not only peaceful uses, but also economically significant purposes.

In recent years there has been a greater realisation of the complexity of the issues surrounding the control of dual-use materials that might be misused. At the time the CWC was negotiated, stockpiles of chemical weapons held by governments for use by military forces was considered the key threat to be countered. While that still remains a threat, albeit a considerably reduced one, the threat of toxic materials being used by non-state actors for terror or criminal purposes has become politically significant.

One of the responses to this greater potential for hostile uses has been to increase the emphasis on the need for toxic chemicals to be held within secure arrangements and to prompt a broader effort to promote chemical safety and security. Monitoring the responsible use of toxic chemicals forms part of a web of measures that can significantly reduce the possibilities for diversion of materials from legitimate uses.

Effective capacities for responding to the deliberate release of poisons reduce the disruption that might be caused by them. Diminished potential disruption reduces the attractiveness of such a release to a possible perpetrator and therefore reduces the likelihood of a possible perpetrator taking steps to acquire toxic chemicals. There is a particular difficulty in how to quantify any response efforts needed to remain in place as part of standby procedures. As a deliberate release is a low-probability

event with significant consequences, response capacities that are financed for the sole purpose of countering a deliberate release are likely to be unsustainable. A more sustainable approach is to tie responses to deliberate release into broader response plans to natural disasters, pandemic diseases and industrial accidents. Such ‘all-hazards’ approaches bring with them a number of synergies.

The role of the regime, and the OPCW and its member states in particular, in enhancing response capacities in Assistance and Protection helps raise awareness within government authorities of what measures are feasible as well as directly enhancing response capacities which, themselves, make the use of chemical methods of warfare less attractive.

Broader possibilities for reducing chemical weapon threats derive from the overall reduction in violent conflict that has happened in recent decades – a trend that has been continuing. While this is largely beyond the direct scope of the CWC itself, it should not be forgotten. Reduced violent conflict on a global scale means that there are fewer possibilities that chemical weapons might be desired or even used.

The legacies of past chemical weapons programmes still require attention. There is a legal requirement to deal with old/abandoned chemical weapons, including new discoveries of these. Some would argue that there is a moral imperative to deal with other issues such as long-term health effects that victims of exposure to chemical weapons have suffered and the risks posed by chemical munitions dumped at sea some decades ago. Effective action on legacy issues enhances norms and values within the regime.

Universality would strengthen the overall regime as any territory outside of the jurisdiction of the CWC represents a potential weakness in the Convention. – not necessarily by design of the entity outside the CWC. As well as universality of membership of the Convention, there is also a need for universality of effective implementation of its provisions.

In order to give the regime to control chemical weapons greater depth and resilience, a campaign of education and awareness raising needs to be undertaken among practising chemists. Awareness on a political level leads to action and resources, but there is a vital need for chemistry practitioners to be aware of the potential for their science to be misused. Developments in chemistry and in the life sciences mean that dual-use technologies are being used in a wider range of circumstances and in a wider variety of locations than ever before. Governance of disseminated dual-use items has to be broader than just government action and needs to involve industry associations, professional bodies, learned societies, etc, many of which either operate across national boundaries or interact closely with counterparts in other countries. Disseminated dual-use technologies need to be matched by equally wide-ranging norms and values regarding their control. This, in turn requires confidence that such norms and values

are valid and such confidence relies upon practitioners being involved with standard setting. A powerful argument in this regard is that the right of access to dual-use items should carry the responsibility of vigilance against misuse of those items. It is quite possible that the first indication of misuse of dual-use materials and technologies may well come from within the scientific community itself – in effect, disseminated verification of disseminated technologies.

The provision of cooperation and assistance (including capacity building to deal with any and all of the factors detailed above) will remain an important counter to the threats to the regime to control chemical weapons. All governments face challenges in implementation of the regime. Moreover, the CWC contains a bargain, just like the other treaties controlling particular weapons of mass destruction: the renunciation of hostile uses of the relevant materials and technologies in return for freedom to gain the benefits of the peaceful uses of them. Security, economic and geographical considerations influence how individual countries see the balance between the two sides of the bargain. While most Western states have consistently put emphasis on the security aspects of the bargain, they have increasingly come to realise that the other considerations have to be taken into account in order to encourage universal membership, national implementation and ongoing active engagement with the treaties.

The division of responsibilities between the OPCW and States Parties

Within the CWC there is a division of responsibilities at the international level and at the national level.

The CWC does not define how a National Authority should operate, simply referring to a ‘national focal point’ in Article VII of the Convention. Should this be simply a contact point or should it be an active agency? It may be argued that any State Party that considers itself to be actively enforcing CWC provisions should have an active National Authority, not simply a post box that collates information from reporting bodies, such as industry or government agencies. Indeed, in order to be effective, a National Authority needs to actively seek out any new entities within the State Party that might have to report any relevant activities.

The concept of an effective National Authority is a significant one as it is not possible to properly consider the division of responsibilities and activities between the national and international level without it. However, benchmarks and yardsticks might be a better way to approach this than defining a more detailed standard as the political, legal and constitutional contexts within which National Authorities operate can be varied. Nevertheless, a move towards a global standard could enhance CWC implementation, bearing in mind that care must be taken in attempting to set any kind of global standard in order to ensure that it does not result in a lowest common denominator global standard.

Effective National Authorities enhance the activities of the OPCW Technical Secretariat by, for example, clearer data provision and greater removal of anomalies. As much of the data examined by the OPCW is data on transfers between States Parties, more accurate and timely data helps identify anomalies at an early stage.

In considering the division of responsibilities/activities between the States Parties and the OPCW, there are other issues that need consideration. Much of what was able to be put on a national level had already been done during the negotiations for the CWC. This was done for more than one reason. While a prime consideration was keeping the Technical Secretariat as small as possible to keep costs down, some negotiators indicated a wish that the Technical Secretariat should not become too powerful. One example of this concerned the question of who should make an assessment of non-compliance. The United States has made it repeatedly clear it wants such assessment to be made by States Parties individually while most other countries want the OPCW to have the capacity to do it.

Possible contextual changes in the coming decade

As noted above, all international conventions embody characteristics of the era during which they were negotiated. However, the context within which any such convention operates is not static and contextual change can be rapid – with the technological environment having the potential to change much more rapidly than the political environment. Looking to the future of the CWC in the post-destruction era, it is useful to examine potential changes over the next decade or so.

Technological change in the field of chemistry will lead to new possibilities for small-scale production of chemicals with complicated structures. This will present a number of verification challenges as the range of facilities capable of making scheduled chemicals will significantly increase.

As understandings develop of the processes that sustain life, there are greater opportunities to intervene in life processes for both good and bad purposes. Scientific breakthroughs that create new possibilities of beneficial therapeutic treatments may also be used to intervene in life processes in a hostile manner. This may lead to a wider range of chemical substances being of concern.

In general terms, developments in information technology could have both positive and negative repercussions. On the plus side, new developments may enhance methods of gathering, transmitting, collating and retrieving data which might help with verification. Less auspiciously, new IT developments might potentially also usher in new ways of undermining the verification arrangements of the OPCW.

Connected with the issue of IT developments is the growing range of information that is readily available in the public domain. This open source information is likely to be indexed and categorised in new ways as information systems develop and there may be new ways to utilise such information within the regime to control chemical weapons. One purpose would be to note whether there are facilities referred to in the open literature that have been inadvertently (or worse, deliberately) omitted from a declaration by a State Party. Many governments are hesitant about the use of open source materials as this prevents them being in control of the information to which the OPCW has access about entities, and the processes and technologies they use, within their jurisdiction. A second purpose is to allow the OPCW to keep track of developments in industrial processes and new uses of materials. This is far less controversial.

Key questions

There are no clear answers that cover the range of all of the issues raised above. However, the selection of particular individual questions may help focus debate. The five questions raised here are not comprehensive, but if answers to these can be found, a number of the other issues should fall into place relatively easily. While these questions could be raised at the Third Review Conference, their relevance is much broader and the subject matter should be revisited regularly.

1. What are the levels of routine activities at a national and international level needed to inhibit misuse of toxic substances? This is a more complex question than it may seem at first sight for reasons outlined elsewhere in this chapter. However, reaching a conclusion on this allows for much better planning of national and multilateral activities.
2. What needs to be done specifically by the OPCW Technical Secretariat and the States Parties? This is essentially about the practical implementation of the activities identified in the first question. Again, this should be part of a process leading to an outcome that allows for much better planning of national and multilateral activities.
3. What are the levels of routine activities needed to maintain the skill-set for non-routine activities? Non-routine activities include such processes as challenge inspection and investigation of alleged use of chemical weapons. Neither of these can be carried out without ongoing training and access to individuals with certain skill-sets. As the organisation will have a reduced staff once destruction verification has been completed, it will be a significant challenge for the OPCW to be effective at challenge inspection or investigation of alleged use and this should be addressed before the reductions in staff numbers are completed.
4. What is the optimum size for the Technical Secretariat? This needs to be based on answers provided to the first three questions. There is a sub-question here that re-

lates to implications of the tenure policy at the OPCW. In the run-up to the Third CWC Review Conference, it is striking how few Secretariat members were present at the Second Review Conference five years previously. This highlights the loss of experience that a relatively high rotation of staff can bring. For a Review Conference this is regrettable but not too serious; however in many technical areas that the OPCW deals with this could have significant repercussions in the long term.

5. If States Parties are not willing to pay for Technical Secretariat activities will they be prepared to pay to carry out the same activities domestically? This is a serious issue. There is a natural tendency to want to keep costs of international organisations as low as possible and the OPCW will be subject to such pressures. The temptation in budgetary negotiations will be to say that some functions could be carried out at a national level instead. But how many countries would then implement such functions and, if indeed they turn out to be few, what are the risks to the effectiveness of the regime?

As noted at the beginning of this section, there are no simple answers to these questions.

Conclusions

The transition to the post-destruction era is likely to be a difficult period with a challenging reorientation of priorities in national arrangements as well as in the OPCW. The following conclusions may be drawn.

- Realistic threat assessments will be needed. These will obviously vary between those making them, and are dependent on a range of factors such as geographical proximity to potential possessor states or regional terrorist threats. Care is needed in discussion of possible threats. Overstating threats can lead to later accusations of ‘crying wolf’ which can substantially hinder sustainability in funding levels and resource allocation. Overstatement of threats can also make the acquisition of chemical weapons more attractive to potential possessors as they might perceive the threat assessment as an indication that this sort of weapon could have the greatest terror effect. On the other hand, understating the threat can lead to complacency and to a lack of preparedness.
- There will remain a need for efforts aimed at preventing re-emergence to be given suitable political priority at a global level while raising awareness within governments of the difficulties of quantifying progress in this area.
- Flexibility in the way in which future industry inspections are carried out will be required. It is possible that there may need to be more than one OCPF inspection selection method. Considering how challenging the OCPF issues have been so far, it will

be important to treat this subject area with some care and to ensure that there is broad consensus support for any changes. As part of the monitoring of the chemical industry to ensure exclusively peaceful uses of chemicals, it will be necessary to keep track of technological changes.

- There will be a need to maintain the skills base of the Technical Secretariat while remaining sensitive to the concerns of some States Parties. The tenure policy has been successful at making the OPCW a non-career organisation. However, this policy may have negative consequences that some States Parties which supported it may not have intended.
- Historically, the most vocal concerns from States Parties have been about an OPCW that is too effective. The concern should be now that in the coming years we could potentially have a situation where the OPCW is too weak to carry out its duties effectively.
- A strengthening of National Authorities, irrespective of whether the division of labour with the Technical Secretariat changes or not, will be needed. It is clear that some States Parties have had administrative difficulties in identifying all relevant activities within their jurisdiction.
- Most of all, the potential for ‘failure from success’ has to be avoided. The overall regime, of which the CWC and OPCW are major parts, has been extremely successful at delegitimising chemical weapons as instruments of power. The CWC itself has been the main instrument of oversight of destruction of past stockpiles. But the paradox of the regime becoming a victim of its own success remains of paramount concern. The very success of the regime in producing significant reductions in chemical threats could mean that resources for continuing efforts are reduced which, in the long term, weakens the regime to such an extent that future opportunities for re-emergence could occur.

IV. THE FUTURE OF THE CWC: IMPLICATIONS FOR NATIONAL IMPLEMENTATION

Yasemin Balci

Introduction

Once a state has become a party to the Chemical Weapons Convention (CWC), it is required to adopt measures at the national level to implement its treaty obligations. Article VI on non-prohibited activities requires States Parties to ‘adopt the necessary measures to ensure that toxic chemicals and their precursors are only developed, produced, otherwise acquired, retained, transferred, or used’ for peaceful purposes. Article VII on national implementation measures requires all States Parties to adopt the necessary measures, especially penal legislation, to fulfil their obligations under the Convention.

This chapter provides an overview of the current status of national implementation, in particular implementing legislation for the Convention. Data from the Organisation for the Prohibition of Chemical Weapons (OPCW) demonstrate that fifteen years since the entry into force of the Convention, most States Parties have still not adopted the required implementation measures. This is a serious shortcoming, given the significance of national implementation and its role in prohibiting and preventing chemical weapons (CW). The chapter also discusses the increased importance of national implementation in ten years’ time, when the completed destruction of CW stockpiles will generate internal changes for the OPCW. Lastly, it examines how changes in security, science and technology, and industry will affect the CWC. Since the national implementation measures required by the CWC are typically focused on prohibition and prevention of CW, they will largely be able to absorb those changes. Nonetheless, additional measures to prevent non-state actors from obtaining toxic chemicals for malicious purposes will be necessary. Developments in other international instruments relating to the security environment, such as the 1998 Rome Statute of the International Criminal Court, and those relevant to science and technology, such as the 1972 Biological and Toxin Weapons Convention (BTWC), should be closely followed too. The need to adopt national implementation measures will become increasingly urgent for states with an emerging chemical industry.

The chapter concludes with some suggestions on how to increase the number of States Parties with appropriate and comprehensive legislation, including the role that the European Union (EU) could play to achieve this goal.

The status of national implementation of the Chemical Weapons Convention

The OPCW keeps track of the number of States Parties that have adopted implementing legislation. Most States Parties have still not fully implemented the CWC in their domestic legal orders. In its 'Review of the Operation of the CWC since the Second Review Conference', the Open Ended Working Group for the Preparation of the Third Review Conference concedes that progress in adopting implementing legislation 'has been slow'.¹

In October 2002, 27 percent of States Parties (39 out of 145) had adopted implementing legislation that covered key areas of the Convention.² The key areas are considered to be, firstly, prohibition of the development, production, acquisition, stockpiling, retention, transfer and use of CW as defined in Article II and extra-territorial application of these prohibitions (Article VII). Secondly, they include control regimes for all scheduled chemicals, their related facilities, other chemical production facilities (OCPFs), and penalties for not complying with the control regimes (Article VI). Scheduled chemicals are toxic chemicals that have historically been developed, produced, stockpiled or used as a CW. They are placed on three different schedules on the basis of the risk they pose to the object and purpose of the Convention.³ OCPFs are production facilities for unscheduled discrete organic chemicals. While these facilities do not produce scheduled chemicals, they are still subject to a control regime because their production systems could be diverted towards the manufacture of CW.⁴

The First Review Conference of the CWC in 2003 recommended that improvements be made with respect to national implementation, which resulted in the adoption of the OPCW Action Plan in October 2003.⁵ This almost coincided with the adoption of UN Security Council Resolution 1540 in April 2004, which requires states to adopt and enforce effective national measures to prevent proliferation of nuclear, chemical and biological weapons and materials.⁶

Ten years later, the percentage of States Parties that have implementing legislation in key areas is 47 percent.⁷ More countries have in the meantime joined the Convention, bringing the number of States Parties with legislation covering key areas to 89 out of 188. Of the five regional groups at the OPCW, EU member states belong to either the

1. Note by the Technical Secretariat, Review of the Operation of the Chemical Weapons Convention since the Second Review Conference, WGRC-3/S/1, 5 October 2012, para. 3.262.

2. Lisa Tabassi and Scott Spence, 'Improving CWC implementation: the OPCW Action Plan', Verification Yearbook 2004, VERTIC, p. 49.

3. See Annex on Chemicals to the CWC.

4. See Annex on Implementation and Verification to the CWC, Part IX.

5. Tabassi and Spence, *op. cit.* in note 2, p. 45.

6. *Ibid.*, p. 52.

7. National implementation of the Chemical Weapons Convention. See: www.opcw.org.

Western Europe and Others Group (WEOG) or the Eastern European Group (EEG), with the exception of Cyprus, which belongs to the Asia Group. Within WEOG the percentage of States Parties with legislation in key areas is 86 percent, or 25 out of 29 States Parties. For EEG, the percentage stands at 88 percent, or 22 out of 25 States Parties.⁸

To put it the other way around, 100 out of 188 States Parties, or 53 percent, have not adopted legislation in key areas yet. This means they do not have the full measures in place to prevent the misuse of certain toxic chemicals, for example by setting up authorisation procedures for their imports and exports and deciding who can produce, acquire, retain or use them, which constitute important steps to prevent proliferation. The States Parties in question might not have a sizeable chemical industry, but their lack of legislation creates loopholes in the global system, which can be exploited by those with malicious intent, whether they are state or non-state actors.⁹ Those actors could also take advantage from the lack of legislation in *non*-States Parties, which is why universality of the Convention is equally important. While non-States Parties might already have some legislation in place to prohibit and prevent CW, the OPCW cannot check that this legislation is sufficiently comprehensive. These non-States Parties may also have adopted legislation to implement UN Security Council Resolution 1540, but this resolution is complementary to the CWC and further legislation to fully cover the CWC may therefore be necessary.

The Technical Secretariat of the OPCW is proposing to change its approach to counting and increasing the number of States Parties with implementing legislation from a process based on an assessment of 'legislation covering key areas' to a two-phased process where *all* States Parties are expected to comply with a set of 'initial requirements' and a few also with 'additional compulsory requirements'. 'Additional compulsory requirements' will depend on the size and nature of the chemical industry of each State Party and may therefore vary per State Party. 'Initial requirements' function as the lowest common denominator and are based on measures that would have to be taken by a 'non-possessor State Party that has no declarable chemical production facility on its territory'. In other words, these are measures that all States Parties would have to take, regardless of the state of their chemical industry or any chemical weapon destruction obligations. Initial requirements consist of definitions, prohibitions and penalties relating to chemical weapons and scheduled chemicals. 'Additional compulsory measures' relate largely to a control regime for production of scheduled chemicals.¹⁰

8. Report by the Director-General: Status of Implementation of Article VII of the Chemical Weapons Convention as at 27 July 2012: Article VII(1)(a) to (c) and Other Obligations, EC-70/DG.3 C-17/DG.6, 28 August 2012; Report by the Director-General: Status of Implementation of Article VII of the Chemical Weapons Convention as at 27 July 2012: Further Obligations Pursuant to Article VII, EC-70/DG.4 C-17/DG.7, 28 August 2012.

9. Alexander Kelle, 'Non-proliferation and preventing the re-emergence of chemical weapons', in Disarmament Forum, *Agent of change? The CW Regime*, 2012 (1), p. 61.

10. Note by the Technical Secretariat, Review of the Operation of the Chemical Weapons Convention since the Second Review Conference, WGRC-3/S/1, 5 October 2012, paras. 3.264-3.268.

National implementation in the post-destruction era

Within ten years, the CWC will move into an era in which destruction of declared CW stockpiles will have been completed. The OPCW will have to maintain capability to verify destruction of chemical weapons as non-States Parties with CW stockpiles may join the Convention (e.g. Syria) or in case undeclared CW stockpiles become known, as happened in Libya in 2011. However, it is evident that the OPCW will change internally when its core activities will shift from destroying CW to preventing their re-emergence. This shift does not in itself affect States Parties' national implementation obligations, because the measures required by Article VII typically focus on prevention.

States Parties are required under Article VII to *prohibit* activities such as developing, producing or using CW. Through the adoption and, crucially, the effective enforcement of criminal legislation, States Parties will be able to investigate, prosecute and punish offenders. Having the necessary criminal legislation in place has a deterrent effect that manifests itself in two ways. Specifically, it deters the offender from re-committing crimes and generally, it signals to the wider public that engaging in this kind of behaviour will result in punishment, thus discouraging and preventing the misuse of toxic chemicals.

Criminal legislation, however, is only part of the necessary national legislation. For those who are undeterred by prohibitions, it should be made as difficult as possible to acquire dangerous toxic chemicals. States Parties are therefore required to subject certain activities involving scheduled chemicals and unscheduled discrete organic chemicals to a national authorisation system. Lastly, national inspection regimes have to be set up to verify compliance with the applicable rules. These national measures allow States Parties to control certain toxic chemicals in their territories and prevent their misuse.

It has been noted that 'to effectively prevent covert rearmament, the OPCW and its states parties must focus more than currently on the in-depth implementation of the CWC; that is the comprehensive implementation of all its prohibitions at all levels and within all sectors.'¹¹ Similarly, the Working Group for the Preparation of the Third Review Conference states that 'in order to ensure the proper functioning of all of the Convention's mechanisms (specifically in the context of preventing the re-emergence of chemical weapons), it is essential that all States Parties establish and enforce the administrative and legislative measures required by the Convention.'¹²

11. Daniel Feakes, 'The In-Depth Implementation of the Chemical Weapons Convention and the Second Review Conference', in Ralf Trapp (ed.), *Academic Forum – Conference Proceedings*, The Hague, 18-19 September 2007, p. 100.

12. Note by the Technical Secretariat, *Review of the Operation of the Chemical Weapons Convention since the Second Review Conference*, WGRC-3/S/1, 5 October 2012.

However, when the focus of the OPCW shifts from destroying CW to preventing their re-emergence, international attention to the OPCW might wane rather than rise. The OPCW could be at risk of having reduced resources for supporting States Parties' implementation of the CWC, including providing legislative support. The OPCW could also face difficulty in verifying the CWC's non-proliferation obligations due to the many dual-use scientific and technical challenges, all of which increases the importance of States Parties having robust, effective and enforced national implementation measures.

Future developments and their effects on national implementation

The Report of the International Advisory Panel on Future OPCW Priorities ('Advisory Panel'), published in July 2011, discusses the changing landscape in security, science and technology, and industry in the post-destruction era. The implications of these developments for national implementation of the CWC will be discussed below.

Developments in security

The rise of non-international armed conflicts

With regard to developments in security, the Advisory Panel notes that there are now more non-international armed conflicts, with new non-state actors playing a role, which could lead to the undermining of international humanitarian law.¹³ The civil war in Syria is an example of a non-international armed conflict that causes concern because of the state's CW stockpiles, which the government might use against its population or against foreign armed forces. There are also fears that a possible loss of control by Syria over its CW stockpiles could lead to their acquisition and potential use by foreign non-state actors. Syria is a party to the Geneva Protocol of 1925, which prohibits the use of chemical and biological weapons between its contracting parties, but not to the CWC.¹⁴ This highlights the importance of achieving universality of the CWC. As long as there are states outside of the CWC, there is no mechanism to check that they are not producing or storing CW that could possibly be used in a situation of armed conflict.

For states that are parties to the CWC, the scope of the Convention is wide enough to cover these changes in the security environment. States Parties to the CWC have undertaken to 'never under any circumstances' develop, produce, acquire, stockpile or retain, transfer or use chemical weapons. This means both in peace and wartime,

13. Report of the Advisory Panel on Future Priorities of the Organisation for the Prohibition of Chemical Weapons, S/951/2011, 25 July 2011, para. 11.

14. Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and Bacteriological Methods of Warfare (the Geneva Protocol of 1925) (Geneva, 17 June 1925, entered into force 8 February 1928, 94 League of Nations Treaty Series 65); For an analysis of international law and Syria's chemical weapons stockpiles, see Scott Spence, 'International Law and the Use of Chemical Weapons', VERTIC Blog, 8 August 2012. Available at: <http://www.vertic.org/pages/posts/syria-international-law-and-the-use-of-chemical-weapons-345.php>.

and in both international and non-international armed conflicts. Since Article VII requires any activity prohibited to States Parties in the Convention to *also* be prohibited to natural and legal persons at the national level, the scope of states' national legislation will be wide enough to cover these changes in the security environment. If a State Party were to face a situation of civil war in the future, any activities relating to CW would be prohibited to both the government armed forces and the opposing armed groups.

The threat posed by non-state actors outside the realm of armed conflict

With regard to the threat posed by non-state actors *outside* the realm of armed conflict, it has become clear that more national measures are warranted to secure dangerous toxic chemicals and chemical facilities than is explicitly required by the CWC.¹⁵ Article VI requires that States Parties take measures to ensure that scheduled chemicals are only developed, produced, acquired, retained, transferred or used for peaceful purposes. While security measures could be regarded as one of those measures, the CWC refers explicitly to safety measures only. For example, article VII (3) requires that the highest priority be given to the safety of people and protection of the environment during implementation of the Convention.

The threat of non-state actors targeting chemical facilities to release toxic chemicals or attempting to steal these from such facilities has underscored the need to adopt and enforce chemical safety and security measures, as evidenced by the adoption of UN Security Council Resolution 1540 in 2004.¹⁶ The OPCW has started hosting various conferences on chemical safety and security. It supported an international meeting in Tarnow, Poland in November 2012 to welcome the establishment of the International Centre for Chemical Safety and Security. The OPCW can also be expected to play a greater role in advising States Parties in the future on the measures needed in national legislation to secure toxic chemicals and chemical facilities.

While the OPCW can contribute to preventing terrorism, for example by promoting the norm against CW and stopping dangerous toxic chemicals from being acquired by those with malicious intent,¹⁷ it has so far only cautiously linked the CWC to counterterrorism. This may be understandable given the ease with which the wider public conceptually links CW to terrorists and rogue states. For example, in newspaper reports on the case of *US v. Bond*, which dealt with the conviction of Ms. Bond under the United States 'Chemical Weapons Convention Implementation Act of 1998', the CWC is sometimes referred to as a treaty on terrorism.¹⁸ Ms. Bond, a

15. Ralf Trapp, 'The OPCW in transition: from stockpile elimination to maintaining a world free of chemical weapons', Disarmament Forum, *Agent of change? The CW Regime*, 2012 (1), p. 45.

16. See UNSC Res 1540 (28 April 2004) UN Doc S/RES/1540 (2004), operative paragraph 3 (a) and (b).

17. Rob de Wijk and Tim Sweijts, 'The Threat of Terrorist Organisations Acquiring Chemical Weapons: The Role of the OPCW', in Ralf Trapp (ed.), *Academic Forum – Conference Proceedings*, The Hague, 18-19 September 2007, p. 244.

18. E.g. Adam Liptak, 'Court Weighs the Power of Congress', *The New York Times*, 22 February 2011. Available at: <http://www.nytimes.com/2011/02/23/us/politics/23scotus.html>.

microbiologist, had put toxic chemicals on the car door handles and doorknobs of her former friend, Ms. Haynes, after finding out that the latter was pregnant with the child of Ms. Bond's husband. Since Ms. Bond's acts were not of a terrorist nature, some of the US court judges voiced concern on the application of the CWC Implementation Act to her case. They seemed to equate the concept of individual use of CW with terrorism. However, the CWC and the national implementation measures required by it do not restrict the prohibition of non-peaceful use of toxic chemicals to those of a terrorist nature. Their aim is to criminalise any acts that use the physiological effects of toxic chemicals to cause death, temporary incapacitation or permanent harm. The US Supreme Court will now hear Ms. Bond's case in appeal.¹⁹

Developments in other international instruments relating to security

In other areas of law relating to security, such as international criminal law and international human rights law, developments are taking place that are directly relevant to the CWC but which do not take the Convention into account.

The 1998 Rome Statute, which established the International Criminal Court to prosecute individuals for war crimes, crimes against humanity, genocide and aggression, includes the use of 'poison or poisoned weapons' and 'asphyxiating, poisonous or other gases' as war crimes.²⁰ On the basis of the Rome Statute, individuals, whether they are officials or non-state actors, can be held accountable for these crimes.

However, the Rome Statute does not satisfactorily address the prohibition of the use of chemical weapons.²¹ The Rome Statute refers to 'poison and poisoned weapons', copying language from the Hague Regulations of 1899 and 1907, while 'asphyxiating, poisonous or other gases' are terms taken from the Geneva Protocol of 1925.²² The Rome Statute does not refer to 'chemical weapons' as defined in the CWC and it does not include biological weapons, even though the prohibition of the use of both is widely recognised as customary international law.²³ Because of its use of old

19. See also Yasemin Balci, 'Bond v United States: towards the US Supreme Court again', VERTIC Blog, 7 February 2013, available at: <http://www.vertic.org/pages/posts/bond-v.-united-states-towards-the-us-supreme-court-again-446.php>; Yasemin Balci, 'Chemical weapons case reaches US Supreme Court', *Trust & Verify* no. 134, July-September 2011, available at: <http://www.vertic.org/media/assets/TV/TV134.pdf>, and Yasemin Balci, 'United States v Bond: The Finale', VERTIC Blog, 28 June 2012, available at: <http://www.vertic.org/pages/posts/united-states-v-bond-the-finale-320.php>.

20. The Rome Statute, Articles 5 (1) and 8 (2) (b) (xvii) and (xviii).

21. See Kara Allen, Scott Spence and Rocío Escarriaza Leal, 'Chemical and biological weapons use in the Rome Statute: a case for change', VERTIC Brief no. 14, February 2011, p. 9.

22. Regulations concerning the Laws and Customs of War on Land, Annexed to Convention (II) with Respect to the Laws and Customs of War on Land (the Hague Regulations of 1899) (The Hague, 29 July 1899, entered into force 4 September 1900), Article 23(a); Regulations concerning the Laws and Customs of War on Land, Annexed to Convention (IV) respecting the Laws and Customs of War on Land (The Hague Regulations of 1907) (The Hague, 18 October 1907, entered into force 26 January 1910), Article 23(a).

23. International Committee of the Red Cross, Customary International Humanitarian Law Database, 'Rule 73: Biological Weapons' and 'Rule 74: Chemical Weapons'. See: http://www.icrc.org/customary-ihl/eng/docs/v1_rul.

terminology, it is unclear which acts the Rome Statute covers.²⁴ As noted by the International Court of Justice, there is no definition of ‘poison or poisoned weapons’, but there are multiple interpretations of the term.²⁵ The Rome Statute aimed to codify customary international law, but in the case of chemical and biological weapons it fell short of this aim.²⁶ It is therefore important to address this shortcoming and explicitly prohibit the use of chemical and biological weapons in the Rome Statute. This is also crucial from the viewpoint of criminal law in general, where the clarity of crimes is of great importance to prosecutors, defendants, judges and the larger community.²⁷

Given the rise of non-international armed conflicts as discussed above, it is worth mentioning that in the case of use of poison or poisoned weapons and asphyxiating, poisonous or other gases, the International Criminal Court only has jurisdiction if these crimes occur in international armed conflicts. During the First Review Conference in 2010, States Parties to the Rome Statute agreed to extend the Court’s jurisdiction over these crimes to include non-international armed conflicts.²⁸ This is a welcome development, as it brings the Rome Statute in conformity with customary international law and the CWC’s prohibition of use in any circumstance. However, these amendments will only enter into force for those States Parties to the Rome Statute that have ratified or accepted them.²⁹ At the time of writing, Liechtenstein, Luxembourg, Samoa, San Marino, and Trinidad and Tobago have ratified these amendments. Moreover, these amendments have to be implemented in State Parties’ domestic legal orders. States Parties that have already adopted implementing legislation for the Rome Statute may need to amend their national legislation to bring it in line with the revised Rome Statute.

With respect to the use of incapacitating chemical agents (ICAs) for law enforcement purposes, it has become clear that a lack of discussion of the subject among CWC States Parties is affecting other areas of international law such as human rights law and consequently states’ domestic legal systems, which need to be in compliance with international law. In the case of *Finogenov and others v. Russia*, regarding the use of toxic chemicals by the Russian authorities to incapacitate hostage takers in a theatre in Moscow, the European Court of Human Rights (ECHR) did not take the CWC into account, probably due to the divergent opinions on the CWC’s provisions on the subject. While some scholars argue that the CWC does not allow for ICAs to be

24. Kara Allen, Scott Spence and Rocio Escauriaza Leal, ‘Chemical and biological weapons use in the Rome Statute: a case for change’, VERTIC Brief no. 14, February 2011, p. 9.

25. ‘Legality of the Threat or Use of Nuclear Weapons’, Advisory Opinion, ICJ Reports 1996, International Court of Justice, 8 July 1996, para. 55.

26. The reason for leaving chemical and biological weapons out of the Rome Statute was related to disagreement on the inclusion of nuclear weapons. See Allen, Spence and Leal, op. cit. in note 24, pp. 6-8.

27. Ibid., p. 9.

28. RC/Res.5, Amendments to Article 8 of the Rome Statute, adopted at the 12th plenary meeting, on 10 June 2010.

29. The Rome Statute, Article 121 (5).

used for law enforcement purposes, others maintain that the Convention does not contain such a restriction.³⁰ As a consequence, case law of the ECHR has developed on the use of ICAs in law enforcement, without any reference to the CWC as a relevant source of international law.³¹

Developments in science and technology

With respect to developments in science and technology, the Advisory Panel highlights the increasing convergence between chemistry and biology, and states that these advances call for a clarification of the relationship between the Chemical and Biological Weapons Conventions in the future.³² Similarly, in its third and most recent report from October 2012, the OPCW's Scientific Advisory Board recommends the strengthening of the relationship between the OPCW and the Implementation Support Unit of the BWC.³³ At the national level, states already show an interest in combining both Conventions by working on their implementation concurrently. For example, some States Parties designate their CWC National Authority, which serves as the national focal point for liaison with the OPCW and other States Parties, as their focal point for the BWC.³⁴ Others aim to harmonise their BWC and CWC legislation, while being mindful of the differences in obligations that need to be implemented.

Advances in science and technology will also increase the challenges for National Authorities to monitor imports and exports and to generally enforce legislation. In the OPCW's 'Verification Summary for 2011', the Technical Secretariat mentions that approximately 75 percent of transfers of Schedule 2 and 3 chemicals between importing and exporting States Parties show discrepancies regarding the same transfer, which makes 'data monitoring for non-proliferation purposes [...] very difficult to achieve.'³⁵ The Technical Secretariat gives 'the lack of a common understanding on the meaning of the terms "import" and "export" for declaration purposes' as a reason.³⁶ Now is therefore not the time to reduce the budgets of National Authorities and the Technical Secretariat, whose role in facilitating awareness raising,

30. International Committee of the Red Cross, *Toxic Chemicals as Weapons for Law Enforcement: A threat to life and international law?*, Synthesis, September 2012, pp. 2-3; International Committee of the Red Cross, *Incapacitating Chemical Agents: Implications for International Law*, Expert Meeting Report, 24-26 March 2010, Montreux, Switzerland, pp. 44-45.

31. The ECHR did consider the CWC in the cases of *Ali Güneş v. Turkey* (no. 9829/07, 10 April 2012) and *Oya Ataman v. Turkey* (no. 74552/015 December 2006). However, these cases dealt with the use of tear gas, a riot control agent, for the purposes of law enforcement as opposed to use of incapacitating chemical agents. See the chapter by Cindy Vestergaard for further discussion of this case.

32. Report of the Advisory Panel on Future Priorities of the Organisation for the Prohibition of Chemical Weapons, S/951/2011, 25 July 2011, paras. 21 and 22.

33. Report of the Scientific Advisory Board on Developments in Science and Technology for the Third Special Session of the Conference of States Parties to Review the Operation of the Chemical Weapons Convention, RC-3/DG.1, 29 October 2012, para. 46.

34. See Article VII (4) of the CWC.

35. Summary of Verification Activities in 2011, S/1042/2012/Rev.1, 2 November 2012, Annex 1, para. 7.12.

36. *Ibid.*, para. 7.13.

education and training, particularly of the scientific and industry sectors, should be growing.³⁷ To continue to regulate science and technology in the future, States Parties will have to reach common understandings on new measures at the international level in order to be able to implement them consistently and coherently at the national level.

Developments in the global chemical industry

Concerning developments in the chemical industry, the Advisory Panel notes that chemical production is growing fast in new locations in Asia and Latin America.³⁸ From 2001 to 2010, the number of declared OCPFs (21) stayed the same in the Western Europe and Others Group, while the number increased from 7 to 22 in Asia, and from 5 to 13 in the Latin America and the Caribbean Group. The Advisory Panel also expects growth in Africa's chemical industry given its need for chemicals.³⁹ It notes that the geographical expansion of the chemical industry brings an increased risk of misuse of toxic chemicals with it.⁴⁰ These changes underscore the importance for states with growing industries to adopt implementing legislation and establish a legal framework to support their industry. Having the necessary legislation in place can in turn also boost states' emerging industry as it signals to investors that they are a reliable location for work with toxic chemicals. Moreover, the global expansion of the chemical industry will require States Parties to have the capacity to work with a larger number of states on imports and exports.

Conclusion

To prevent the re-emergence of chemical weapons, increased attention to national implementation of the CWC is needed. For its part, the EU should ensure that all its member states have adopted implementing legislation for the CWC. It should also continue to review its legislation to ensure it meets the demand for chemical security measures. Moreover, it should start addressing the issues raised here in the context of the Rome Statute and the ECHR in formal governance settings such as the Review Conferences of both the CWC and the Rome Statute and meetings of the Council of Europe. Finally, it should promote national implementation – and universality where applicable – in bilateral meetings with states, including those with an emerging chemical industry. With 27 member states from both common and civil law traditions and varying sizes of chemical industry, the EU is in a good position

37. See also Report of the Scientific Advisory Board on Developments in Science and Technology for the Third Special Session of the Conference of States Parties to Review the Operation of the Chemical Weapons Convention, RC-3/DG.1, 29 October 2012, para. 128.

38. Report of the Advisory Panel on Future Priorities of the Organisation for the Prohibition of Chemical Weapons, S/951/2011, 25 July 2011, paras. 16 and 20.

39. *Ibid.*, para. 17.

40. *Ibid.*, para. 20.

to provide examples to other states of the various ways in which the CWC has been implemented in its member states' domestic legislation.

In order for all States Parties to have implementing legislation in all relevant areas of law, better cooperation with multiple types of actors will be necessary. Government officials covering the CWC often work on several treaties concerning weapons and international security. Cooperation by the OPCW on national implementation of the CWC should be channelled through regional organisations, in liaison with other relevant international organisations, and within the context of UN Security Council Resolution 1540. This will make the process more valuable to those officials responsible for a wider range of weapons. In turn, governments should also reach out through their National Authorities to their civil society, academia and industry so that they understand, influence and support the proposed legislation.

In the post-destruction era, States Parties should have the implementing legislation in place that is crucial to ensure a world free of chemical weapons. The external changes that the CWC will face at this time in the security environment and in the domains of science and technology, and industry, will require States Parties to pay closer attention in their legislation to the security of toxic chemicals and chemical facilities, the increasing convergence of chemistry and biology, and the expansion of the chemical industry. In this changed landscape, States Parties should take action to ensure that the CWC is a universal convention that is fully taken into account in both domestic and related international law.

V. MAINTAINING CHEMICAL PEACE: THE CWC, THE EUROPEAN UNION, AND POLITICAL DEVELOPMENTS

Cindy Vestergaard

Introduction

A century after chemical weapons (CW) were first used to devastating effect, the world is finally enjoying its longest respite from state-to-state chemical warfare. No state has used CW against another state since the last recorded CW attacks by Iraq in 1988. This ‘chemical peace’ that has lasted for the past twenty-five years is no small achievement. The twentieth century was characterised by the recurrent use of CW, affecting every generation from World War I to the 1980-88 Gulf War.¹ Today, with an almost universal membership of 188 States Parties, the Chemical Weapons Convention (CWC) is being implemented on a grand scale. Over 75 percent of the declared global stockpiles of 71,194 metric tonnes have been destroyed as of August 2012.² With 141 States Parties taking legislative and administrative measures to implement the treaty and eighty nine having legislation that covers all key areas,³ the treaty is having a trickle-down effect with international prohibitions being enforced at the citizen level. In other words, the world’s first – and only – verifiable disarmament treaty is working.

Chemical weapons, however, cannot yet be consigned to history as armaments of the past. Recent declarations of potential CW use by Syria against any incoming foreign forces coupled with revelations of larger-than-initially-declared CW stockpiles in Libya are a reminder of the fragility underlying the current chemical peace. Meanwhile, tear gas is used to disperse protesters from Tripoli to Thailand and California to Cairo – raising questions about when a tool for law enforcement crosses the line to become a method of warfare. Moreover, the eurozone and global economic and financial crises roll on, focusing world attention on the enduring fiscal crunch. Whether attested by the wave of uprisings in the Arab world, the Occupy Movement

1. Iraq employed chemical warfare in its war with Iran (1980-1988) and against its own Kurdish civilians. The current twenty-five year respite from chemical warfare surpasses the previous record of seventeen years between 1945 (and Japan’s use of chemical weapons in its war with China 1938-1945) and 1962 when the US began employing herbicides in Vietnam. The apocalyptic group Aum Shinrikyo released sarin gas in Tokyo’s subway system in 1995 which was an example of non-state use of chemical warfare. If this incident is taken into account then the world has been free of chemical warfare for eighteen years – still the longest period recorded since the Battle of Ypres on 22 April 1915.

2. See: <http://www.opcw.org/our-work/demilitarisation>.

3. As of 7 December, 2012. See: ‘The Chemical Weapons Ban Facts and Figures,’ OPCW: available at: <http://www.opcw.org/news-publications/publications/facts-and-figures>.

or global recession, there is a sense that the world is entering a 'New Normal': one of permanent crisis, continuous change and diverse types of organised violence.

Within these changing times, the CWC's implementing body, the Organisation for the Prohibition of Chemical Weapons (OPCW), is moving into a period of transition where it can gradually shift from aspiring towards a world free of chemical weapons, to actually establishing and maintaining such a world. At the same time, the non-proliferation and disarmament policy of the European Union is entering its tenth year. Adopted in December 2003, the EU *Strategy against Proliferation of Weapons of Mass Destruction* (WMD Strategy) provides the EU with the basis for common action on non-proliferation. Accordingly, this chapter examines how Arab uprisings, the use of tear gas worldwide and the global economic and financial crisis are impacting on CW non-proliferation and disarmament. Specifically, it will look at how the OPCW's transitory phase presents an opportunity for considering its future role and functions in a context of accelerated scientific, technological, commercial and political developments. It will also look at the upcoming ten-year anniversary of the EU's WMD Strategy which affords the EU the occasion to look back on the implementation of 'effective non-proliferation' – not only as an exercise to reflect on how the Strategy's objectives have been streamlined *within* the Union, but also on how political developments, evolving treaties and a changing security environment require an update of the common non-proliferation approach.

The Middle East: chemically charged, politically uncertain

Whether in Tripoli, Damascus, or Tahrir Square, the presence of declared and undeclared CW stockpiles has heightened concerns in a region undergoing sweeping political change. Chemical weapons have long been a feature of the Middle East reality with at least six states known to have or suspected of having CW programmes⁴ and the region the only one to experience recurrent CW use: by Egypt in the 1960s, and Iraq in the 1980s. As Syria threatens the potential for another round of CW use in the Middle East,⁵ Israel contemplates pre-emptive strikes on Syrian CW facilities⁶ and NATO includes the CW threat in its rationale for installing Patriot anti-missile defences in Turkey.⁷ Deteriorating conditions and political uncertainty have also raised concerns about the security of any stockpiles that Egypt might still possess, undeclared caches in Libya,⁸ and the potential for rebel and non-state acquisition of the region's CW stocks. Indeed, the Middle East could be called the world's most 'chemically charged' security environment, with the Arab uprisings highlighting not

4. Egypt, Iran, Iraq, Israel, Libya and Syria. Iran declared two CW production facilities, but no stockpiles upon its joining the CWC in 1997. Libya joined the CWC as a CW possessor in 2004 as did Iraq in 2009.

5. 'Syria Threatens Chemical Attack on Foreign Force,' *New York Times*, 23 July 2012.

6. 'Report: Israel requested Jordan's "permission" to attack Syrian chemical weapons sites,' *Haaretz*, 3 December 2012.

7. 'Syria Crisis: NATO approves Patriots for Turkey,' *BBC News*, 4 December 2012.

8. 'Libyan Rebels Discover Gaddafi's Chemical Weapons,' *The Guardian*, 22 September 2011.

only the urgent need for the CWC to be universalised but also for the region to become WMD-free.

At the same time, the continuing use of tear gas as a Riot Control Agent (RCA) across the region has led to reports of the misuse of tear gas in Bahrain⁹ and to the first case of a protester dying of asphyxiation in Egypt.¹⁰ The use of these toxic agents is complicated by a legal paradox where Article 1(5) of the CWC prohibits the use of RCAs as a method of warfare but does not do so in a domestic context for law enforcement in Article II (9). In other words, the soldier is protected from their use but civilians are not.¹¹ This raises a host of questions as to when the use of RCAs crosses from a legitimate form of riot control by law enforcement to a method of warfare by a state – a grey area which States Parties have yet to address.

Consequently, continuing unrest and the threat of CW use in states outside of the CWC underscore the fact that the OPCW needs to stay prepared for non-members to join as possessor states as well as to retain the capability to respond to CW attacks. It also requires States Parties, including the EU, to address non-proliferation and disarmament in their approach to countries outside of the CWC, while also working towards clarifying Articles I (5) and II (9) of the Convention.

European disarmament diplomacy in the Middle East

From an emphasis on establishing regional export controls in the 1980s and 1990s, the EU has extended its external reach into the realm of non-proliferation diplomacy with a focus on strengthening non-proliferation and disarmament institutions. The 2003 WMD Strategy was adopted on the heels of the divisions within Europe over the US-led invasion of Iraq and fulfilled the need to lay down EU values and interests based on common threat assessments and shared non-proliferation aims. In accordance with its declared objective of ‘effective multilateralism’ the EU began to pour millions of euro into different international institutions in support of various non-proliferation and disarmament activities. It further expanded its involvement in cooperative threat reduction (CTR) in Russia and countries of the former Soviet Union and, since 2004, has added a ‘non-proliferation clause’ to many EU agreements with third parties. To this end, the EU WMD Strategy seems to be furthering what EU bureaucrats call ‘streamlining non-proliferation policy

9. Physicians for Human Rights, ‘Weaponizing Tear Gas: Bahrain’s Unprecedented Use of Toxic Chemical Agents Against Civilians’, August 2012; ICRC, ‘Toxic chemicals as weapons for law enforcement: a threat to life and international law?’, 30 September 2012. Available at: <http://www.icrc.org/eng/resources/documents/legal-fact-sheet/toxic-chemicals-legal-factsheet-30-09-2012.htm>.

10. ‘Egypt protestor dies from tear gas,’ *Daily Star*, 27 November 2012.

11. As noted in Israel’s Manual on the Rules of Warfare when it notes ‘an absurd situation results in which demonstrators are “endangered” by tear gas whereas fighters going into battle are protected from it.’ See Katja Knoechelmann, ‘The Legal Paradox of International Chemical Riot Control Agents’, ALMA IHL article, October 2012. Available at: <http://www.alma-ihl.org/opeds/knoechelmann-riotcontrolagents102012>.

into the external relations of the EU.¹² In terms of the Middle East however this streamlining is not fully integrated.

The launch of the Euro-Mediterranean Partnership in 1995 marked a milestone in the EU-Middle East relationship: its objective was to strengthen EU relations and conclude bilateral trade agreements with Mashriq and Maghreb countries.¹³ With regard to Syria, the approach was one of normative diplomacy, i.e. to engage Syria in a series of deals and agreements that would slowly encourage change in 'Syria's behaviour and shape its security policy.'¹⁴ Unlike Egypt and Israel, negotiations on a bilateral Association Agreement with Syria began after the EU adopted its WMD Strategy and its accompanying non-proliferation clause. Negotiations with close to 100 countries have included such a clause since 2004 but the EU trade agreement with Syria was the first where the clause proved to be controversial both within and outside of the EU in trade negotiations.¹⁵

Early negotiations with Syria highlighted internal EU divisions as some states such as Germany stressed it was important 'not to water down the clause'¹⁶ while Syria pushed for its removal or rewording given disparities with the EU-Israel Association Agreement¹⁷ and sensitivities to WMD references after false claims of WMD programmes justifying war with Iraq by the US, UK and some EU countries. Negotiations led to the initialling of the Agreement with an amended clause in October 2004 and then a re-initialling in December 2008¹⁸ after a suspension in-between of relations due to the 2005 Hariri assassination in Beirut and suspected Syrian involvement. However procedures for the formal conclusion of the agreement have not been completed, with the EU's signature now on hold due to unfolding events in Syria.¹⁹ In addition, in May 2011, the EU adopted a number of restrictive measures towards Syria, including an import ban on crude oil and petroleum products as well as export restrictions on dual-use goods, key equipment and technology for oil and gas industries, and cer-

12. Statement by Annalisa Giannella cited in Oliver Meier, 'Between Noble Goals and Sobering Reality: Interview with Annalisa Giannella, Permanent Representative on Non-proliferation of WMD to EU High Representative Javier Solana,' *Arms Control Today*, vol. 35, 2005, pp. 20-22.

13. A Euro-Mediterranean Conference of Foreign Affairs Ministers was held in Barcelona, Spain, in 1995. Also known as the Barcelona Process, the Euro-Mediterranean Partnership laid down the foundation for a new regional relationship aimed at achieving peace, stability and growth in Mediterranean Partner countries. It covers political, economic and social cooperation.

14. Michael Elleman, Dina Esfandiary and Emile Hokayem, 'Syria's Proliferation Challenge and the European Union's Response,' EU Nonproliferation Consortium, *Nonproliferation Papers* no. 20, July 2012, p. 13.

15. *Ibid.*, p. 14.

16. *Ibid.*, p. 15.

17. The EU-Israel Association Agreement was signed in 1995 and entered into force in 2000. EU-Israel negotiations were therefore conducted before the WMD Strategy and the Agreement does not contain a non-proliferation clause.

18. 'Council Decision on the signing, on behalf of the European Community, and provisional application of certain provisions of the Euro-Mediterranean Agreement establishing an association between the European Community and its Member States, on the one part, and the Syrian Arab Republic, on the other part', Interinstitutional File: 2008/-248 (AVC), Brussels, 17 August 2009, p.2.

19. European Commission, 'Trade: Syria', available at: <http://ec.europa.eu/trade/creating-opportunities/bilateral-relations/countries/syria>.

tain items of telecommunications equipment and luxury goods. In November 2012 these measures were further tightened to include embargoes on arms and related materials as well as certain goods ‘which might be used for the manufacture and maintenance of products which could be used for internal repression.’²⁰

The Syrian case has shown the EU how economic integration does not lead to normative security change in third countries, particularly in countries where WMD concerns should trump commercial ones. Despite the suspension of negotiations from 2004 to 2008, the belief that *rapprochement* with Syria was the best method to influence its behaviour persisted throughout the EU, even after revelations in 2007 of a nuclear reactor under construction in Syria.²¹ In reviving the Agreement just a year later, it seemed clear that the EU considered Iran’s nuclear programme as the more urgent challenge, with Israel’s pre-emptive strike on al-Kibar seen as eliminating the threat of Syria going nuclear. There was also a prevalent EU assumption that Syria’s WMD programmes could only be addressed in a regional context, which would first require peace between Syria and Israel.²²

With the Syrian Association Agreement on hold until Syria’s conflict comes to an end and order is restored, it is now more apparent that disarmament assurances will be required in the future. The WMD clause however guarantees neither compliance nor disarmament. Inconsistently applied across the EU’s agreements with third countries,²³ it is not likely that a more strongly-worded clause would have made a difference in Syria. What will make a difference is for CWC membership to become a minimum provision in any new Agreement, and not just with Syria, but any state outside of the CWC. Given that the EU-Israel Association Agreement was negotiated and in force before the EU WMD Strategy (and its clause) was conceived, as was the EU-Egypt agreement,²⁴ an additional approach will be needed by the EU to maintain chemical peace and stability in the Middle East. If the EU wants WMD disarmament to be a part of a regional security framework, then it needs to approach states in the region indiscriminately when it comes to the CWC, along with the Biological and Toxin Weapons Convention (BTWC) and the Nuclear Nonproliferation Treaty (NPT). While the DG for External Relations noted in 2007 that there was a need for Member States to agree in advance which states required a softly worded WMD clause and those that required tougher

20. Council Decision 2012/739/CFSP, Brussels, 30 November 2012.

21. David Makovsky, ‘The Silent Strike: How Israel bombed a Syrian nuclear installation and kept it secret,’ *New Yorker*, 17 September 2012.

22. Michael Elleman, Dina Esfandiary and Emile Hokayem, ‘Syria’s Proliferation Challenge and the European Union’s Response,’ EU Nonproliferation Consortium *Nonproliferation Papers* no. 20, July 2012, p. 17.

23. It only applies to mixed agreements and not to Community agreements (i.e. Free Trade or Trade and Cooperation Agreements), nor has it been applied to the association framework with its overseas and country territories. See: Cindy Vestergaard, ‘The EU, Nonproliferation and its Overseas Territories: The Case of Arctic Yellowcake,’ *EU Nonproliferation Consortium Policy Paper*, December 2012.

24. The Association Agreement between the EU and Egypt entered into force in June 2004.

language,²⁵ experience since suggests the need is more for states to agree on a common position on how to frame relations with non-parties before considering bilateral trade in any form of chemicals. Additional export control measures on all toxic agents therefore may prove a useful – if not controversial – idea for the EU in maintaining a consistent position on CWC universality.

While the EU WMD Strategy was developed to mitigate non-proliferation and disarmament divisions within Europe, the Syrian case demonstrates that varying positions of EU member states still impede streamlining non-proliferation policy. Given events over the past two years in Syria, there is a need for a review of the EU-Syria agreement and the WMD strategy, but more importantly the EU needs to define a clear vision for implementing the CWC, particularly as the use of tear gas is spreading and intensifying not just in the Middle East but across the globe.

Made abroad, ambiguously used

With civil society calling the use of tear gas in Bahrain ‘unprecedented in the 100-year history of tear gas use against civilians’²⁶ and for the suspension of tear gas exports to Manama, as well as Libya and Egypt, the issue of toxic agents for riot control and their export is making headlines.²⁷ Although generally perceived as legitimate tools for crowd control, incapacitants and RCAs can pose serious health risks and even cause death when used in large quantities or in enclosed spaces. The use of RCAs, and restrictions thereon, was highly contested during CWC negotiations with the end compromise requiring States Parties to declare RCAs they possessed for law enforcement purposes under Article III, with the provision that they are not used as a method of warfare. The Treaty states that if a state considers that a RCA has been used against it as a method of warfare it has the right to request assistance from the OPCW which would trigger an investigation of alleged use (IAU) by the Organisation. At the same time, the OPCW Scientific Advisory Board (SAB) has noted a major gap in the ability of inspectors to verify an IAU if a riot control agent or a non-scheduled toxic chemical is being investigated and the chemical agent is not on the OPCW’s Central Analytical Database.²⁸ Inspectors therefore may not be able to meet future verification challenges unless the types and quantities of agents are identified and clarified.

25. Gerrard Quille, ‘Note: EU Non-proliferation Clauses applied to certain agreements in the EU’s wider relations with third countries’, European Parliament, Directorate-General External Policies, Policy Department, 21 September 2007. Available at: http://www.europarl.europa.eu/meetdocs/2004_2009/documents/dv/sede011007exponote_/sede011007exponote_en.pdf.

26. Physicians for Human Rights, ‘Weaponizing Tear Gas: Bahrain’s Unprecedented Use of Toxic Chemical Agents Against Civilians, August 2012; ICRC, ‘Toxic chemicals as weapons for law enforcement: a threat to life and international law?’, 30 September 2012.

27. See, among others: Xiadon Liang, ‘Arms Exporters React to Middle East Unrest,’ *Arms Control Now*, 23 February 2011; ‘Tracing the Middle East Weapons Flow,’ *Al Jazeera*, 24 October 2011; Amnesty urges US to stop sending tear gas to Egypt,’ *BBC News*, 7 December 2012.

28. Report of the Scientific Advisory Board on Developments in Science and Technology for the Third Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention, RC-3/DG.1, 29 October 2012, p. 23 (para 98).

The SAB also considers the term ‘non-lethals’ for these agents as inappropriate given that toxicity is a matter of dosage,²⁹ i.e. lethality depends on the quantity used, vulnerabilities of the victim, and the method and location of dispersal.³⁰ The SAB specifically highlighted: ‘... it is not simply a matter of precisely what incapacitating chemical is used for law enforcement purposes, but how it is used. In one incident, pepper spray (a riot control agent) was used to break up a fight in a crowded night club, which resulted in 19 deaths as people panicked and tried to escape.’³¹ So, while toxic agents are allowed for domestic control, if they are misused, they can do far more than simply subdue a crowd. The SAB recommended that the OPCW Secretariat start preparations for verification activities relevant to incapacitants that could require an investigation of alleged use.³²

Specifically within the EU context, the EU Court of Human Rights noted in 2006 that the use of RCAs is authorised for law enforcement purposes, including domestic riot control (CWC, Art. II (9) (d)). It further noted however that the CWC does not ‘state which State bodies may be involved in maintaining public order. This remains a matter for the sovereign power of the State concerned.’³³ Advances in science and technology confuse this further as states may develop a novel agent while claiming technical compliance with the CWC. Accordingly, without addressing the governance of incapacitants and RCAs, the research, development and use of these agents could be used to circumvent the CW non-proliferation norm.

Instances of the repeated use of tear gas over the past few years, not just in the Middle East, but globally, have led to a shift in the opinion of the European Court of Human Rights. While its 2006 ruling did not deem the case of *Oya Ataman v. Turkey* a violation of Article 3 (prohibition of inhuman or degrading treatment) of the European Convention on Human Rights, the European Court of Human Rights in 2012 unanimously agreed (although judgment is not yet final) in *Ali Günes v. Turkey* that a violation of Article 3 had occurred when authorities were unable to justify the use of pepper spray against Mr. Günes, a protestor at the 2004 NATO summit in Istanbul.³⁴ The Court noted that although tear gas was not considered a chemical weapon by the CWC, the Council of Europe’s Committee for the Prevention of Torture (CPT) had expressed concerns about the use of such gases in law enforcement and had called for the drawing of clear, specific rules about their use.

29. Ibid., p. 4 (para 12).

30. British Medical Association, ‘The use of drugs as weapons: The concerns and responsibilities of healthcare professionals’, London, May 2007.

31. SAB Report to the Third Special Session of the Conference of the States Parties to Review the Operation of the CWC, p. 21 (paragraph 84).

32. Ibid, p. 4 (para 13).

33. *Oya Ataman v. Turkey*, Application No. 74552/01, 5 March 2007, Final. See: <http://hudoc.echr.coe.int>.

34. ‘Police should not have used tear gas against a peaceful demonstrator’, Press Release issued by the Registrar of the Court, ECHR 149 (2012), 10 April 2012.

The Court held that Turkey was to pay Mr. Günes €10,000 in nonpecuniary damages and €1,500 for costs and expenses.³⁵

Within Europe overall, however, the approach to these toxic agents is not uniform. The EU Council Decision of 19 November 2012 which guides member states in their approach to the upcoming CWC Review Conference takes no position, other than ‘emphasising the full and timely implementation by the States Parties of all declaration obligations under Article III, especially those relating to chemical weapons, and including also those relating to riot control agents.’³⁶ The EU therefore retains the minimum reporting requirement as its basic approach. The Decision does reconfirm that the CWC’s prohibitions apply to any toxic chemical ‘as long as the types and quantities are consistent with such purpose’, but the EU Members and States Parties to the CWC are yet to define what those types and quantities are. The common position however does refer to the need to strengthen the CWC verification regime to ensure prevention of re-emergence of chemical weapons and recognises that there may be merit in reviewing the list of Schedules at regular intervals. The EU therefore will not have a common position on incapacitants and RCAs by the Third Review Conference, but will need to develop one rapidly to ensure the maintenance of the CWC’s absolute prohibition on CW use.

Economics and disarmament

The eurozone crisis, and the wider global economic and financial crisis, have dragged on for over five years now, driving down government spending, raising unemployment and leading to a global recession. Considered by many economists as the most serious financial crisis since the Great Depression of the 1930s, the current crisis has led to concerns over ‘fiscal cliffs’,³⁷ the slowdown of the Chinese economy,³⁸ and the potential for a Greek exit – or ‘Grexit’ – from the EU monetary union.³⁹ These events have similarly impacted on global non-proliferation treaty implementation and increased pressure on the OPCW budget as many States Parties are looking at ways to save money. It also puts pressure on the EU’s internal negotiations, as witnessed at the 2011 BTWC Review Conference when the agreed EU Common Position to increase the budget and staff levels of the BTWC Implementation Support Unit (ISU) was scuttled by an EU Member at the last minute.

35. European Court of Human Rights, *Ali Gunes v. Turkey*, Application no. 9829/07. Date of Judgement: 10 April 2012. Available at: <http://sim.law.uu.nl/sim/caselaw/Hof.nsf/1d4d0dd240bfee7ec12568490035df05/8747661eb3aae402c12579de004b2318?OpenDocument>.

36. EU Council Decision, 19 November 2012, p. 2.

37. ‘Q&A: The US Fiscal Cliff’, *BBC News*, 14 November 2012.

38. ‘FT Explainer: China’s Slowdown’, *Financial Times*, 19 October 2012.

39. ‘Greek Bailout: Is ‘Grexit’ at Hand?’, *The Economist*, 28 July 2012.

In the BTWC case, economic and financial realities were played out as many delegations arrived with instructions from their respective capitals to support no real growth in the regular budget. In this case, proposals to expand BTWC activities would have represented a significant percentage increase despite the overall amounts being minimal in comparison with other WMD arrangements. With resource restraints and the financial bottom line at the forefront, the expansion of the BTWC's much-needed ISU was impossible.⁴⁰ This led to an expressed concern about a two-speed BTWC where those States Parties with resources deepen their BTWC implementation while those without will fall short.⁴¹ This mixed system of treaty implementation is reminiscent of the revisited notion of a 'multi-speed Europe,'⁴² both of which provide lessons learned for States Parties at the Third CWC Review Conference against the background of a struggling global economy.

With regard to the CWC, the EU's current economic and financial crisis is revealing a double approach to the OPCW: one where the EU continues to fund CWC implementation through Joint Actions while also accepting overall cuts to the organisation's budget. Since 2004, the EU has contributed €9.5 million to OPCW projects related to universal treaty adherence, national implementation and cooperation on the peaceful uses of chemistry.⁴³ It has also provided funds for constructing three chemical weapons destruction facilities at Gorny, Kambarka and Shchuch'ye in Russia as part of its overall €1 billion commitment to the *G8 Global Partnership Program Against the Spread of Weapons and Materials of Mass Destruction*. At the same time, national contributions are going down. The EU WMD Strategy and its contributions have definitely been advantageous for cash-strapped non-proliferation institutions tasked with treaty implementation, and having to contend with higher costs and zero growth budgets, but they should not replace national commitments. Supplemental funds by the EU will continue to be important for the future of the OPCW and CWC implementation, particularly in a world of fewer – and eventually zero – chemical weapons. But, as events in the Middle East demonstrate, funding for regular budgets also remains a priority as the OPCW's main activities are still in focus.

To avoid a repeat of the 2011 BTWC Review Conference, the EU must ensure a cohesive approach toward funding the regular budgets of international non-proliferation and disarmament institutions. While the BTWC serves as an example of a treaty where verification still needs to get off the ground, the CWC is the world's only verifiable WMD disarmament treaty, requiring a range of resources to maintain chemical peace. This requires a clear and cohesive EU vision for the future of the OPCW, which

40. Richard Guthrie, 'The Seventh BTWC Review Conference: outcome and assessment', *RevCon report* no 16, 31 December 2011.

41. *Ibid.*, p. 2.

42. Paul Gillespie, 'The Euro Crisis: Ins and Outs – Multi-Speed Europe?', *Working Paper*, The Institute for International and European Affairs (IIEA), December 2011.

43. OPCW, 'European Union Continues Support for the OPCW,' 16 July 2012. Available at: <http://www.opcw.org/news/article/european-union-continues-support-for-the-opcw>.

is also in line with the discipline of ‘economics of disarmament’ where long-term disarmament needs a development process and an adequate public policy.⁴⁴ Member states should therefore prepare national positions for the 2013 CWC Review Conference far enough in advance to better coordinate at the EU level, particularly on budgetary matters to which the 2012 Common Position makes no reference (other than previous Joint Actions) As seen at the 1995 Extension Conference of the Nuclear Non-proliferation Treaty (NPT), when the EU is cohesive and committed, it can be a force for good in upholding international non-proliferation treaties.⁴⁵

The OPCW’s Medium-Term Plan for 2013-2015 notes that the seven core objectives of the OPCW will remain unchanged and will need to be addressed ‘within existing resources.’⁴⁶ Specifically on the ongoing financial situation, the OPCW notes that financial constraints are likely to continue as austerity cutbacks imposed domestically are liable to limit resources being made available to the OPCW Secretariat for fulfilling its mandate. The Secretariat recognises therefore that it will need to be more efficient in its day-to-day operations within available appropriations. It also recognises the need for States Parties to pay their assessed contributions in full and on time. For the OPCW, current financial constraints mean zero growth budgets and therefore a need to attract supplemental funds from States Parties in the years to come. Accordingly, EU member states need to ensure their payments to the CWC are paid on time if the EU is to maintain not only the world’s longest chemical peace but enforce its WMD strategy overall.

Conclusion

The ‘New Normal’ of political uprisings, economic constraints and continuing crises underscore that the OPCW’s transition must be managed in a balanced way. The Organisation has to be able to focus on destroying the remaining twenty five percent of stockpiles, stay prepared for the potential of states outside of the CWC to join as possessor states, and continue (and accelerate) CW non-proliferation, national implementation and international cooperation. At the same time, the maintenance of a global and long-standing chemical peace requires a strengthened and more equitable verification regime that addresses advances in science and technology which could be used to circumvent the non-proliferation norm. Moreover, whether in the Middle East, Thailand or Greece, the use of tear gas requires the OPCW and States Parties to work together to close the gap between Article I (5) and Article II (9) of the CWC. The upcoming Third CWC Review Conference therefore needs to go beyond the usual

44. Jacques Fontanel, ‘The Economics of Disarmament,’ in Keith Harley and Todd Sandler (eds.), *Handbook of Defense Economics*, Vol. 1 (Amsterdam: Elsevier, June 1995).

45. David Fischer and Harald Müller, ‘United Divided: The Europeans at the NPT Extension Conference,’ *PRIF Report No. 40*, 1995.

46. The seven core objectives are: chemical demilitarisation, non-proliferation, assistance and protection, international cooperation, universality, national implementation and organisational effectiveness. See: OPCW Executive Council, ‘Medium-Term Plan for the Period 2013 to 2015,’ EC-70/S/1, 28 June 2012.

five-year treaty review of the past to also become a 'Preview' conference – one where taking stock of the past five years is supplemented by an attempt to predict how the situation will evolve in the years ahead.

The tenth anniversary of the WMD Strategy also constitutes an opportune moment for the EU to look back and take stock of how non-proliferation and disarmament policy has developed within the EU, taking into account not only its impact abroad but also looking closely at how the Strategy has been implemented within the EU. Streamlining non-proliferation policy has been challenged by the position of member states, not least in negotiations carried out with Syria. Accordingly, the EU will have much policy development and coordination to undertake during the intersessional period between CWC Review Conferences. How the EU and its 27 member states will accomplish this appears uncertain. What may be certain however is that future trade agreements with states outside of the CWC such as Syria should include a more robust assurance for non-proliferation *and* disarmament to ensure a world free of chemical weapons and prevent their re-emergence.

ANNEXES

Abbreviations

BTWC	Biological and Toxin Weapons Convention
BZ	US code for 3-Quinuclidinyl benzilate, an incapacitating agent
CW	Chemical Weapon(s)
CWC	Chemical Weapons Convention
CWPFs	Chemical Weapon Production Facilities
DG	Directorate General
DNA	Deoxyribonucleic Acid
ECHR	European Court of Human Rights
EEG	Eastern European Group
IAU	Investigation of Alleged Use
ICA	Incapacitating chemical agent
ISU	Implementation Support Unit
IT	Information Technology
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organisation
NGO	Non-Governmental Organisation
NIM	National Implementation Measures
NPT	Nuclear Non-Proliferation Treaty
OCPFs	Other Chemical Production Facilities
OPCW	Organisation for the Prohibition of Chemical Weapons
PFIB	Perflouroisobutene, a potential CW
R&D	Research and Development
RCA	Riot Control Agent
SAB	Scientific Advisory Board
WEOG	Western Europe and Others Group
WMD	Weapons of Mass Destruction

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