sipri

REASSESSING CBRN THREATS IN A CHANGING GLOBAL ENVIRONMENT

EDITED BY FEI SU AND IAN ANTHONY

June 2019

STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

SIPRI is an independent international institute dedicated to research into conflict, armaments, arms control and disarmament. Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

The Governing Board is not responsible for the views expressed in the publications of the Institute.

STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE
Signalistgatan 9
SE-169 72 Solna, Sweden
Telephone: + 46 8 655 9700
Email: sipri@sipri.org
Internet: www.sipri.org

Reassessing CBRN Threats in a Changing Global Environment

EDITED BY FEI SU AND IAN ANTHONY

June 2019

Contents

Preface

For more than two decades after the end of the cold war, the place of nuclear weapons in the security discourse of both Europe and East Asia was diminishing. At the same time, the entry into force of the Chemical Weapons Convention (CWC) in 1997—with the Biological Weapons Convention already agreed some 25 years earlier—suggested the world might have put the issue of chemical, biological, radiological and nuclear (CBRN) weapons behind it.

Today, however, the picture looks very different. In recent years, the use of chemical weapons (CW) by both state and non-state actors has underlined how complex the challenge of achieving their permanent elimination is. The threats posed by CBRN weapons in both Europe and Asia have been highlighted by their use in assassinations and assassination attempts. Further dimensions of threat arise when considering potential CW use in mass impact terrorist attacks such as the nerve gas attacks on the Tokyo subway in 1994 and 1995 by the Aum Shinrikyo cult.

At the same time, all states that possess nuclear arsenals are currently modernizing them; the Democratic People's Republic of Korea (DPRK/North Korea) has emerged as a new nuclear-armed state, and international nuclear arms control is in crisis. As a result, greater attention is now also being paid to nuclear weapons and to nuclear strategic issues.

Addressing the challenge of CBRN requires international cooperation. CBRN threats cross borders and so must attempts to manage, reduce and end them. On 14 January 2019, SIPRI held an international expert workshop 'Reassessing chemical, biological, radiological and nuclear threats and their implications for East Asia', to facilitate discussion of the risks associated with these weapons.

This volume seeks to bring the discussion at the workshop one step further, bringing technological developments in this field to a broader audience. The volume reassesses CBRN threats in a rapidly changing political environment with the aim of generating a clearer awareness of the CBRN threat in both European and East Asian countries. It focuses on the importance of maintaining and strengthening cooperation to enhance security based on international agreements, identifies the obstacles that impede cooperation, and explores the possible ways forward for mitigating the threats.

Dan Smith
Director, SIPRI
Stockholm, June 2019

Acknowledgements

The Stockholm International Peace Research Institute and the editors would like to express their sincere gratitude to the Government of Japan for its support of this project.

The editor also wishes to thank all of the experts who contributed to this volume: Dr Tatsuya Abe, Professor, School of International Politics, Economics and Communication, Aoyama Gakuin University (Japan); Lieutenant Colonel Koichi Arie, Fellow, Government and Law Division, Security Studies Department, National Institute for Defense Studies (Japan); Joseph Ballard, Senior Policy Officer, Office of Strategy and Policy, Organisation for the Prohibition of Chemical Weapons (New Zealand); Elena Dinu, Head Prosecutor, Department for Combating Terrorism and National Security Crimes of the Romanian Prosecutor's Office (Romania); Dr Tongfi Kim, Assistant Professor, International Affairs Department, Vesalius College (Republic of Korea); Dr David Santoro, Director and Senior Fellow, Nuclear Policy, Pacific Forum (United States); Dr Åke Sellström, Associate Professor (Docent) of Histology, Umeå University (Sweden); Dr Sadik Toprak, Associate Professor, Department of Forensic Pathology, Istanbul University (Turkey); as well as the other workshop speakers: Dr Nobumasa Akiyama, Professor, Graduate School of Law, School of International and Public Policy, Hitotsubashi University (Japan); Dr Ian Anthony, Director of European Security Programme, SIPRI (United Kingdom); Andrei Apostol, forensic scientist, Horia Hulubei National Institute for Physics and Nuclear Engineering (Romania); Dr Bradley Dickerson, Senior Manager, Sandia National Laboratories (United States); Dr Bruno Tertrais, Deputy Director, Fondation pour la recherche stratégique (France); Dr Tong Zhao, Fellow, Carnegie-Tsinghua Center for Global Policy (China). The views expressed in this volume are those of the authors and do not represent the official positions of their organizations or governments.

In addition, the editors wish to thank Dr Sibylle Bauer for her moderation of the panel at the workshop; Vitaly Fedchenko for his helpful comments; Ekaterina Klimenko; Martina Selmi; Alexandra Manolache and Stephanie Blenckner for providing the logistical and communications support; and the experts who attended the workshop for bringing their expertise to the discussion.

Abbreviations

^{210}Po	A highly radioactive isotope of a chemical element polonium
BMD	Ballistic missile defence
CBRN	Chemical, biological, radiological and nuclear
CSP-SS-4	Fourth Special Session of the Conference of States Parties
CWC	Chemical Weapons Convention
DPRK	Democratic People's Republic of Korea
EDD	Extended Deterrence Dialogue
ICBM	Intercontinental ballistic missile
INF Treaty	Intermediate-Range Nuclear Forces Treaty
INTERPOL	International Criminal Police Organization
ISIL	Islamic State of Iraq and the Levant (Da'esh)
JIM	Joint Investigative Mechanism
NDS	National Defense Strategy
NPR	Nuclear Posture Review
NPT	Non-Proliferation Treaty
NATO	North Atlantic Treaty Organization
NSS	National Security Strategy
TCDD	2,3,7,8-tetrachlorodibenzodioxin
OPCW	Organisation for the Prohibition of Chemical Weapons
UNSCOM	United Nations Special Commission
VX	O-Ethyl S-2-diisopropylaminoethyl methylphosphonothiolate
WMD	Weapons of mass destruction

Executive Summary

Threats related to chemical, biological, radiological and nuclear (CBRN) use are evolving rapidly alongside changes in the political environment and developments in technology. The continued use of chemical weapons (CW) in armed conflict has, in particular, underlined the fragile nature of existing arms control agreements. In addition, several recent attacks in Asia and Europe using toxic chemicals and radioactive materials suggest that a new concern—state-sponsored assassination or attempted assassination—must now be incorporated into national security policy. Such confirmed use of CBRN materials by both state and non-state actors in these contexts highlights substantial challenges that the world is facing. As such, it is imperative to identify the threats posed by the use of CBRN and to understand the obstacles that impede cooperation at both the regional and international levels. Strengthening barriers against the use of CBRN weapons by exploring the possibility for working collectively to safeguard and enhance existing international instruments is in the mutual interest of Asian and European states. On 14 January 2019, SIPRI held the expert workshop 'Reassessing chemical, biological, radiological and nuclear (CBRN) threats and their implications for East Asia'. A number of key takeaways generated from the workshop are set out below.

Trends and Threats of CBRN Use

1. The use of chemical weapons in terrorist attacks can cause large-scale casualties and spread panic. However, preventing dangerous materials from falling into the wrong hands is a complex challenge given that the dual-use nature of chemical and biological substances makes them relatively easy to obtain through the healthcare and industrial sectors. Specific cases in Japan, such as the use of sarin in Matsumoto in June 1994 and in Tokyo in March 1995, indicate that non-state actors can, under certain conditions, produce sophisticated chemical agents. Technological developments coupled with the complexity of global supply chains could make the production and delivery of such weapons easier.
2. Chemical weapons have been used often in recent years. Their most recent use on a large scale has occurred in Syria, where various types of chemicals and delivery methods have been used by both state and non-state actors since 2013. The United Nations–Organisation for the Prohibition of Chemical Weapons (UN–OPCW) Joint Investigative Mechanism (JIM) played an important role in identifying the perpetrators that must be held accountable for this use. The failure to renew the JIM mandate has drawn attention to the deadlock in the UN Security Council over the proper response to CW use, and the OPCW is now in charge of fulfilling this responsibility.

3. Beyond the use of chemical weapons in armed conflict, both Asia and Europe have recent experiences of sophisticated chemical agents being used to carry out assassinations or assassination attempts: the VX nerve agent was used to kill North Korean leader Kim Jong Un's half-brother, Kim Jong Nam, at the Kuala Lumpur International Airport in Malaysia in 2017; and toxic chemicals were used on attacks against three individuals (including a former Russian intelligence agent) in Salisbury, United Kingdom, in 2018. The implications for such use extend beyond the direct victims: the use of toxic chemicals in public spaces causes collateral damage to a potentially large number of victims, and multidisciplinary teams set up from various state agencies are required to work quickly to respond to these attacks.
4. Various types of toxic chemicals have been used in recent CBRN attacks, and there is an increasing possibility for new types to be developed. The nerve agent used in Salisbury, for instance, was not listed in the schedule of chemicals annexed to the 1992 Chemical Weapons Convention (CWC) at the time of the attack. A proposal has been submitted to the OPCW to include new families of toxic chemicals.

Challenges in Responding to CBRN Incidents

1. When responding to CBRN incidents, the application of forensic science to support the investigation process is crucial. These incidents often leave a vast crime scene with large volumes of evidence that must be collected by a forensics team. In Romania, the government has been working on building its CBRN forensics capabilities for the past five years, mainly focusing on incidents involving radioactive material, but their systematic approach provides applicable lessons to other kinds of incidents.
2. Judicial authorities need to have a better understanding of CBRN incidents if they are to oversee the criminal cases related to them. The availability of forensics teams to provide investigative support makes an important contribution to judicial understanding of CBRN-related matters. The aim of investigating CBRN-related crimes is not only to hold the responsible individuals to account, but also to track down the sources of the CBRN materials to prevent their future procurement through similar means. Such investigations will help build an understanding of how the crime was planned and carried out, thus building an intelligence picture that can help prevent future incidents.
3. The failure to reach consensus at the OPCW's Fourth Special Session of the Conference of States Parties (CSP-SS-4) in 2018 indicates divided views among CWC states parties about the proper

response to the use of chemical weapons. The erosion of decision making by consensus at the OPCW could make it more difficult to close existing gaps in implementation. Four challenges and gaps in implementation of the CWC have been identified: verification, national implementation, attribution and universality.

4. In particular, Article VII of the CWC encourages states parties to adopt minimum national implementation measures, which include civil law that allows prosecutors to carry out the tasks required to investigate and prosecute perpetrators. In Asia, less than 60 per cent of the countries have implemented the minimum measures needed for effective implementation. This indicates a lack of threat awareness in the region, especially in South East Asia where a CBRN incident recently occurred.
5. North Korea is one of just four countries that remain outside of the CWC. The likelihood of North Korea acceding to the CWC remains low. Verification of a North Korean declaration on chemical weapons, which is necessary to join the convention, would require North Korea to allow OPCW inspectors extensive access to its facilities, including military sites. This degree of openness will be difficult for North Korea to accept.
6. The internet poses another challenge for preventing CBRN incidents. It provides access to information, equipment and materials, including through transactions on the dark web, that could help weaponize CBRN materials. The internet has also become a platform for both circulating propaganda and recruiting terrorists.

Nuclear Risks and Geopolitics in East Asia

1. Perceptions of nuclear risk differs among East Asian countries. For South Korea, North Korea's nuclear and ballistic missile programme is a significant threat, but it's not at the top of the government's agenda. The current priority of the administration of Moon Jae-in is to prevent a second Korean war. The two major concerns for China are the measures taken by the United States to counter a potential intercontinental ballistic missile (ICBM) attack from North Korea and the decision of US President Donald J. Trump to withdraw from the 1987 Intermediate-Range Nuclear Forces (INF) Treaty. These developments will affect the future direction of China's nuclear and ballistic missile programmes. For Japan, in addition to the long-standing nuclear risks posed by North Korea, the major threats are the modernization of the nuclear arsenals of China and Russia, and that the deterioration of US–Russian–Chinese strategic relations could undermine strategic stability in East Asia. The Japanese Government is deeply concerned that these developments

will affect the credibility of USA's extended deterrence in the country.

2. Under the current US Government, finding a near-term solution to the problem posed by North Korea's systematic progress on its nuclear and missile programmes has become urgent. However, the major power competition with Russia and particularly with China has become a high priority for the USA.
3. For European states, potential confrontations with a nuclear dimension in East Asia pose a serious risk to global security. The increasing number of missiles with intercontinental range and nuclear warheads, as well as secondary nuclear and missile proliferation threats, could have a direct impact on European security.
4. A quick solution to the problems arising out of North Korea's nuclear weapon programme is considered unlikely. Adopting the 'suspension for suspension' approach, as initially proposed by China, might be feasible since its implementation can be easily monitored without inspectors on the ground. The nuclear disarmament of North Korea would require a degree of intrusive access to a range of sites that the state's current government is unlikely to accept under present conditions.
5. A shared framework for maintaining strategic stability through deterrence has yet been established among states in East Asia. Deep mistrust along with complicated and evolving power plays in the region are promoting worst-case scenario analyses. Regional nuclear crisis management, especially in the midst of current crises, needs to be addressed with greater urgency. There is an increasing need to address the threats posed by the application of new technologies to existing weapons systems, where common standards need to be developed and followed.

1. The approach of the current US Government, in promoting an 'America First' foreign policy will inevitably affect the national security perspective of its allies in East Asia: Japan and South Korea. Three options for US allies on how to react to these changes have been discussed by experts: to prove how the alliance benefits the USA, to give up alliance with the USA and look for alternative partnerships or to wait for a new administration.

Cooperation

1. To promote effective response, there is an urgent need to identify the elements of a national system for investigation and attribution, including certified methods of and uniform standards for evidence collection and analysis. Science-advice from the technical community must be taken into account by decision-making bodies.

Since many countries lack the capabilities to conduct investigations, international organizations, such as the CBRN Centres of Excellence and the International Criminal Police Organization (INTERPOL), have a role to play in providing both training and knowledge to national judicial and law enforcement authorities.

2. To recover the consensus approach within the OPCW, the activities of its Technical Secretariat must be based on unbiased mechanisms for investigating allegations of chemical weapon use. Beginning with the formation of its investigation teams, the idea of promoting geographical spread among OPCW team members should be considered, as well as how to share information about the conduct and results of investigations in a balanced way.
3. The participation of East Asian states in existing nuclear non-proliferation and nuclear security- related treaties and regimes is uneven. China's participation in all these treaties and regimes is vitally important to ensure nuclear security at both the regional and the international levels. Japan is working to secure the widest participation in international mechanisms.
4. The enhancement of East Asian cooperation on export controls through capacity building of national enforcement and information sharing could prevent illicit roundabout trades in CBRN materials or weapons. Nuclear security training among Centres of Excellence could serve as another strand for meeting the need for regional nuclear security. In addition, China, Japan and South Korea should work together to build a nuclear forensics library on incidents and trafficking.
5. The implications of events such as the suspension and almost certain termination of the INF Treaty need to be assessed in both East Asia and Europe. The military dimension of great power competition and the attendant risks, including those related to nuclear weapons, have an impact on security in both regions.
6. Compared to the nuclear domain, which clearly has more competitive elements, such as for deterrence purpose, the chemical, biological and radiological domains share more common interests among stakeholder countries, such as preventing use for terrorist purposes. Cooperation on countering the threats posed by chemical, biological and radiological substances should be considered a confidence-building measure.

1. Introduction

FEI SU AND IAN ANTHONY

SIPRI held a workshop on 'Reassessing CBRN threats and their implications for East Asia' on 14 January 2019. This event hosted 15 leading academic, official and technical experts from China, France, Germany, Japan, the Netherlands, New Zealand, Romania, the Republic of Korea (South Korea), Sweden, the United Kingdom and the United States, and over 25 ambassadors, defence attachés, public officials and senior scientists. Together, they identified the emerging threats posed by nuclear weapons and chemical weapons. They looked at both past and more recent cases to assess the challenges in responding to the risks at both regional and international level and to explore how Asian and European countries could work together to safeguard and enhance existing international instruments.

Although the term 'CBRN' is used frequently throughout this volume, the workshop focused mainly on chemical and nuclear weapons. While not downplaying risks associated with biological and radiological materials, this choice reflected our perception of current political priorities and recent CBRN-related events. Therefore, this volume focuses on exploring the increasing threats arising from chemical and nuclear weapons.

In part I, the authors address the recent developments in the malicious use of CBRN materials and discuss the possible responses to the threats they pose, with a focus on chemical weapons. Dr Sadik Toprak offers an overview of recent cases where CBRN materials have been used in attacks and the characteristics of the attacks. He highlights the importance of forensic science in investigating CBRN incidents. Elena Dinu provides insights into the possible factors driving the use of CBRN materials, particularly for terrorist purposes. She argues that the internet can facilitate the malicious use of CBRN materials and emphasizes the importance of international legal frameworks, such as the European Union's Directive 2017/541 on combating terrorism, to promote international cooperation to prevent and combat CBRN terrorism. Joseph Ballard reviews the chemical weapons threats set out in the Chemical Weapons Convention (CWC) and the role of the Organisation for the Prohibition of Chemical Weapons (OPCW) in countering such threats. He notes that the states parties have not universally adopted minimum national implementation measures, and that industrial and technical developments pose another challenge to controlling CBRN materials. He addresses the OPCW's continued efforts at both political and technical levels to meet these evolving challenges. Dr Tatsuya Abe explores the reasons behind the use of chemical weapons and identifies four gaps in the CWC: verification, implementation, attribution and universal participation. He addresses the international response and the efforts of the Japan Government to cooperate with the OPCW. He concludes that the full implementation of the CWC, including regular monitoring of how states implement their obligations, is key to countering chemical weapons use. Dr Åke Sellström explores how the OPCW can promote the

legitimacy of investigations by demonstrating impartiality and increasing the capability to verify declarations. Specific case studies on Syria help to identify existing shortcomings in OPCW investigations.

In part II, the authors discuss the risks posed by nuclear weapons. Lieutenant Colonel Koichi Arie offers an overview of the current nuclear risks in East Asia, including US–Russia and US–China nuclear relations, as well as the risks arising from North Korea's nuclear programme. He discusses how these regional nuclear risks could affect the credibility of the USA's extended deterrence to Japan. He argues that Japan needs to enhance its ballistic missile defence system to maintain its own deterrence capability and notes the increasing need to include discussion on cross-domain deterrence within the US–Japan Extended Deterrence Dialogue. Dr Tongfi Kim analyses the different perspectives of the Republic of Korea (South Korea), Japan and China on evaluating the nuclear risks posed by North Korea's nuclear programme. He notes two obstacles in negotiating nuclear disarmament with North Korea: the power asymmetry between the negotiating parties and incomplete information. He concludes that although North Korea's nuclear programme poses serious threats, it does not necessarily mean that the strategic stability of East Asia will be undermined. Dr David Santoro expands the discussion to the implications of the extra regional player in the East Asia—the United States. He offers an overview of the changes in US foreign and defense policy, with a focus on its nuclear policy under the Trump administration. He analyses how the changes impact the US approach to nuclear issues in Russia, China and North Korea, as well as the potential implications for the USA's allies in East Asia—namely, Japan and South Korea. He identifies three options that allies might consider in response.

2. Trends in recent CBRN incidents

SADIK TOPRAK[1]

Introduction

Recent incidents of attacks using chemical, biological, radiological and nuclear (CBRN) agents suggest that the spectrum of threats has broadened. Some recent attacks have been carried out with sophisticated agents, but 'old-fashioned chemical weapons' such as mustard gas, used for the first time in World War I, are also still in use.[2] Sometimes both sophisticated and simple agents are used in the same location, for example the alleged use of sarin, a relatively complex nerve agent, and chlorine gas, a widely available industrial chemical used as a choking agent in Syria.[3] There have also been several attacks with sophisticated nerve agents on individuals in public spaces in countries where no conflict has taken place in recent years. There seems to be an increasing use of CBRN in attacks, which justifies a close assessment. This chapter focuses on identifying the commonalities of these recent CBRN incidents and what strategies and solutions could be applied in response.

Trends

Recent CBRN incidents include attacks in Malaysia, Syria, the United Kingdom and Ukraine, diverse states in different parts of the world. Since 2013 there has been extensive use of chemical weapons in armed conflicts in Syria, with chlorine as the most common agent, but over time more deadly and more sophisticated weapons, including the organophosphorus nerve agent sarin, have been used.[4] The most deadly attacks have been carried out with chemical agents that require significant knowledge and the specialized resources that state actors have at their disposal, which put them beyond the reach of non-state actors.

Several incidents in 2017 and 2018 showed increasing use of sophisticated chemical agents to carry out assassinations or assassination attempts. In February 2017, Kim Jong Nam, the half-brother of North Korea's leader Kim Jong Un, was assassinated at the Kuala Lumpur airport with the nerve agent

[1] Dr Sadık Toprak is an Associate Professor in the Department of Forensic Pathology at Istanbul University in Turkey.

[2] Kilic, E. et al., 'Acute intensive care unit management of mustard gas victims: the Turkish experience', *Cutaneous and Ocular Toxicology*, vol. 37, no. 4 (May 2018), pp. 332–37.

[3] Brooks, J. et al., 'Responding to chemical weapons violations in Syria: legal, health and humanitarian recommendations', *Conflict and Health*, vol. 12, no. 1 (Feb. 2018), p. 12.

[4] Organisation for the Prohibition of Chemical Weapons (OPCW)–United Nations Joint Investigative Mechanism, 'The seventh report of the Organisation for the Prohibition of Chemical Weapons (OPCW)-United Nations Joint Investigative Mechanism', S/2017/904, 26 Oct. 2017. The OPCW is the body that implements the 1993 Chemical Weapons Convention (CWC) and the OPCW–UN Joint Investigative Mechanism (JIM) in Syria was a specialized cooperation arrangement between the OPCW and the United Nations.

O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate (VX).[5] Malaysian authorities placed two women on trial for the act in late 2017, and an autopsy reportedly identified VX in ocular and facial swabs.[6] On 4 March 2018, the Soviet-era nerve agent novichok was used in the poisoning of Sergey Skripal and his daughter Yulia in the UK.[7]

Although the types of the chemical agents and the methods used in CBRN attacks vary, there are commonalities:

The role of state actors

Governments have strictly denied any connection with the assassinations and assassination attempts.[8] However, state actors may have nonetheless committed the crimes. In most cases, only state actors would be able to obtain the highly sophisticated CBRN agents that investigations revealed as having been used. Motive plays an important role in criminal law and state actors had motives in all the cases under discussion here.

The use of highly sophisticated and lethal chemical weapons

Given the difficulty in manufacturing and storing nerve agents, the stockpile is not easily accessible to non-authorized personnel. Potential exposure to VX or sarin normally occurs in the context of chemical warfare or an assassination with political purposes as in the use of VX in the Kim Jong Nam case. An exception is the use of VX by the Aum Shinrikyo cult to kill dissenting members in 1994 and 1995 in Japan.[9]

Another example is a highly radioactive isotope of polonium, ^{210}Po, which is extremely difficult to obtain.[10] The world production of ^{210}Po is estimated to be about 100 grams annually.[11] This alpha-emitting material was likely used in two assassinations. In November 2004, Yasser Arafat, the former chair of the Palestine Liberation Organization, died in Percy Military Hospital in France, one month after the sudden onset of symptoms that included severe nausea, vomiting, diarrhoea and abdominal pain followed by multiple organ failure. A forensic expert report moderately supports the proposition that Arafat was

[5] VX is an odourless liquid used as a quick-acting military chemical nerve agent. A fraction of a drop of VX, absorbed through the skin, can fatally disrupt the nervous system. See National Center for Biotechnology Information, 'VX Agent', PubChem Compound Database, 18 May 2018; Council on Foreign Affairs 'VX', Backgrounder, 1. Jan. 2006.

[6] Chai, P. R. et al., 'Toxic chemical weapons of assassination and warfare: nerve agents VX and sarin', *Toxicology Communications*, vol. 1, no. 1 (Sep. 2017), pp. 21–23.

[7] Nepovimova, E., and Kuca, K., 'The history of poisoning: from ancient times until modern ERA', *Archives of Toxicology*, vol. 93, no. 1 (Jan. 2019), pp. 11–24.

[8] Nepovimova, E., and Kuca, K. (note 7).

[9] Chai et al. (note 6).

[10] ^{210}Po is a short-lived (T1/2 = 138 d) alpha emitter, which typically creates damage on a millimetre scale, notably to the gastrointestinal tract if ingested and then to inner organs and bone marrow via blood distribution.

[11] Emsley, J., 'Q&A: Polonium 210', *Chemistry World*, 27 Nov. 2006.

poisoned by ^{210}Po, while another has disputed this conclusion.[12] Another case is the November 2006 assassination of Alexander Litvinenko, a former officer in the Russian Federal Security Service, in London by ingestion of ^{210}Po.[13]

The attack occurs in a public place

All of the attacks noted above took place in public places, with collateral damage in some of the cases. On 4 March 2018, Sergey and Yulia Skripal were poisoned in Salisbury, UK, with a nerve agent that contained almost no impurities—suggesting that it had been produced in a very specialized facility.[14] However, on 30 June 2018, two other people, Dawn Sturgess and Charlie Rowley, fell ill at a house in Amesbury, about 13 kilometres from Salisbury. Both victims were exposed to the same type of poison used to attack Skripal and his daughter; however it is not proven whether the poisons from two incidents are from the same synthesis batch.[15] According to Rowley, he found a famous brand perfume bottle and gave it to Sturgess. They broke the seal on the bottle and became sick within 15 minutes after spraying the oily substance onto her wrists and rubbing them together.

Once they arrived at the hospital, their doctors suspected the novichok agent, due to the high-profile case that had happened nearby a few months earlier. The Sturgess and Rowley case has special importance because both victims were ordinary people. British Home Secretary Sajid Javid stated the most likely hypothesis was that the novichok was in an item discarded after the Skripal attack. He accused Russia of using Britain as a 'dumping ground for poison'.[16]

The attack targets individuals rather than seeking mass casualties

In the attacks discussed here, the individuals appear to have been selected because of specific characteristics. Several cases involved former intelligence agents; another was a direct relative of a head of state. To this list could be added another attack, in which Ukrainian ex-president Viktor Yushchenko was poisoned when he was a candidate in a presidential election campaign. CBRN attacks on people with a relatively high political profile inevitably raise the suspicion of state involvement.

[12] Froidevaux, P., et al., '(210)Po poisoning as possible cause of death: forensic investigations and toxicological analysis of the remains of Yasser Arafat', *Forensic Science International*, vol. 259 (Nov. 2015), pp. 1–9; Uyba, V.V., et al., 'Polonium-210 Version of Arafat's Death: the Results of Russian Investigation', Medical Radiology and Radiation Safety, vol. 60, no. 3, 2015, p. 50–57.

[13] Nepovimova and Kuca (note 7).

[14] OPCW, Technical Secretariat 'Summary of the report on activities carried out in support of a request for technical assistance by the United Kingdom of Great Britain and Northern Ireland (Technical assistance visit TAV/02/18)', Note by the Technical Secretariat, S/1612/2018, 12 Apr. 2018.

[15] OPCW, (note 14).

[16] BBC News, 'Amesbury poisoning: Couple "handled contaminated item"', 5 July 2018.

Exposure occurs via unusual method of delivery or dosage

Yushchenko was poisoned by a high dose of 2,3,7,8-tetrachlorodibenzodioxin (TCDD) in December 2004 at a dinner during his presidential campaign.[17] The identification of the poison took more than two and a half months because the presence of TCDD was not routinely investigated in patients with signs of acute poisoning. Yushchenko was exposed to TCDD in a single oral dose of five million-fold more than the accepted daily exposure in the general population.[18] If Yushchenko had not survived, the poison would not have been identified as it was in the Yasser Arafat case.[19]

Different possible time delivery-schemes in some cases

In the Arafat case, many medical tools were used, including toxicological tests and urine and faeces analyses for radioactive substances based on gamma emission. However, because there were no positive results, diagnosis could not be established while Arafat was alive. After his death, in 2012, abnormal levels of ^{210}Po were found in some of his belongings worn during his final hospital stay and stained with biological fluids.

The Litvinenko case has some similarities with others. While he was ill, he realized that he had been poisoned. The poison was identified partly by chance, but it was too late.[20]

There were some clinical differences between Arafat and Litvinenko. Unlike Litvinenko, Arafat did not show myelosuppression and hair loss. These differences can be explained by age differences as well as different modes of delivery.[21] If a victim received small doses regularly rather than one high dose, clinical findings would differ.

Lessons

The cases sketched out here suggest that in both ante-mortem and post-mortem medical tests the diagnosis of suspected CBRN cases is extremely difficult.

Vulnerable individuals, such as political figures, experiencing unusual symptoms might be active CBRN incidents. This should be borne in mind during medical treatment. The same approach applies to post-mortem cases.

Once exposed to CBRN agents, patients rarely present as routine clinical cases. Litvinenko is a good example of the difficulty of diagnosis. The clinical findings, including his acute, severe, progressive gastrointestinal symptoms, were consistent with acute radiation syndrome. His health rapidly deteriorated,

[17] Nepovimova and Kuca (note 7); Sorg, O., Zennegg, M., Schmid, P., et al., '2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) poisoning in Victor Yushchenko: identification and measurement of TCDD metabolites', *Lancet*, vol. 374, no. 9696 (3 Oct. 2009), pp. 1179–85.

[18] Saurat, J. H. et al., 'The cutaneous lesions of dioxin exposure: lessons from the poisoning of Victor Yushchenko', *Toxicological Sciences*, vol. 125, no. 1 (Jan. 2012), pp. 310–17.

[19] Sorg, O., Zennegg, M., Schmid, P., et al. (note 17).

[20] McFee, R. B. and Leikin, J. B., 'Death by Polonium-210: lessons learned from the murder of former Soviet spy Alexander Litvinenko', *Seminars in Diagnostic Pathology*, vol. 26, no. 1 (Feb. 2009), pp. 61–67.

[21] Froidevaux et al. (note 12).

although all his test results were negative, including a gamma spectrometry. In the final stages of his life, significant amounts of alpha particle radiation were found in his urine. He died soon after the diagnosis was established.[22]

The general rules of forensics continue to be useful in responding to CBRN incidents. Forensic science plays an important role in investigating CBRN cases and reaching conclusions. Based on past lessons, the Scientific Advisory Board of the Organisation for the Prohibition of Chemical Weapons (OPCW) has pointed out the importance of evaluating technologies and adopting methods applicable to investigative work, especially traditional forensic techniques.[23]

Technical developments should be actively encouraged. The OPCW's Scientific Advisory Board encourages research on the potential markers of exposure to chemicals.[24] There are already some biomarkers for certain chemical weapons, but some chemical weapons such as chlorine do not have any biomarker. Hence, research on the weakest points should be supported.

A post-mortem examination should always take place in all cases because it is an integral part of uncovering the actual course of events. The autopsy of Kim Jong Nam gave crucial information about his death. The lack of an autopsy in the Arafat case was an important shortcoming in that investigation.

Anyone suspected of illegal, arbitrary and summary executions should be investigated under international standards.[25] Protocols such as the Minnesota Protocol on the Investigation of Potentially Unlawful Death and the European harmonization of medico-legal autopsy rules should be used in any suspected CBRN incident.

Conclusions

This chapter has briefly introduced some significant trends in recent CBRN incidents. One of the important characteristics of these trends is that the targets are individuals rather than masses. CBRN agents have been increasingly used for assassinations or assassination attempts in some high-profile cases. A logical conclusion is that because these attacks targeted only certain individuals, forensic tools should be applied as they would be in any other criminal case.

[22] McFee and Leikin (note 20).

[23] OPCW, Scientific Advisory Board, 'Report of the Scientific Advisory Board on Developments in Science and Technology for the Fourth Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention', RC-4/DG.1, 30 Apr. 2018.

[24] OPCW (note 23).

[25] Toprak, S. et al., 'The pathology of lethal exposure to the Riot Control Agents: towards a forensics-based methodology for determining misuse', *Journal of Forensic and Legal Medicine*, vol. 29 (Jan. 2015), pp. 36–42.

3. Reassessing CBRN terrorism threats

ELENA DINU[1]

Introduction

The threat of attacks involving chemical, biological, radiological or nuclear (CBRN) material by terrorist groups has lurked for several decades. Various sources have confirmed that by 2005 al-Qaeda had initiated plans to acquire weapons of mass destruction, but its efforts did not progress very far in either scale or sophistication.[2] Attacks were more likely to involve easily available industrial chemicals.[3] In 2017, the Organisation for the Prohibition of Chemical Weapons (OPCW)–United Nations Joint Investigative Mechanism (JIM) identified the Islamic State of Iraq and the Levant (ISIL/Da'esh) as responsible for the use of sulphur mustard in Syria, after previously confirming repeated use of chlorine as a weapon in the area.[4]

The confirmation of al-Qaeda's interest in procuring and using CBRN means in terrorist attacks obliged the law enforcement community to start preparing for the worst-case scenario. Recent reports on the use of chemical agents by ISIL in conflict zones brought the menace closer to Europe both in space and time. In this context, several questions arise. Apart from the use of CBRN in armed conflict, is the threat also real for the civil community? Are CBRN attacks easier to carry out today? Would terrorists want to initiate attacks that would be so difficult to control? If so, are authorities prepared to deal with the aftermath of such events? How could they be prevented?

Although it is difficult to give definitive and exhaustive answers to most of these questions, this chapter provides some insights by analysing the possible motivations and drivers behind the use of CBRN means by terrorists. It then discusses accessibility in the context of the potential and reach enabled by online communications, and offers some considerations concerning response, investigation and prosecution before presenting several conclusions.

[1] Elena Dinu is the Head Prosecutor of the Department for Combating Terrorism and National Security Crimes of the Romanian Prosecutor's Office. The views expressed are those of the author and do not necessarily represent the views of the Romanian Prosecutor's Office.

[2] Dunn L. A., *Can al Qaeda Be Deterred from Using Nuclear Weapons?*, Center for the Study of Weapons of Mass Destruction (CSWMD) Occasional Paper no. 3 (National Defense University: Washington, DC, 1 July 2015); Tamsett, J. and Ackerman J., *Jihadists and Weapons of Mass Destruction* (CRC Press: Boca Raton FL, 2009).

[3] United States Senate, Select Committee on Intelligence, 'Statement of Vice Admiral Lowell Jacoby, USN, Director, Defense Intelligence Agency', *Current and Projected National Security Threats to the United States*, S. HRG. 109–61, 16 Feb. 2005, pp. 45–58.

[4] United Nations, Security Council, 'Government, 'Islamic State' known to have used gas in Syria, Organisation for Prohibition of Chemical Weapons head tells Security Council', Press Release SC/13060, 7 Nov. 2017; Organisation for Prohibition of Chemical Weapons (OPCW), 'Second report of the OPCW Fact-Finding Mission in Syria: Key findings', S/1212/2014, 10 Sep. 2014.

Motivations and driving factors

The CBRN spectrum is so wide and varied that it is difficult to include all elements in a generalized discussion of motivations and factors driving the possible use of CBRN materials in terrorist attacks. The issue has been widely addressed in the literature.[5] However, a review of the potential implications of CBRN and past incidents would make it easier to understand why such means appeal to terrorists. Several reasons include the following, in no apparent order.

1. Sophisticated CBRN agents are potentially highly lethal while being silent killers, and therefore harder to detect and contain;
2. Any attack using CBRN material would attract attention and receive prime-time coverage in the mass media;
3. CBRN attacks would most certainly provoke terror and panic among civilians;
4. CBRN materials have the potential to inflict serious consequences and collateral economic damage (e.g. by contaminating the environment and affecting animal and human health);
5. CBRN materials offer the means to blackmail governments or at least pressure them; and
6. Possession and use of CBRN means would place the perpetrator in a position of perceived power vis-à-vis national authorities (at least temporarily).

Attacks might not only be conducted by established terrorist groups, but might also include so-called lone wolf incidents involving less sophisticated materials. Recent terrorist attacks have switched from attacking public figures to targeting random civilians. CBRN materials risk becoming a weapon of choice for terrorist attacks, even if they involve only small amounts.

Communications technologies and the growing use of e-commerce might facilitate access to relevant scientific information and newer technologies, which allows for higher damage at lower costs with fewer knowledge prerequisites. In the future, CBRN tools may look more attractive to 'dark minds'. Furthermore, other risk factors of these wrong and powerful weapons falling into indiscriminate hands include access to CBRN materials outside of government control in conflict zones, abuse of poor inventory systems in troubled territories and the threat of insiders' access in sensitive facilities, perhaps facilitated by corruption.

The fragmentation of terrorist groups, the loss of authority, the creation of disparate cells or the facilitation of dangerous individuals could inspire alternate means for violence. As already noted, the use of chemicals in attacks in Syria has been documented, and as ISIL continues to lose control of territory and power, individuals with relevant knowledge may be among the foreign terrorist fighters

[5] Cole, B., *The Changing Face of Terrorism: How Real Is the Threat From Biological, Chemical and Nuclear Weapons?* (I. B. Tauris: London, 2011); Asal, V. H., Ackerman G. A. and Rethemeyer, R. K., 'Connections can be toxic: Terrorist organizational factors and the pursuit of CBRN weapons', *Studies in Conflict & Terrorism*, vol. 35, no. 3 (2012), pp. 229–54.

who leave the conflict zone through illegal migration. Such individuals may bring the capability to carry out attacks using CBRN materials to the rest of the world.

Past terrorist attacks as well as failed attempts by groups such as the Aum Shinrikyo cult in Japan or al-Qaeda suggest that terrorist groups with a religious focus might be more inclined to acquire CBRN weapons and use them to attack what they consider to be enemy land. These kinds of groups also seem biased towards attacks motivated by eliminating 'non-believers' or 'impure' ethnic and religious groups. Any means capable of eradicating non-desired communities may seem justified, with little religious or ethical concern. In fact, it was religious scholars affiliated with al-Qaeda who promoted and justified the use of CBRN means in the first place.[6]

Accessibility

The evolving conflicts in and near Europe indicate that increased vigilance would be prudent in a period of heightened risk. To improve awareness of where dangerous ideas are developed and how they spread, it is necessary to understand the influence of online communication.

The internet has become the most accessible way to spread ideas, exchange information, find a sense of community and procure resources. Ever younger individuals find each other on gaming platforms, start communicating and step by step get radicalized, to finally follow direction from interested groups. The internet is also where terrorist groups recruit their youngest supporters, and where propaganda is being overlooked to resemble just another war game.

The internet can be a safe haven, and for some individuals sometimes it is the only place where friends can be found. At times, even underage individuals start planning serious attacks and unscrupulous actors will offer them support. Encryption offers security and anonymity, text and video chat platforms make communication between total strangers possible and desirable, new technology translates instantly and adjustable image filters can transform anybody into hero fighters. The use of the internet to spread propaganda and aid recruitment has been highlighted by the United Nations as an example of how technology has facilitated the transnational evolution of terrorism.[7]

Another concern is the availability of dual-use products and technologies. Some of the chemical and biological materials available for medical or industrial purposes can become dangerous weapons in criminal hands. Many countries have taken various measures to prevent such materials from being obtained by people with a criminal agenda, yet it is very difficult in practice to oversee all dangerous

[6] Jerrold, M., 'Killing in the name of God: Osama Bin Laden and Al Qaeda', Counterproliferation Papers, Future Warfare Series no. 18 (USAF Counterproliferation Center, Air University: Maxwell Air Force Base, Alabama, Nov. 2002); see for Cole, B. (note 5) on manuals published by al-Qaeda on the use of chemical and radiological weapons, see also Nasir al-Fahd's text on the 'The legality of using weapons of mass destruction (WMD) against infidels' retrieved from <https://archive.org/stream/NasirAlFahd/NasirAl-fahd-TheRulingOnUsingWeaponsOfMassDestructionAgainstTheInfidels_djvu.txt> on 14 Apr. 2019.

[7] United Nations Office on Drugs and Crime (UNODC), *The use of the Internet for terrorist purposes*, (English, Publishing and Library Section, United Nations Office at Vienna: Vienna, 2012).

developments. It is not possible to control all chemicals and precursors that could potentially be used with terrorist intent. In fact, some toxic industrial chemicals are freely available on the market for very mundane uses.

As recent cases involving attacks with radioactive or chemical substances have shown, containing the effects of such attacks or incidents in densely populated areas places an extremely high burden on responding authorities, as well as creating health risks to unaware individuals, civilians as well as officials, who can easily fall victim even to small quantities of a toxic substance. Contamination can occur on a scale that is hard to estimate and counter.

Response, investigation and prosecution

Preparing to meet the challenge posed by attacks with CBRN materials effectively requires a great deal of planning and forethought. The investigation and prosecution of CBRN attacks involve some very specific aspects. Such cases involve potentially vast crime scenes, where it can be difficult to conduct enquiries or manage access, and the nature of the material might make dispersion and the secondary poisoning of individuals impossible to control, as demonstrated by the Litvinenko and Skripal cases. The number of victims could be high following an indiscriminate attack or unintentional contamination. The physical movement of the CBRN agent used in an attack might mean that hundreds of people need medical assessment or assistance. Containing the consequences, implementing countermeasures to protect the public and decontaminating physical spaces would involve many agencies and large multidisciplinary teams. This in turn would raise issues concerning availability of resources, safety, cost, lead and coordination. Extensive resources might be necessary not only for the crime scene management, but also for crisis management, including for protecting civilians, ensuring public order and providing medical care. Additional services would be needed for security and decontamination, as well as support for victims and their families (psychological, medical and financial). Another very important aspect is public communication, because the insidious nature of CBRN weapons makes them prone to producing panic among civilians.

Evidence management itself could prove challenging, depending on the extent of the crime scene, the number of victims and the contamination hazard. Because CBRN investigations rely heavily on specialized support and scientific examination of evidence, expert resources are essential. Depending on the background of the attackers and the peculiarities of the case, it might be necessary to gather information and evidence from abroad, from conflict or unfriendly areas. Evidence that is collected would need to be preserved over an extended period in ways that still allow it to be admitted in a court at a later date, perhaps many years in the future. Proceedings could be very lengthy and their success could depend on the parties involved. For instance, it took 20 years to bring those responsible for the Lockerbie air crash in 1988 to court.

Terrorism investigations, particularly those involving CBRN materials, may require considerable international cooperation, either for exchange of information,

technical assistance or evidence collection. Apart from political challenges, which could hamper or delay legal and operational assistance, requesting and obtaining such assistance is in most cases grounded on international legal instruments. These instruments prescribe certain legal obligations and responsibilities for participating member states, including criminalizing specific deeds, setting out procedures for cooperation and obtaining evidence from abroad, establishing jurisdiction, ensuring dual criminality for granting extradition or assuming prosecution, and implementing safety and security measures.

The international legal framework for preventing and combating CBRN terrorism currently comprises seven United Nations legal instruments.[8] In accordance with the United Nations Security Council Resolution 1540 (2004) on preventing acquisition and proliferation by terrorists of weapons of mass destruction, the enforcement of these instruments through national legislation offers the premises for states to comply with their obligations.[9]

The 1997 Chemical Weapons Convention prohibits the procurement and use of chemical weapons and provides for on-site inspections for the purpose of systematic verification.[10] However, the inspection mechanisms to verify an arms control agreement still have to be refined and 'reality checked' before they could be considered an effective tool for law enforcement.

In practice not all states completely apply the existing international legal framework in their respective national laws. Even when they comply formally, some governments do not necessarily act to ensure such provisions have full legal force. Sensitive bilateral or regional circumstances could further impede cooperation. One notable exception concerns the European Union's extensive legal framework for mutual assistance in criminal matters, where mutual recognition of judicial decisions, surrender of own nationals, joint investigation teams and commonly recognized arrest warrants apply. The EU Directive 2017/541 on combating terrorism also adds an extra layer of legal provisions regarding the acquisition and use of CBRN materials for terrorist purposes, as well as any release of hazardous substances that could endanger human life.[11] Other acts that are criminalized include engaging in a public provocation to commit a terrorist offence by any means, recruitment, providing or receiving training for terrorism, and travelling for the purpose of terrorism.

[8] The seven instruments are the 1980 Convention on the Physical Protection of Nuclear Material and its 2005 Amendment, the 1997 International Convention for the Suppression of Terrorist Bombings, the 2005 International Convention for the Suppression of Acts of Nuclear Terrorism, the 2005 Protocol to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, the 2005 Protocol to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf and the 2010 Convention on the Suppression of Unlawful Acts relating to International Civil Aviation. UNODC, 'Tackling chemical, biological, radiological and nuclear terrorism', accessed 7 Feb. 2019.

[9] UN Security Council Resolution 1540 (2004), 28 Apr. 2004.

[10] Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (Chemical Weapons Convention, CWC), opened for signature 10 Apr. 1972, entered into force 26 Mar. 1975, *United Nations Treaty Series*, vol. 1015 (1976).

[11] Directive 2017/541 of the European Parliament and of the Council of 15 March 2017 on combating terrorism, *Official Journal of the European Union*, L88/6, 31 Mar. 2017.

Conclusions

The threat posed by CBRN terrorism is still considered relevant, driven by political, ideological, social, economic and technological factors. Although threats should not be unnecessarily exaggerated, attacks could plausibly be conducted with CBRN means targeting random civilians or selected individuals because of their political or ideological significance.

Preventing and countering CBRN attacks is particularly cumbersome and requires considerable resources. To successfully discourage and punish such acts, the international cooperation framework must be strengthened and improved, and a meaningful and reasonable dialogue must be promoted between countries to help them prepare themselves with maximum efficiency and minimum cost.

4. Reassessing chemical weapon threats

JOSEPH BALLARD[1]

Introduction

More than 20 years have passed since the entry into force of the Chemical Weapons Convention (CWC). Almost all declared chemical weapons arsenals have been almost totally eliminated.[2] Yet recent events have starkly underlined that chemical weapons nonetheless remain a threat. This threat presents a significant challenge for the 193 states parties to the CWC and for the Organisation for the Prohibition of Chemical Weapons (OPCW). This essay provides an overview of how the OPCW views contemporary chemical weapons threats, charts out some of the key political and technical developments that may impact the probability of chemical weapons use in the future and looks at how the OPCW has responded to those challenges.

Avenues of the chemical weapons threats

It is important to start with the vantage point of the OPCW Technical Secretariat when it comes to discussing chemical weapons threats. The OPCW was established in 1997 through the entry into force of the CWC. The secretariat's role is to oversee the treaty's implementation, mainly through the operation of the CWC's complex verification system and a capacity-building programme to ensure effective national implementation. By necessity and design, the CWC focuses largely on the behaviour of its states parties: the obligations in the treaty are all borne by the states parties and they are answerable for any breaches. Although Article II of the CWC has an extremely broad definition of what can amount to a chemical weapon—any toxic chemical—the role of the OPCW in verifying compliance and the obligations on states parties focus on particular kinds of listed chemicals, particularly those designed to be chemical warfare agents, and on militarily significant quantities of those chemicals. These are not necessarily the same kinds of chemicals, or quantities, that non-state actors are using or could use in attacks. For these reasons, the secretariat is institutionally oriented towards states. It devotes comparatively fewer resources to the question of chemical terrorism, although this share is increasing.

There is no doubt that the OPCW is concerned by the threat of chemical terrorism. Any use of chemical weapons, by anyone, at any time, is unacceptable; the convention's preamble sets out its states parties' determination 'for the sake of all

[1] Joseph Ballard is a senior policy officer in the Organisation for the Prohibition of Chemical Weapons (OPCW) Technical Secretariat's Office of Strategy and Policy, where he focuses primarily on developing policy on counterterrorism and chemical security. The views expressed are those of the author and do not necessarily represent the views of the OPCW Technical Secretariat.

[2] More than 96% of the world's declared chemical weapons stockpiles have been eliminated. See OPCW, 'OPCW by the numbers', accessed 1 Apr. 2019.

mankind, to exclude completely the possibility of the use of chemical weapons, through the implementation of the provisions of this Convention'. The OPCW must respond to all emerging threats to the CWC, and chemical terrorism constitutes one clear avenue for the re-emergence of chemical weapons.

State-sponsored programmes represent the other avenue. When it comes to states, the CWC was designed to prevent such an eventuality, whether it is through; (*a*) the operation of the treaty's complex verification regime; or (*b*) in the provisions that deal with a state party suspected of violating its treaty commitments; or (*c*) through encouraging states outside the treaty to join and to destroy any stockpiles they may possess.

The treaty's preventive mechanisms against chemical terrorism are less clear, but they do exist. The CWC requires states parties to apply the treaty's prohibitions and controls at the domestic level and punish violators, whether they are terrorists or otherwise.[3] This is a key mechanism. States parties must also take the necessary measures to ensure that all toxic chemicals—whether they are subject to OPCW verification or not—are only used for non-prohibited purposes.[4] These are broad obligations, and their implementation can vary from state to state. For its part, the secretariat must ensure it is doing all it can to help the states parties' readiness to prevent and respond to the threat of any use of chemical weapons by any actor. To stay ahead of the threat, and to maximize the utility of the convention in preventing chemical terrorism, it is important for the states parties and the secretariat alike to constantly refresh understandings of what implementation of the CWC means.

Trends in chemical weapons use

It is important to understand how chemicals are being weaponized in order to know how the implementation of the CWC should evolve. The use of chemical weapons in Syria is incontrovertible. The use of those weapons has been attributed by the OPCW–UN Joint Investigative Mechanism (JIM) to both the Syrian armed forces and armed non-state groups.[5] The widespread use of chemical weapons in the Syrian conflict and their disproportionate impact on innocent civilians has underlined what is so horrific about chemical weapons, and why the international community has rightly banned them. The kinds of chemicals used in Syria—ranging from sarin, a potent nerve agent, to chlorine, an exceedingly common industrial chemical—and their delivery methods—from rockets to barrel bombs—underscore not only the dangers of chemical weapons, but also in many cases their relative accessibility and usability.

[3] Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (Chemical Weapons Convention, CWC), opened for signature 10 Apr. 1972, entered into force 26 Mar. 1975, *United Nations Treaty Series*, vol. 1015 (1976).

[4] CWC (note 3), Article VI.

[5] United Nations, Security Council, 'Seventh report of the Organisation for the Prohibition of Chemical Weapons–United Nations Joint Investigative Mechanism', S/2017/904, 26 Oct. 2017. The OPCW is the body that implements the 1993 CWC and the OPCW–UN Joint Investigative Mechanism (JIM) in Syria was a specialized cooperation arrangement between the OPCW and the United Nations.

The targeted killing of Kim Jong Nam at the Kuala Lumpur International Airport in early 2017 revealed another chilling part of the chemical threat picture: individuals or governments are prepared to use nerve agents to carry out assassinations. The purported involvement of the Democratic People's Republic of Korea is a further worrying sign, not only of a potential chemical weapons stockpile in a state outside the CWC, but of authorities seemingly prepared to use it.[6] The similar case in Salisbury in the United Kingdom a year later confirmed a trend of apparently targeted assassinations using nerve agents, and introduced a new element: a previously little-known and highly toxic chemical warfare agent not listed in the CWC's schedules.[7]

All of these instances of chemical weapons use are of deep concern and are damaging to the global norm and to the CWC. They have the potential to inspire further attacks. They underline the continuing danger of chemical weapons, and the need for the OPCW and the broader international community to redouble efforts in support of the CWC's universalization and full implementation. The Salisbury case in particular also demonstrates the considerable disruption and costs associated with responding to the use of chemical weapons in a crowded urban environment and has raised further fears about the threat of chemical terrorism. But how real are those fears?

When it comes to the terrorist use of chemical weapons, beyond the Syrian conflict there has not been a large-scale incident affecting civilians since the Aum Shinrikyo attacks in Tokyo in the mid-1990s. According to data maintained by the US National Consortium for the Study of Terrorism and Responses to Terrorism, chemical terrorism remains rare, making up less than one quarter of one per cent of all terrorist incidents.[8] However, of the different types of unconventional weapons (chemical, biological, radiological and nuclear—CBRN), chemical weapons have been the most frequently pursued and used by terrorists, with chemical weapons accounting for 69 per cent of all CBRN terrorism incidents and 88.5 per cent of all terrorist uses of CBRN agents.[9] It is a problem that affects both developed and developing countries.

Implementation and challenges

Preventing such attacks must remain a priority. This can be accomplished through a range of measures largely at the national level: (*a*) to establish proper legal frameworks for the control of potentially weaponizable chemicals; (*b*) to ensure there are appropriate sanctions for perpetrators; and (*c*) to prepare emergency services to respond should the worst occur. The CWC itself sets out obligations in these areas, and the OPCW provides capacity-building support

[6] The remaining non-member states are Egypt, Israel and North Korea. Israel is a signatory.

[7] OPCW, Technical Secretariat, 'Request for Information from State Parties on New Types of Nerve Agents', Note by the Director-General, S/1621/2018, 2 May 2018.

[8] Ackerman, G., Binder, M. and Pinson, L., *Profiles of Incidents Involving CBRN Use by Non-State Actors (POICN) Database* (National Consortium for the Study of Terrorism and Responses to Terrorism (START): College Park, MD, 2018).

[9] Ackerman, Binder and Pinson (note 8).

to states parties in their work to implement the obligations. The convention is therefore a key enabler of the international effort to counter chemical terrorism, if it is effectively implemented at the level of each CWC state party.

In this critical area of national implementation, much remains to be done. Of the CWC's 193 states parties, only 63 per cent have adopted what the OPCW regards as the minimum national implementation measures, while 20 per cent have not reported the adoption of any implementation measures.[10] Even more concerning is that implementation rates are lower in regions with broader security concerns. For instance, fewer than 50 per cent of African states parties to the CWC have reported the adoption of the minimum set of national implementation measures.[11] While progress in CWC implementation is not necessarily a direct indicator of a country's preparedness to counter the threat of chemical terrorism, these macro-level views can help to build a global picture and highlight where more work is needed.

Alongside these implementation challenges, industrial and technological developments have the potential to increase the ease with which those determined to carry out an act of chemical terrorism can acquire the means to do so. Potential weaknesses in global efforts to prevent toxic chemicals from falling into the wrong hands include developments in chemical synthesis, new technologies that can enable easier delivery of chemical weapons, increasingly complex chemical supply chains and the growing use in many developing countries of contract chemical manufacturing.

The path forward

These challenges will continue to evolve. To meet those challenges, we must ensure continued awareness of the threat and the availability of policy responses. It is critical to build awareness of the threat of chemical terrorism among those who handle or regulate toxic chemical. Policy makers, chemical practitioners, and industry participants are the essentials.

At the political level, the OPCW's policymaking organs—the Executive Council and the Conference of the States Parties—recognize the threat posed by the use of chemical weapons. In October 2017, the Executive Council underlined the threat to the object and purpose of the CWC posed by the use of chemical weapons by non-state actors and laid out a number of measures to be taken by the states parties and the Technical Secretariat to counter that threat.[12] In June 2018, a special session of the Conference of the States Parties was convened to deal with chemical weapons use, particularly in Syria.[13] The session passed a decision giving the OPCW Technical Secretariat the power to identify the perpetrators of chemical

[10] OPCW, Executive Council, 'Overview of the Status of Implementation of Article VII of the Chemical Weapons Convention as at 31 July 2018', EC-89/DG.9 C-23/DG.8, 24 Aug. 2018.

[11] OPCW (note 10).

[12] OPCW, Executive Council, 'Decision: Addressing the Threat Posed by the Use of Chemical Weapons by Non-State Actors', EC-86/DEC.9, 13 Oct. 2017.

[13] OPCW, Conference of the States Parties 'Report of the Fourth Special Session of the Conference of the States Parties', C-SS-4/3, 27 June 2018.

weapons attacks in Syria. This was a strong reaction to the failure of the United Nations Security Council to renew the mandate of the JIM, the body previously charged with that task. It was also a divided one: the decision was taken not by consensus, as had become the tradition at the OPCW, but by vote. On the technical level, at the beginning of 2019, OPCW states parties started to consider two sets of proposals to add the families of chemicals associated with the Salisbury attack to the CWC's schedules, which would subject those chemicals to strict verification measures.[14]

Although the Fourth Review Conference in November 2018 ended without a consensus outcome, it mirrored the reality of diverging views among states parties to the CWC on a certain number of political issues. Despite these differences, states parties clearly reconfirmed their ongoing commitment to the Convention and reached ad referenda agreement on a large range of measures of importance to effective implementation of the CWC. Importantly, there was no argument over the OPCW's role in contributing to countering chemical terrorism. This is a considerable development in states parties' understanding of the CWC compared to several years ago, when a number expressed fundamental doubts as to the OPCW's mandate to address this issue, which is not explicitly mentioned in the convention.

The secretariat itself has taken a range of measures to respond further to the threat of chemical terrorism. In Syria, the OPCW Fact-Finding Mission has been actively investigating and verifying claims of chemical weapons use. The OPCW Director-General established the Rapid Response and Assistance Mission to respond to emergency requests for assistance from any state party that believes it has been the subject of a chemical weapons attack.[15] A project to upgrade the OPCW Laboratory to a Centre for Chemistry and Technology is underway, as are efforts to expand the secretariat's analytical and situational awareness capabilities in support of its contingency operations. To contribute to raising awareness about the threat, the OPCW hosted the first Conference on Countering Chemical Terrorism in June 2018.[16]

With regard to national implementation, the secretariat continues to work closely with states parties that have not yet established the minimum legal measures to enforce the CWC at the domestic level. A new national implementation framework is being designed to help all states parties to update and fully adapt their CWC implementation measures to meet contemporary security challenges, as the treaty envisages.

[14] OPCW, Executive Council, 'Report of the Sixty-Second Meeting of the Executive Council', EC-M-62/2, 14 Jan. 2019.

[15] OPCW, 'Field Exercise in Romania to Improve OPCW's Rapid Response and Assistance Capabilities', 14 Dec. 2017.

[16] OPCW, 'Summary of the Conference on Countering Chemical Terrorism, OPCW Headquarters, The Hague, The Netherlands, 7–8 June 2018', S/1652/2018, 16 July 2018.

Conclusions

The last several years, for better and for worse, have seen a resurgence in interest in chemical weapons and the work of the OPCW. Documented cases of chemical weapons use could point towards the phenomenon that the OPCW is seeking to prevent: the re-emergence of chemical weapons. But there are reasons to remain positive: the strong international reactions to each instance of chemical weapons use have demonstrated that the taboo against chemical weapons remains strong. The CWC continues to deliver on one of its central missions: the permanent eradication of military stockpiles of chemical weapons, with more than 96 per cent of declared global stockpiles now eliminated and the rest soon to follow. There is growing awareness of the threat of chemical terrorism, and the OPCW is working to build up its policy and operational response to that threat.

Since 2013, the OPCW has been tested as never before. Its operations to secure and destroy chemical weapons in Syria and Libya demonstrate the OPCW's resilience and flexibility. Those qualities will be needed even more as the OPCW community—the states parties and the secretariat, working together—faces the challenges of the future.

5. International actions against the threats of chemical weapons use: A Japanese perspective

TATSUYA ABE[1]

Introduction

Ever since the 1915 chlorine gas attacks in Ypres, Belgium, the international community has faced the threat of chemical weapons. The fact that chemical weapons have been used on several occasions in the past 25 years is a reminder that they remain a real threat today. This chapter will first review the recent cases of chemical weapons use, then will discuss the reasons for them and address the international response, and finally will provide a Japanese perspective on future directions.

Recent cases of chemical weapons use

On 13 January 1993, the Chemical Weapons Convention (CWC) was opened for signature. Participation in the CWC has grown to include 193 states, and the international community believed that a world free of chemical weapons could be achieved in the foreseeable future. However, despite the adoption of the CWC, in the past 25 years chemical weapons including toxic chemicals have been used in several locations both by states and by non-state actors. Aum Shinrikyo, a Japanese doomsday cult, used sarin in Matsumoto and Tokyo in June 1994 and March 1995 respectively; there were multiple uses of chlorine gas by groups in Iraq in February 2007; chemical weapons such as sarin, sulphur mustard and chlorine have often been used during the conflict in Syria since 2013; a citizen of the Democratic People's Republic of Korea (DPRK, or North Korea) was killed by nerve agent O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate (VX) at the Kuala Lumpur International Airport in February 2017; and there was an

[1] Dr Tatsuya Abe is a Professor of International Law at the School of International Politics, Economics and Communication at the Aoyama Gakuin University in Tokyo.

attempt to kill a former Russian spy and his daughter using a nerve agent in Salisbury, United Kingdom, in March 2018.[2]

Reasons for chemical weapons use

Despite the adoption of the CWC and the establishment of the Organisation for the Prohibition of Chemical Weapons (OPCW) as its international implementing body, why are chemical weapons used so often?

From a technical perspective, chemical weapons are relatively easy to produce, obtain, handle and thus use. Due to their dual-use nature that can be used in both civilian and military applications, many toxic chemicals and their precursors are readily available to ordinary people. Aum Shinrikyo proved that a non-state group could produce the complex nerve agents of sarin and VX.

The fact that chemical weapons are used often suggests that there are at least four gaps in the CWC: verification, implementation, attribution and universal participation.

Verification is not comprehensive. The CWC identifies chemicals and chemical activities subject to its verification. Consequently, verification, or, more precisely, routine verification, does not cover chemicals or chemical activities that are not specified by the CWC.

Implementation is the sole responsibility of each state party. The submission of declaration is the starting point for implementation. If chemical weapons or chemical activities are not declared in accordance with Articles III and VI, the verification system is rendered useless.

Attribution is not the primary purpose. The CWC focuses on destroying declared chemical weapons stockpiles and preventing their re-emergence. The CWC

[2] United Nations, Security Council, 5635th meeting, S/PV.5635, 23 Feb. 2007, p. 4; United Nations, General Assembly and Security Council, 'Report of the United Nations Mission to Investigate Allegations of the Use of Chemical Weapons in the Syrian Arab Republic on the alleged use of chemical weapons in the Ghouta area of Damascus on 21 August 2013', A/67/997–S/2013/553, 16 Sep. 2013; Organisation for the Prohibition of Chemical Weapons (OPCW), Technical Secretariat, Note by the Technical Secretariat: Summary report of the work of the OPCW Fact-Finding Mission in Syria covering the period from 3 to 31 May 2014', S/1191/2014, 16 June 2014; United Nations, Security Council, 'Letter dated 25 February 2015 from the Secretary-General addressed to the President of the Security Council', S/2015/138, 25 Feb. 2015; OPCW, Technical Secretariat, 'Report of the OPCW Fact-Finding Mission in Syria regarding alleged incidents in the Idlib Governorate of the Syrian Arab Republic between 16 March and 20 May 2015', Note by the Technical Secretariat, S/1319/2015, 29 Oct. 2015; OPCW, Technical Secretariat, 'Report of the OPCW Fact-Finding Mission in Syria regarding alleged incidents in Marea, Syrian Arab Republic August 2015', Note by the Technical Secretariat, S/1320/2015, 29 Oct. 2015; OPCW, Technical Secretariat, 'Report of the OPCW Fact-Finding Mission in Syria regarding the incident of 16 September 2016 as reported in the Note Verbale of the Syrian Arab Republic number 113 dated 29 November 2016', Note by the Technical Secretariat, S/1491/2017, 1 May 2017; OPCW, Technical Secretariat, 'Report of the OPCW Fact-Finding Mission in Syria regarding an alleged incident in Khan Shaykhun, Syrian Arab Republic April 2017', Note by the Technical Secretariat, S/1510/2017, 29 June 2017; Malaysia, 'Statement at the 84th session of the Executive Council', 7 Mar. 2017, The Hague; OPCW, Executive Council, 'United Kingdom of Great Britain and Northern Ireland: Statement by H.E. Ambassador Peter Wilson Permanent Representative of the United Kingdom of Great Britain and Northern Ireland to the OPCW at the Eighty-Seventh Session of the Executive Council', EC-87/NAT.5, 13 Mar. 2018; United Nations, Security Council, 'Letter dated 13 March 2018 from the Chargé d'affaires a.i. of the Permanent Mission of the United Kingdom of Great Britain and Northern Ireland to the United Nations addressed to the President of the Security Council', S/2018/218, 13 Mar. 2018.

prohibits the use of chemical weapons, but if it should occur, there is no explicit mechanism to identify those responsible. The lack of an attribution mechanism may thus induce perpetrators to use chemical weapons.

Universal participation has not yet been achieved. As an international treaty that binds only states parties, the CWC cannot prevent a non-signatory state from possessing and using chemical weapons.

International response

The international community has responded to the use of chemical weapons and taken actions against chemical threats in both specific and general contexts.

The actions in response to the use of chemical weapons vary according to the situation. In the case of Syria, the allegations were investigated using a number of procedures, depending on mandates and availability. The question of whether chemical weapons were used was first examined under the UN Secretary-General's mechanism for investigation of alleged use of biological and chemical weapons.[3] At the time, this was the only procedure that could be applied in Syria, which was a member of the United Nations but not a state party to the CWC. After Syria acceded to the CWC, the ad hoc OPCW Fact-Finding Mission carried out the investigation.[4] Following that, the ad hoc OPCW–UN Joint Investigative Mechanism (JIM) identified those who had used chemical weapons.[5] The termination of the JIM's mandate led to another ad hoc arrangement within the OPCW to fulfil the same function.[6]

Regarding the killing of a North Korean citizen at the Kuala Lumpur airport, the OPCW Executive Council expressed its deep appreciation for the information provided by Malaysia. It also underlined the importance of receiving and considering the official results once Malaysia had completed its investigation of the incident.[7] Both the OPCW Executive Council and the UN Security Council discussed the chemical incident in Salisbury, although no specific action was taken.[8]

[3] UN General Assembly Resolution 42/37C, 30 Nov. 1987.

[4] OPCW, Technical Secretariat, 'Summary Report of the Work of the OPCW Fact-Finding Mission in Syria Covering the Period from 3 to 31 May 2014', Note by the Technical Secretariat, S/1191/2014, 16 June 2014, annex 2, paras. 4–7.

[5] UN Security Council Resolution 2235 (2015), 7 Aug. 2015.

[6] OPCW, Conference of the States Parties, 'Decision: Addressing the threat from chemical weapons use', C-SS-4/DEC.3, 27 June 2018, para. 10. This decision was adopted by vote of 82 in favour and 24 against (see OPCW, Conference of the States Parties, 'Report of the Fourth Special Session of the Conference of the States Parties', C-SS-4/3, 27 June 2018, para. 3.15.

[7] OPCW, Executive Council. 'Decision: Chemical weapons incident in Kuala Lumpur, Malaysia', EC-84/DEC.8, 9 Mar. 2017, paras. 2 and 4.

[8] United Nations, Security Council, 8203rd meeting, S/PV.8203, 14 Mar. 2018; OPCW, Executive Council, 'Report of the Eighty-Seventh Session of the Executive Council', EC-87/2, 15 Mar. 2018, para. 6.2; United Nations, Security Council, 8224th meeting, S/PV.8224, 5 Apr. 2018; OPCW, Executive Council, 'Report of the Fifty-Ninth Meeting of the Executive Council', EC-M-59/3, 18 Apr. 2018, para. 3; United Nations, Security Council, 8237th meeting, S/PV.8237, 18 Apr. 2018; United Nations, Security Council, 8343rd meeting, S/PV/8343, 6 Sep. 2018.

The multiple cases where chemical weapons have been used, whether by states or non-state actors, have attracted great attention from the international community. Several systematic actions have been taken to uphold the authority and integrity of the fundamental norms of chemical weapons prohibitions.

In October 2017, by consensus, the OPCW Executive Council adopted a decision on the use of chemical weapons by non-state actors.[9] The decision expressed the fundamental importance of a full and effective national implementation of the obligations under Article VII of the CWC. The decision encouraged states parties (*a*) to examine their national laws to ensure they define appropriate offences for which indirect perpetrators could be prosecuted; (*b*) to use any existing mutual legal assistance arrangements to cooperate in investigating incidents involving non-state actors; and (*c*) to share information related to cases of chemical weapons acts by non-state actors, as well as information related to domestic investigations, including subsequent criminal or other legal proceedings.

In January 2018, like-minded states launched the International Partnership against Impunity for the Use of Chemical Weapons.[10] Participating states committed to collect and share information about those who used chemical weapons, to use existing mechanisms to identify perpetrators, to publish the names of those who have been subject to sanctions and to provide assistance regarding state capacity-building where necessary.

In June 2018, the OPCW Conference of the States Parties held its fourth special session and adopted, by vote, a decision on 'Addressing the Threat from Chemical Weapons Use' that included provisions to strengthen the CWC's implementation.[11] This established a new mandate to the OPCW's Director-General to provide states parties with technical expertise on request to identify those involved in the use of chemical weapons. This means that the OPCW can expand its scope of activities to address the issue of attribution. It also invites the Director-General to submit proposals and options in three areas of the Technical Secretariat: verification capacity, capacity building and international cooperation programmes, and other capabilities. The Director-General has already submitted his report to the states parties in this regard, and has proposed improvements and adjustments to the verification capacity of the Technical Secretariat. These include greater use of open source information and refinement of inspection procedures, shifting the focus of capacity building and international cooperation to the context of threats of chemical weapons use, and the sustainability of the capacity of the Technical Secretariat.[12]

[9] OPCW, Executive Council, 'Decision: Addressing the Threat Posed by the Use of Chemical Weapons by Non-State Actors', EC-86/DEC.9, 13 Oct. 2017.

[10] International Partnership against Impunity for the Use of Chemical Weapons, 'Declaration of Principles', 23 Jan. 2018.

[11] OPCW, C-SS-4/DEC.3, (note 6), para. 20.

[12] OPCW, Conference of the States Parties, 'Report on proposals and options pursuant to paragraph 21 of decision C-SS-4/DEC.3 (dated 27 June 2018) on addressing the threat from chemical weapons use', Note by the Director-General, C-23/DG.16 RC-4/DG.4, 15 Nov. 2018.

Ways forward

Given the developments described above, how can the international community counter the threats of chemical weapons use? This chapter offers the perspective of Japan, where the first chemical terrorism occurred and where the obligations under the CWC have been fulfilled.

First and foremost, the full and effective implementation of the CWC obligations is indispensable. Specifically, the obligations under paragraph 1 of Article VII and paragraph 2 of Article VI must be implemented by all states parties as soon as possible. These provide a basic domestic legal infrastructure for suppressing and preventing the use of chemical weapons and the misuse of toxic chemicals and their precursors. Based on its experience enacting and implementing domestic legislation, and in cooperation and collaboration with the OPCW Technical Secretariat and other states parties, Japan has provided technical assistance on request to states parties that have not fully implemented these obligations.

Second, there must be a full and effective implementation of relevant decisions. The OPCW decisions regarding 'Addressing the Threat Posed by the Use of Chemical Weapons by Non-State Actors' and 'Addressing the Threat from Chemical Weapons Use' will enhance cooperation among states parties, and will upgrade the capacity of the Technical Secretariat to address the threat of chemical weapons use. New attribution arrangements should be fully operational as soon as possible. From a technical perspective, the experiences of states parties in chemical incidents, such as Japan in dealing with cases of non-discriminatory use by non-state actors, Malaysia and the United Kingdom in dealing with cases of targeted use most probably by state agents, will serve as a useful reference for attribution arrangements.

States parties should carefully consider the Director-General's proposals on verification-related matters such as sampling and analysis capability, greater use of open source information and refinement of inspection procedures. These proposals should also enable verification to keep pace with contemporary technology, as well as ensure its effective and efficient conduct on a level playing field. In addition, the discovery of undeclared chemical weapons in Libya and discrepancies in Syria's declarations suggest that the OPCW should explore verification tools to address the issue of undeclared activities.

Third, the international legal framework, the main component of which is the CWC, should be applied universally. The four states of DPRK, Egypt, Israel and South Sudan remain outside the CWC. All four, in particular the DPRK from a Japanese perspective, are strongly urged to join the CWC without delay. In 2006, the UN Security Council, in paragraph 7 of Resolution 1718, decided that 'the DPRK shall abandon all other existing weapons of mass destruction and ballistic missile programme in a complete, verifiable and irreversible manner'.[13] When it comes to the DPRK and chemical weapons, the starting point is not the accession

[13] UN Security Council Resolution 1718 (2006), 14 Oct. 2006, para. 7.

to the CWC but the implementation of UN Security Council Resolution 1718. As long as this resolution remains valid, the UN Security Council must identify ways to implement paragraph 7, which will require close cooperation with the OPCW.

Finally, the status of implementation needs to be monitored on a regular basis. As a result of regular monitoring, which is accommodated in accordance with relevant provisions of the CWC and decisions, states parties are continually reminded of the importance of implementation. Their active participation in the consultation process and timely decisions by the policymaking organs is required.

Conclusions

The international community has responded to the recent cases of chemical weapons use. In dealing with the chemical incidents conducted both by states and by non-state actors, the international community has found ways to address the threat of chemical weapons in more generic and systematic ways.

Any use of chemical weapons anywhere, at any time, by anyone, under any circumstances is widely regarded as unacceptable and contravenes international norms and standards. Those responsible for the use of chemical weapons should be held accountable. This global normative consensus is the basis for the practical measures against the threat of chemical weapons use.

The OPCW has taken a step forward and embarked on strengthening its capability to address chemical threats. It has adopted decisions, by consensus or by vote, in accordance with the procedures under the CWC and the implementation process has already begun. It is high time for states parties, the Technical Secretariat and other stakeholders to work together with a view to implementing decisions and achieving the goal of completely excluding the possibility of the future use of chemical weapons.

6. The role of the OPCW and the Syrian conflict: How the OPCW can develop its cooperation with states parties

ÅKE SELLSTRÖM[1]

Introduction

For the Organisation for Prohibition of Chemical Weapon (OPCW), the Syrian conflict has been an invigorating test of its procedures interacting with the states parties to the Chemical Weapons Convention (CWC). The conflict in Syria reintroduced chemical weapons onto the political agenda. Following the United Nations investigation that confirmed the use of sarin in Syria in 2013, the Syrian Arab Republic decided to accede to the CWC.[2] Despite effective efforts to dismantle Syria's declared chemical weapons capability during late 2013 and the first half of 2014, incidents were once again recorded in the conflict. Multiple OPCW reports referred to the use of chemical weapons, mainly chlorine, in Syria from 2014 onwards. A supranational process was called for, in which the UN Security Council would further investigate the crimes and identify a perpetrator. Accordingly, in Resolution 2235 (2015) the UN Security Council requested that the OPCW and UN work together to investigate and identify individuals, entities, groups or governments perpetrating, organizing, sponsoring or otherwise involved in the use of chemicals as weapons in Syria 'to the greatest extent feasible'.[3] Resolution 2235 was formalized as the OPCW–UN Joint Investigative Mechanism (JIM). The JIM was initially in effect for one year, and its mandate was subsequently extended after reporting back to the UN Security Council in August 2016.[4] In October 2017, the JIM pointed to the Syrian Government as responsible for sarin use at Khan Shaykhun on 4 April 2017.[5] The UN Security Council thereafter, in spite of several attempts, did not extend the JIM.

Instead, the Conference of the States Parties to the CWC at its fourth special session decided that: 'the Secretariat shall put in place arrangements to identify the perpetrators of the use of chemical weapons in the Syrian Arab Republic by identifying and reporting on all information potentially relevant to the origin of those chemical weapons in those instances in which the OPCW Fact-Finding Mission

[1] Dr Åke Sellström is an Associate Professor (Docent) of Histology at Umeå University, Sweden.

[2] Organisation for the Prohibition of Chemical Weapons (OPCW), 'Syria's accession to the Chemical Weapons Convention enters into force', 14 Oct. 2013.

[3] UN Security Council Resolution 2235 (2015), 7 Aug. 2015.

[4] United Nations News, 'Security Council extends the mandate of joint UN–OPCW body on chemical weapons in Syria', 18 Nov. 2016.

[5] OPCW, 'OPCW Fact-Finding Mission confirms use of chemical weapons in Khan Shaykhun on 4 April 2017', 30 June 2017.

in Syria determines or has determined that use or likely use occurred, and cases for which the OPCW–UN Joint Investigative Mechanism has not issued a report.'[6]

The struggle against the use of hazardous chemicals is entering a new phase. Instead of the UN Security Council filtering out unwanted supranational processes and activities such as the JIM, the OPCW's mandate has now clearly been extended in order to pursue investigation to the point of attribution. Some states parties objected vehemently to the Fourth Special Session of the Conference of the State Parties to the CWC giving the OPCW this new role. The objection could initiate a conflict among states parties that would erode their loyalty to the CWC.

Entering a new phase of existence, the OPCW needs to consider reforming some of its organization and practices. This particularly applies to OPCW interaction with the governments of its state parties in two main areas of activity: regaining legitimacy and verifying declarations.

Regaining legitimacy

The CWC and its verifying organization, the OPCW, have almost eradicated all state-controlled chemical weapons capability. Currently, only four countries remain outside the CWC.[7] In contrast to the Treaty on the Non-Proliferation of Nuclear Weapons, the CWC constitutes a universal ban on chemical weapons that applies without differentiating the obligations of states. In practice, the OPCW has traditionally been a 'gentlemen's club' for states that relatively willingly refrain from chemical weapons capabilities. Here, the prevailing sentiment of the OPCW is trust among its states parties. Consequently, intrusive methods such as challenge inspections have never taken place. This sentiment has persisted among major states parties in spite of rumours and concerns, such as the possible existence of Black Programmes for fentanyl, the large-scale use of fentanyl leading to 130 fatalities, and a secret programme to produce novichok agents.[8]

The accession of the Syrian Arab Republic to the CWC forces the OPCW to adopt other modalities of operation because several states parties do not trust Syria. This distrust follows the political rift of the ongoing international conflict over the future of Syria. Unfortunately, this political conflict influences the daily work of the OPCW, which already struggles with repeated criticisms of western bias. The criticism applies to the staff and raises questions based on their nationality and attitude, their reporting and their choice of issues to deal with.

[6] OPCW, Conference of the States Parties, 'Decision: Addressing the threat from chemical weapons use', C-SS-4/DEC.3, 27 June 2018, para. 10.

[7] The remaining non-member states are Egypt, Israel and North Korea. Israel is a signatory.

[8] Pitschmann, V., 'Overall view of chemical and biochemical weapons', *Toxins (Basel)*, vol. 6, no. 6, 4 Jun. 2014; Mirzayanov, V., 'Dismantling the Soviet/Russian Chemical Weapons Complex: An Insider's View', *Global Proliferation of Weapons of Mass Destruction: Hearings Before the Permanent Subcommittee on Investigations of the Committee on Governmental Affairs, 104th Cong.*, (US Government Printing Office: Washington, DC, 1996), pp. 393–405; and Tucker, J. B., *War of Nerves: Chemical Warfare from World War I to Al-Qaeda*, (Anchor Books: New York, 2006), p. 231.

The issues arising from the Syrian conflict may be a sign that the OPCW may have approached the point of having met what was expected of it. The world is almost free of military capability in chemical weapons, and what remains encapsulated by the old CWC concept is restricted to a few unwilling governments. The prospect of becoming a distrusted state party in the CWC, and then subject to the same treatment as Syria, is unappealing to the states outside the CWC. Before the few unwilling governments would consider acceding to the CWC, the OPCW has to regain its legitimacy by mitigating the concern about the use of double standards and political biases in favour of western interests.

The effort to prevent the use of toxic chemicals is also entering a new and exciting phase. Without the involvement of the JIM in the Syrian conflict, the OPCW is acquiring a new challenging role: to investigate any use of chemical weapons and to attribute such use to a guilty party. This means that the political conflict that hindered the UN Security Council from agreeing to continue the JIM now is transferred to the Conference of the State Parties to the CWC. In fact, several state parties were against this new investigative role of the OPCW, which is not a good starting position for successful investigations.[9] Any OPCW investigation to attribute chemical weapons use has to have the confidence of its states parties. This involves confidence in its staff, choice of processes and contacts with the intelligence community, among other things. An investigation lacking such confidence easily ends up as a political instrument and subject to various unwanted biases. The problem is easy to identify, but difficult to solve. The solution requires a well-functioning staff of a wide geographical distribution and a trusted relationship between the OPCW and a broad number of intelligence organizations representing various aspects of any underlying international conflict.

The OPCW's capability to verify declarations

Syria formally acceded to the CWC on 14 September 2013, with the Convention coming into force for Syria 30 days after the deposit of the instrument of accession. The heated situation that was the prelude to Syrian accession produced very tough conditions for this new state party to meet.[10] Those conditions included Syria providing a comprehensive list of its weapons within a weak; the destruction of equipment used to produce, mix and fill chemical weapons by November 2013; and the complete elimination of all chemical weapons material and equipment by the first half of 2014.[11]

The JIM was established to oversee this process. In October 2013 the destruction of Syrian chemical weapons began under the supervision of OPCW officials, and by the end of that month the OPCW had identified a total of 1300 metric

[9] OPCW, Conference of the States Parties, 'Report of the Fourth Special Session of the Conference of the States Parties', C-SS-4, 27 Jun. 2018.

[10] French Ministry of Defence, 'Syria/Syrian chemical programme—National executive summary of declassified intelligence', 3 Sep. 2013.

[11] OPCW, Executive Council, 'Decision: Destruction of Syrian Chemical Weapons', EC-M-33/DEC.1, 27 Sep. 2013.

tonnes of chemical weapons.[12] According to a French intelligence assessment published in September 2013, Damascus had several hundreds of tonnes of sulphur mustard, several hundreds of tonnes of sarin and several tens of tonnes of O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate (VX).[13] The destruction of Syria's chemical weapons was reported as completed by August 2014.[14] However, after more than five years, in 2018 the OPCW still could not verify that Syria's initial declaration on its chemical weapons programme was accurate. As reported to the OPCW Executive Council meeting on 21 December 2018 'The Declaration Assessment Team . . . continues its efforts to clarify all outstanding issues regarding the initial declaration of the Syrian Arab Republic' and 'During the reporting period, the Secretariat did not receive any additional information from the Syrian Arab Republic regarding these outstanding issues'.[15] Furthermore,'In view of the above, the Secretariat remains unable to resolve all of the identified gaps, inconsistencies, and discrepancies in the Syrian Arab Republic's declaration, and therefore cannot fully verify that the Syrian Arab Republic has submitted a declaration that can be considered accurate and complete in accordance with the Chemical Weapons Convention . . . and Council decision.'

Consequently, discussions between the OPCW Technical Secretariat and the Syrian Government are still ongoing. In early 2019, the Director-General of OPCW still reported outstanding issues regarding the completeness and accuracy of the initial declaration.[16]

Syria is an example where a state's willingness to become a compliant states party is put into question. There is a historical parallel in Iraq's compliance with the United Nation Special Commission (UNSCOM) in the 1990s. At that time, the UN Security Council forced the Iraq Government to obliterate its programmes for weapons of mass destruction (WMD). In April 1991, at the end of the Gulf War, the UN Security Council passed Resolution 687, which Iraq accepted as a condition of a ceasefire, and Iraqi authorities produced a very short account of the weapons inventory while denying any biological weapons programme. The UNSCOM process 'to help' Iraq fully declare its WMD took eight years. By 1998 the declaration, referred to as the 'full, final and complete disclosure', had increased immensely in volume to cover 10 000 pages. For most of its life the UNSCOM was supported by a united UN Security Council. In addition to the primary resolution, Resolution 687, the Security Council also issued a series of resolutions that repeatedly condemned Iraq's non-cooperation in the strongest words. At times US and British forces even launched air strikes to force the compliance of Iraq. Yet, in spite of an advanced and intrusive inspection process, throughout its

[12] OPCW, Executive Council, 'Progress in the elimination of the Syrian chemical weapons programme', EC-M-34/DG.1, 25 Oct. 2013.

[13] French Ministry of Defence (note 10).

[14] OPCW, 'OPCW: All Category 1 chemicals declared by Syria now destroyed', 28 Aug. 2014.

[15] OPCW, Executive Council, 'Progress in the elimination of the Syrian chemical weapons programme', EC-90/DG.4, 21 Dec. 2018.

[16] OPCW, Executive Council, 'Progress in the elimination of the Syrian chemical weapons programme', EC-90/DG.11, 25 Feb. 2019.

existence the UNSCOM was unable to verify the completeness of the Iraqi declaration.

Following the 2003 Iraq war, David Kay, who led the Iraq Survey Group, reported: 'We have not yet found stocks of weapons, but we are not yet at the point where we can say definitively either that such weapon stocks do not exist or that they existed before the war.'[17] In March 2005, the Commission on the Intelligence Capabilities of the United States reported that the intelligence community was 'dead wrong' in its assessments of Iraq's WMD capabilities before the US invasion.[18]

The failed assessments of Iraq illustrate the difficulty in verifying the declaration of a distrusted state party. The deeper the distrust, the more difficult verification becomes. In the case of Iraq, the main intelligence support came from the West. Influenced by ambitions to topple Saddam Hussein, the intelligence community lost its objectivity and continuously fed the verification process of UNSCOM with stories of non-compliance. This highlights the importance of the manner in which the OPCW and its states parties handle the uncertainties in the Syrian declaration. Since the basic sentiment of distrust will not go away, there is a risk that the process will continue to drag on. Delays might even be promoted by states parties to advance political objectives. Governments outside the CWC will be particularly concerned if the history of Iraq repeats itself in Syria. The process of verifying declarations cannot be used as a political instrument to keep a distrusted government in limbo.

Conclusions

There is a genuine distrust in many geographical regions against supranational structures such as the UN and the OPCW. They are considered western instruments created to maintain control. The structures are judged to use double standards and biased processes to implement rules that benefit the West. The examples given above illustrate elements of this mistrust. If the OPCW is to succeed in convincing the few remaining governments currently unwilling to accede to the CWC, and should the OPCW successfully attribute into chemical weapons use, then every aspect of supporting the democratic character and the universality of the CWC has to be considered.

This means that the OPCW must improve the representativeness of its staffing by incorporating ethical values and basic standards that ensure unbiased investigation into its training. It also means that the OPCW must facilitate sound and trustworthy interaction between a wide range of nationalities and their respective intelligence communities, especially since the success of investigations strongly leans on useful intelligence information.

[17] US Central Intelligence Agency, 'Statement on the Interim Progress Report on the Activities of the Iraq Survey Group', Statement by David Kay on the interim progress report on the activities of the Iraq Survey Group (ISG) before the House Permanent Select Committee on Intelligence, the House Committee on Appropriations, Subcommittee on Defense, and the Senate Select Committee on Intelligence, Speeches and testimony, 2 Oct. 2003.

[18] Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, 'Report to the President of the United States', 31 Mar. 2005.

If the CWC and the OPCW regain a universally democratic position, then that may also increasingly stimulate and support robust domestic instruments and support organizations that counteract non-state actors with ambitions to acquire chemical weapons capability.

7. The risks posed by nuclear weapons in East Asia: A Japanese perspective

KOICHI ARIE[1]

Introduction

In East Asia, maintaining strategic stability among the United States, Russia and China is vital to its regional security. Due to the recent developments related to the Intermediate-Range Nuclear Forces (INF) Treaty, however, there is a growing concern that these three countries might engage in a nuclear arms race in the region if the INF Treaty disappears.[2] Also, North Korea's nuclear programme is considered to be a destabilizing factor in the region.[3] This essay first briefly summarizes current nuclear situations in East Asia, then presents possible regional nuclear risks that may affect Japan's security in particular and, finally, explores how these risks might be mitigated from a Japanese perspective.

The nuclear powers in the region

US–Russia nuclear balance

The relationship between the two nuclear superpowers—the USA and Russia—is becoming less stable, exacerbated by recent developments related to the INF Treaty. The accusation that Russia has violated the INF Treaty by developing SSC-8 nuclear-capable ground-launched cruise missiles, and that missiles are said to have been deployed already, restores a direct threat to Europe, and also to East Asia because of the range parameters of those missiles.[4] In February 2019, the Trump administration formally announced it would withdraw from the INF Treaty and Russian President Vladimir Putin announced that his country would respond accordingly.[5]

Russia has consistently made clear its concerns about the USA's missile defence and its accurate, advanced conventionally armed missiles, including its conventional prompt global strike capabilities, which might in time threaten Russian nuclear deterrent forces. Russia has also been concerned about the inferiority of its own conventional forces relative to those of the USA. These concerns have

[1] Lieutenant Colonel Koichi Arie is a Fellow in the Government and Law Division, Security Studies Department, at Japan's National Institute for Defence Studies. The views expressed are those of the author and do not necessarily represent the views of the National Institute for Defence Studies.

[2] Cui, M. and Rahn, W., 'INF Treaty: Would US dropout begin an arms race with China?', Deutsche Welle, 23 Oct. 2018.

[3] Lankov, A., 'Strategic stability in the twenty-first century: The North Korean nuclear threat', Carnegie Moscow Center, 23 Nov. 2018.

[4] Taheran, S., 'Select reactions to the INF Treaty Crisis', Arms Control Association, 1 Feb. 2019.

[5] White House, 'President Donald J. Trump to withdraw the United States from the Intermediate-Range Nuclear Forces (INF) Treaty', Fact sheet, 1 Feb. 2019; Kramer, A., 'Russia pulls out of I.N.F. Treaty in "symmetrical" response to U.S. move', *New York Times*, 2 Feb. 2019.

driven Russia to increase its reliance on nuclear weapons and strengthen its nuclear forces.[6]

US–China nuclear relationship

China has a much smaller nuclear force compared to the USA and Russia. Its nuclear doctrine follows the policy of minimum deterrence and no first-use of nuclear weapons. Although its nuclear doctrine has not been changed, China has been modernizing its nuclear arsenal in recent years. This development has deeply concerned the USA and other countries, especially as there is a lack of transparency regarding Chinese modernization programmes.[7] China is also developing counter-space and cyberattack capabilities that may disrupt the US nuclear command and control network.

A Chinese non-kinetic attack on US satellites, using cyber or electromagnetic means, could complicate a US response. Such an attack would hardly justify the retaliatory use of a kinetic, and potentially lethal, strike option against China.[8] The introduction of new capabilities by China is creating a cross-domain deterrence challenge that the USA needs to take seriously.[9]

North Korea's nuclear programme

North Korea has not given up its nuclear and missile programme in spite of its pledge to promote the denuclearization of the Korean Peninsula at the Singapore Summit in June 2018. Before the summit, North Korea completed the destruction of some of the tunnels and buildings at the Punggye-ri nuclear test site.[10] However, the International Atomic Energy Association has observed that North Korea is still engaging in the enrichment of uranium.[11] Satellite images have also indicated that the country continues with its nuclear and missile development.[12]

There is also a secondary risk that North Korea may transfer nuclear and missile technology to other countries, and possibly to non-state actors. For instance, North Korea transferred nuclear technologies to Syria, whose nuclear reactor was destroyed by Israel in 2007.[13]

Nuclear risks in East Asia and their impact on Japan's security

The modernization of nuclear weapons in Russia and China could undermine strategic stability in East Asia. If the INF Treaty is no longer in force, there is

[6] Hilborne, M., 'Conventional prompt global strike: Enhancing deterrence?', *Medium*, 21 Jun. 2018.

[7] Li B., et al., 'Why is China modernizing its nuclear arsenal?', Transcript, Carnegie International Nuclear Policy Conference 2015, 24 Mar. 2015.

[8] Harrison, T., 'China's Advanced Weapons', Testimony before the US–China Economic and Security Review Commission: Hearing on China's advanced weapons, 23 Feb. 2017, pp. 123–28.

[9] Scouras, J., Smith, E. and Mahnken, T., 'Cross-domain deterrence in US–China Strategy',Workshop proceedings, John's Hopkins University Applied Physics Laboratory, 2014, pp. 37–49.

[10] Pabian, F. V., Bermudez Jr, J. S. and Liu, J., 'The Punggye-ri nuclear test site destroyed: A good start but new questions raised about irreversibility', 38 North, US–Korea Institute, 31 May 2018.

[11] Haas, B., 'North Korea is still developing nuclear weapons, says IAEA', *The Guardian*, 22 Aug. 2018.

[12] Cohen, Z., 'Satellite images show North Korea upgrading nuclear facility', CNN, 27 June 2018.

[13] Blumenthal, D., 'Time to refocus on North Korea's proliferation', *National Interest*, 20 Sep. 2018.

a high possibility that a deployment of ground-launched intermediate-range nuclear forces by Russia would trigger a reaction from the USA, as well as in Europe and East Asia. The potential deployment of SSC-8 missiles in Russia's Far East could have an adverse impact on China's relationship with Russia.[14] In addition, China's anti-satellite capabilities, especially non-kinetic capabilities, constitute an asymmetric threat to US nuclear deterrence, which depends heavily on space assets.

The erosion of US–Russia–China strategic stability could lower the threshold for using nuclear weapons, thus undermining the credibility of nuclear deterrence in East Asian countries in general. More importantly, this would affect the credibility of the USA's extended deterrence in Japan. Any inability of the USA to retaliate effectively against an attack on its assets in space by China using non-kinetic means could raise doubts about the credibility of US guarantees. Neutralizing China's counter-space capabilities in retaliation for such an attack might further escalate the situation.[15] The USA's inability to respond effectively to different contingencies would erode its credibility in extended deterrence.

North Korea's nuclear and missile programme, unless completely eliminated, will remain a destabilizing factor and raise questions about the effectiveness of nuclear deterrence in East Asia. For now, there is no indication that North Korea will dismantle all of its nuclear weapons and ballistic missiles permanently. As long as North Korea keeps its nuclear and ballistic missile programme, the possibility of a nuclear missile attack will remain a grave threat to Japan's security.

Another concern for Japan is the possible proliferation of North Korea's nuclear technology to non-state actors, which could facilitate nuclear terrorism.[16]

Mitigating nuclear risks in East Asia from a Japanese perspective

Deterrence is the most important response to address nuclear risk. To deter nuclear and conventional missile attacks, Japan has deployed its own ballistic missile defence (BMD) systems composed of Aegis BMD destroyers and PAC-3s. In addition, Japan is planning to introduce the Aegis Ashore system, which is expected to enhance its ability to defend against missile attacks.[17] These BMD systems play a part in deterrence through denying regional nuclear threats to Japan.

As for deterrence by punishment, which can be achieved through the threat of nuclear retaliation, ensuring the credibility of US extended nuclear deterrence is crucial to Japan's security. Japan and the United States have held bilateral Extended Deterrence Dialogue (EDD) since 2010 to exchange views on enhancing

[14] Manning, R., 'Ending Cold War nuclear pact threatens Asia's security', *Nikkei Asian Review*, 29 Oct. 2018.

[15] Harrison (note 8).

[16] Park, J. and Miller, J., 'The scariest thing North Korea could ever do: Sell a nuclear weapon', *National Interest*, 6 Nov. 2016.

[17] Hornung, J., 'Japan's Aegis Ashore defense system', The RAND Blog, 20 Aug. 2018; Gady, F.-S.,'US State Department approves $2.15 billion Aegis Ashore sale to Japan', The Diplomat, 30 Jan. 2019.

alliance deterrence.[18] With the challenges emerging from space, cyberspace and the electromagnetic spectrum, future EDDs should consider a discussion of how to address these cross-domain deterrence challenges.

However, in mitigating nuclear risks, not just dissuading nuclear use of any kind, deterrence plays only a limited role. Effective arms control measures should be put in place to maintain nuclear stability in East Asia. In this sense, a trilateral INF treaty or other nuclear arms treaty among the USA, Russia and China would be necessary and should be promoted in a post–INF Treaty world.

Nuclear security is also important for mitigating nuclear risks in East Asia. Japan can play a significant role in capacity building in nuclear security for other Asian countries and developing nuclear forensic technology in response to the threat of nuclear terrorism.[19] Such efforts would help mitigate nuclear risks at the regional level and be a confidence-building measure to reduce the anxiety and improve the mutual trust in the region. In the best case, they would also add momentum to global processes.

Conclusions

After the cold war, there was a period when issues of nuclear weapons and deterrence receded into the background. Now, these issues are back at the centre of the discourse on international security, as they were during the cold war. This revival of nuclear threats has occurred in a multipolar nuclear environment that includes North Korea and non-state actors. There is greater complexity today because of the emerging of expanded battle domains and the cross-domain deterrence challenge created by advanced military technologies. It is important to take all of these new developments into consideration when addressing the nuclear risks in East Asia.

Japan should make a great effort to mitigate regional nuclear risks in cooperation with the USA and other like-minded countries. Although deterrence remains necessary, it can only play a limited role in mitigating nuclear risks. A trilateral nuclear arms control agreement among the USA, Russia and China is highly desirable. Risk reduction measures are also needed in the field of nuclear security.

[18] Ministry of Foreign Affairs of Japan, 'Japan–US Extended Deterrence Dialogue', Press release, 29 Oct. 2018.

[19] Yosuke, N., 'JAEA's Activities and International Contributions to Nuclear Nonproliferation and Nuclear Security', The International Forum on Peaceful Use of Nuclear Energy, Nuclear Nonproliferation and Security, Japan Atomic Energy Agency, Keynote report, 7 Dec. 2017.

8. The North Korean nuclear weapons programme and strategic stability in East Asia

TONGFI KIM[1]

Introduction

This essay discusses East Asian perspectives on the Democratic Republic of North Korea's (DPRK) nuclear weapons, obstacles to its nuclear disarmament, and strategic stability between the United States and North Korea. It begins with an overview of South Korean, Japanese and Chinese perspectives on security risks posed by the North Korean nuclear programme, and then explores ways forward to nuclear disarmament of the DPRK and how it might interplay with the strategic stability in East Asia. North Korea's nuclear disarmament remains elusive, and its improved nuclear arsenal presents serious threats, but the situation is not necessarily bad for strategic stability.

Perceptions

Although the Republic of Korea (South Korea), Japan and China all share a common interest in the denuclearization of the DPRK, their perspectives on threats from the North Korean nuclear programme are different in nature.

South Korea faces a significant threat from North Korea's nuclear arsenal, but it does not consider North Korea's nuclear disarmament the top priority of its foreign policy.[2] Avoiding a second Korean war is the most important task for the current South Korean Government. President Moon Jae-in and his supporters are known to favour engaging the DPRK, but preventing a war on the peninsula is a priority for South Koreans across the political spectrum. The relative importance of North Korea's nuclear disarmament is lower for South Korea than for other countries because of South Korea's vulnerability to North Korea's conventional military capabilities. Although South Korean military is superior to its northern counterpart, many believe that North Korean artillery can inflict massive damage on the Seoul metropolitan area, where 25 million people live.[3]

For Japan, eliminating North Korean nuclear weapons is a top priority in its policy towards the DPRK.[4] Unlike South Korea, Japan is protected by the ocean from many of North Korea's military capabilities. Although the DPRK has many missiles that can reach Japan, they would cause catastrophic destruction only if

[1] Dr Tongfi Kim is an assistant professor of international affairs at Vesalius College and a senior researcher at the KF-VUB Korea Chair in Brussels, Belgium.

[2] Kim, T., 'Centripetal and centrifugal forces of North Korean threat on the US–Japan–ROK Cooperation', Institute for European Studies, Policy Brief, issue 2018/03, Mar. 2018.

[3] For a critical view on this point, see Menon, P., and Shankar, P. R., 'North Korea can't destroy Seoul with artillery', *National Interest*, 5 Jan. 2018.

[4] Another issue central to Japan's policy on North Korea is the return of Japanese citizens abducted by North Korea.

armed with nuclear warheads. Japan is also concerned that the nature of a deal that the United States might make with the DPRK could compromise the USA's ability to protect Japan against China. Whereas the US mainland is safe from North Korea's nuclear arsenal, unless it is delivered by intercontinental ballistic missiles, Japan is vulnerable to North Korea's shorter-range missiles with nuclear warheads.[5]

China does have an interest in facilitating denuclearization of the DPRK, but this does not seem to be particularly high on its priority list. The threat that North Korean nuclear weapons might pose to China is not publicly discussed.[6] Meanwhile, there are many factors that restrict the extent to which China can or is willing to pressure the DPRK for nuclear disarmament:

1. North Korea is the only country with which China has a mutual defence treaty. Although the current value of the alliance seems negative rather than positive, it might nevertheless become useful in the future. Moreover, abandoning an ally has reputational costs.[7]
2. North Korea is still a key factor and perhaps a useful problem in the context of China–US geopolitical rivalry.
3. It offers a buffer between China and US forces in Asia.
4. China has a long border with North Korea, which makes China anxious about the regime stability of North Korea.

Nevertheless, China should be concerned about the threat of North Korean nuclear weapons because it might end up intervening in a conflict on the Korean peninsula or there could be a governmental disruption in the DPRK that leads to a civil war. There is no guarantee that China and the regime of the Kim family would be on the same side in such situations.[8]

Apart from concerned parties in the region, European countries should not be overlooked, especially considering their successful role in negotiating the Iran deal and their commitment to sustaining it. European countries are generally much less interested in North Korean nuclear threats than Asians or Americans. This is largely because of the physical distance and the relatively weak historical and institutional connections between Europe and Korea. However, as Jens Stoltenberg, Secretary-General of the North Atlantic Treaty Organization (NATO), warned in 2017, Europe is already within North Korea's 'missile range, and NATO member states are already in danger'.[9] Moreover, tens of thousands of European citizens live in South Korea and Japan, where they

[5] Recent Japanese discourse about North Korean nuclear weapons is surprisingly insensitive to the risk of North Korean nuclear attacks on US bases in Japan in case of military conflict between the United States and North Korea. On the Asian allies' fear of decoupling, see Rapp-Hooper, M., 'Decoupling is back in Asia: A 1960s playbook won't solve these problems', War on the Rocks, 7 Sep. 2017.

[6] There is much uncertainty regarding the true nature of China–North Korean relations, but the bilateral tie appears to have improved significantly with multiple meetings between North Korean leader Kim Jong Un and China's President Xi Jinping.

[7] Miller, G. *The Shadow of the Past: Reputation and Military Alliances before the First World War*, (Cornell University Press: Ithaca, NY, 2011).

[8] Mastro, O. S., 'Why China won't rescue North Korea', *Foreign Affairs*, vol. 97, no. 1 (2018), pp. 60–61.

[9] Silva, C., 'North Korea could drop nuclear bombs on Europe, NATO warns', *Newsweek*, 30 Oct. 2017.

arguably face a higher threat of North Korean nuclear attack. A conflict in the Korean peninsula would affect the global economy and even US military posture in Europe. Therefore, Europeans also have good reasons to pay more attention to the developments relating to North Korean nuclear weapons.[10]

Nuclear disarmament

Although Kim Jong Un has surprised many DPRK watchers with his diplomatic initiatives towards to the USA and South Korea, the prospect of North Korea's nuclear disarmament is still far away. Here, the United States' changing preferences over time and the incomplete information about North Korea's nuclear programme are major issues. Addressing these two problems is the most promising approach towards a negotiated nuclear disarmament of the DPRK.[11]

First, it is difficult to bargain over a source of bargaining power, and the power asymmetry between North Korea and the USA makes the DPRK even more reluctant to give up its nuclear weapons. It is an isolated state with much weaker military capabilities and political influence than its negotiating partner. The USA might be willing to improve its relations with the DPRK in exchange for the latter's nuclear disarmament, but the US leadership and its policies towards North Korea change over time. For instance, the 1994 Agreed Framework, signed by the Democratic Clinton administration, was quickly undermined after the major victory of the Republican Party in the 1994 congressional elections—and the agreement died under President George W. Bush. President Donald J. Trump or his successor might change the policy once more. Once the DPRK gives up its nuclear weapons, the USA will lose much of the incentive to cooperate with the DPRK. Without a credible US commitment to continue cooperation, nuclear disarmament is too risky for the North Korean leadership.

Second, incomplete information complicates any international negotiations. Information regarding nuclear weapon programmes is sensitive and secretive even in democratic countries, and the DPRK is notorious for its closed political system. Even if the DPRK declares that it will abandon nuclear weapons, it is hard for outsiders to believe such a commitment without intrusive inspections of militarily sensitive facilities. Accepting robust international inspections, however, is risky for North Korean leaders in circumstances where the USA can change its mind and return to a hostile policy. Accepting inspections might also involve domestic political costs, which would be further accentuated if the cooperation falters after North Korea's nuclear disarmament. The DPRK needs to increase the transparency of its nuclear programme, but it will be reluctant to do so due to the US's inability to credibly commit to sustain cooperation after North Korea's nuclear disarmament.

[10] Richey, M., Kim, T., and Pardo R., 'Waiting with bated breath', International Politics and Society. 13 Mar. 2018.

[11] For more details of this argument, see Kim T., 'Asymmetric strategic problems in nuclear nonproliferation', *International Relations of the Asia–Pacific*, vol. 14, no. 2 (May 2014), pp. 191–213.

Both problems discussed above are intractable, but certain steps can be taken. The USA can offer to formalize its deal with the DPRK as a treaty to make the agreement more binding and credible. In light of the fragility of the Agreed Framework, which was a non-binding political agreement, a legal commitment could help to reassure North Korea. Previously, the 'United States wanted the flexibility to respond to North Korea's policies and actions in implementing the Agreed Framework—flexibility that binding international agreements, such as a treaty, would not have provided'.[12]

In addition to a US–DPRK bilateral deal, it would also be beneficial to have a multilateral agreement involving countries such as China, Russia and even European states to promote cooperation with the DPRK. Although the Trump administration withdrew from the Joint Comprehensive Plan of Action, the agreement is still alive because it is a multilateral agreement involving other states. If the US commitment to cooperation can be made more credible though such measures as proposed above, it will be easier for the DPRK to improve its transparency.

Strategic stability

Although North Korea's nuclear development has been a major threat to the regional security of East Asia, the rising capability of North Korean nuclear weapons does not necessarily hurt strategic stability there. Elbridge Colby defines strategic stability as a 'situation in which no party has an incentive to use nuclear weapons *save for vindication of its vital interests in extreme circumstances*'.[13] Although still risky, the USA would have an incentive to attack a North Korea whose nuclear arsenal is underdeveloped and vulnerable. This in turn creates an incentive for North Korean leaders to use nuclear weapons in a conflict, before the USA neutralizes North Korea's limited nuclear arsenal. Now that the North Korean nuclear arsenal seems more formidable, the USA should have more reasons to refrain from a preventive attack on the DPRK (and trigger a nuclear war).

To improve strategic stability regarding North Korea's nuclear weapons, the USA should avoid threatening an obviously dangerous policy such as a 'bloody nose' strike, that is, a limited attack meant to intimidate the DPRK.[14] To avoid the return of tensions in 2017, both the US and North Korean leaders need to be patient about the progress of their negotiations, and they need to manage the expectations of their respective domestic audiences.

Finally, given that the DPRK has a hard time trusting that the USA will continue to cooperate after its nuclear disarmament and given that the USA has good

[12] United States General Accounting Office (GAO), Report to the Chairman, Committee on Energy and Natural Resources, 'Nuclear Nonproliferation: Implications of the US/North Korean Agreement on Nuclear Issues', GAO/RCED/NSIAD-97-8, Oct. 1996, p. 7.

[13] Colby, E., 'Defining strategic stability: Reconciling stability and deterrence', in eds. Colby, E. A., and M. S. Gerson, *Strategic Stability: Contending Interpretations* (Strategic Studies Institute, US Army War College: Carlisle Barracks, PA, 2013), p. 55.

[14] Cha, V., 'Giving North Korea a "bloody nose" carries a huge risk to Americans', *Washington Post*, 30 Jan. 2018.

reasons to suspect cheating by the DPRK, an easily verifiable double freeze is a promising way forward.[15] Despite the Trump administration's refusal to consider China's freeze-for-freeze proposal, a de facto double freeze currently exists.[16] I do not necessarily advocate the contents of the Chinese-backed proposal, and the contents of an easily verifiable double freeze must be politically acceptable to the negotiating parties. The format, however, has important merits: the suspension of tests does not undermine North Korea's nuclear deterrence and is more acceptable to the DPRK, while easily verifiable goals let the USA circumvent the incomplete information of the North Korean nuclear programme. Such a compromise is conducive to strategic stability and is also a positive step towards North Korea's nuclear disarmament.

Conclusions

Recent developments regarding North Korea's nuclear weapons programme are both worrisome and promising. The key to a peaceful resolution of the nuclear threat lies in the management of expectations in the USA and the DPRK. Although domestic politics in the USA and the DPRK will be the most important factors in this regard, South Korea, Japan and China all have important roles in shaping the international environment for the US–DPRK negotiations. States outside East Asia such as the members of the European Union should also play a proactive role so that the momentum for diplomacy continues even with some setbacks.

[15] Kim, T., 'America could subdue North Korea's nuclear threats with a not-so-grand bargain', *National Interest*, 12 Oct. 2017.

[16] The China-backed freeze proposed North Korea suspending nuclear and missile tests and the United States and South Korea suspending large-scale joint military exercises.

9. The world according to Trump: National security priorities and US alliances

DAVID SANTORO[1]

Introduction

United States foreign policy has always been hotly debated, especially since the end of the cold war. The arrival of Donald J. Trump in the White House in 2016 has raised even more questions, given his long-standing proclivity for strong, authoritarian leaders, his disdain for US allies and his scepticism about free trade. Just over two years into his presidency, then, what does US foreign policy look like? In particular, what are US national security priorities and, more importantly, what are the implications for US allies? This essay addresses these questions with a focus on nuclear policy.

A competitive world

According to the Trump administration, the international security environment is and always has been competitive. The word 'competition' appears multiple times in the 2017 National Security Strategy (NSS) and it is a keyword in other significant strategy documents to characterize the way the United States interacts with other states. The 2018 National Defense Strategy (NDS) and the 2018 Nuclear Posture Review (NPR) both talk at length about the competitive nature of interstate relations. The NSS explains that the USA regards the world as 'an arena of continuous competition', and it stresses that while states can be either at peace or at war, they are always, and always will be, in a struggle for power and influence.[2]

Although previous administrations stressed the need to work towards a more stable world, the current administration focuses on how the USA should enhance its competitiveness. This is the assumption behind the 'America First' slogan: in a competitive environment, the primary goal must be to maximize power and influence, and to put America ahead of others.

In that spirit, the Trump administration believes that the USA needs to rethink the policies it has conducted over the past two and a half decades. Past policies assumed that engagement with rival states and their inclusion in international institutions and global commerce would ensure that they behave as benign actors, and even that they become potential partners. The Trump administration believes that these policies have failed, especially vis-à-vis Russia and China, and that they have worked against US interests. The USA, therefore, should now change course.

[1] David Santoro is Director and Senior Fellow of nuclear policy at the Pacific Forum.

[2] White House, 'National Security Strategy of the United States', 18 Dec. 2017, p. 28.

This need for change is reflected in key policy documents about nuclear weapons. The USA no longer talks about the need to work toward 'strategic stability' with both Russia and China. Although it has never been fully defined in the previous NPRs, since 2010 the assumption behind this concept is that military flashpoints with Russia and China were possible, but that there were more opportunities for cooperation than risks of competition, and that the USA should therefore seek to seize these opportunities. Also embedded in the strategic-stability concept was the recognition—explicitly stated for Russia and implicitly stated for China—that the USA was in a relationship of mutual vulnerability with each. In Trump's NPR, by contrast, the term that best defines the new US approach to Russia and China is deterrence. Because of rising concerns about escalation, the new NPR also includes language about how the USA can achieve its objectives if deterrence fails, and how it should hedge and potentially adjust its force numbers and capabilities.

It is important to note that the Trump administration does not regard competition as necessarily a synonym for hostility. The NSS says as much, stressing that: 'Competition does not always mean hostility, nor does it inevitably lead to conflict.'[3] Yet the administration regards competition as the natural way states interact with each other, and it believes that the best way to maintain peace and stability is through wielding strong American power. To quote the NSS again: 'Just as American weakness invites challenge, American strength and confidence deters war and promotes peace.'[4] That notion lies behind the slogan 'Peace Through Strength'. From the perspective of the administration, strategic stability can and should be maintained with US power and on US terms.

That being said, the administration is, at least in theory, interested in regulating major power relations with more than just US power. The NSS talks about maintaining 'stable deterrence' and it does not exclude using arms control under certain conditions.[5] Moreover, the NSS stresses that US missile defences are 'not intended to undermine strategic stability or disrupt long-standing strategic relationships with Russia or China'.[6] This is line with the NPR, which points out that the USA 'does not wish to regard either Russia or China as an adversary and seeks stable relations with both'.[7] This is one reason why the offer to engage in bilateral strategic stability dialogues with Russia and China is still on the table.

US national security priorities

The NSS, NDS and NPR all make clear that the most worrying trend is the return of major power frictions and potential confrontation. That means the United States worries first and foremost about Russia and China, which the NSS calls 'revisionist states' because it says that their goal is to upend the current

[3] White House (note 2), p. 3.

[4] White House (note 2), p. 3.

[5] White House (note 2), p. 31; US Department of Defense (DOD), *Nuclear Posture Review,* (DOD: Washington, DC, Feb. 2018), p. iii.

[6] White House (note 2), p. 8.

[7] US Department of Defense (note 5), p. 7.

international order. Significantly, the NSS regards China as the primary contender. The NSS's focus on the Indo-Pacific region and the recent roll-out of the so-called US Indo-Pacific Strategy make this clear: the only area where Russia is deemed more of a concern than China is in the nuclear domain.

During the first months of the Trump administration, and even during the 2016 presidential election, some close to Donald J. Trump and the President himself suggested that the USA would be soft on Russia and hard on China because Russia was considered as a less serious problem. That led some to speculate that the administration wanted to play the Nixon/Kissinger card in reverse, meaning that it would engage, accommodate and even possibly cooperate with Russia to better balance China.[8] This did not happen, however: the NSS, NDS and NPR, as well as subsequent US actions, have not reflected such a 'triangulation' effort.

Also noteworthy is that the key strategy documents highlight the dangers posed by the Democratic People's Republic of Korea (North Korea) and Iran—the 'rogue states'—and by terrorism. The NPR notes that North Korea 'continues its illicit pursuit of nuclear weapons and missile capabilities in direct violation of United Nations Security Council resolutions' and that Iran 'retains the technological capability and much of the capacity necessary to develop a nuclear weapon within one year of a decision to do so'.[9] The NPR also talks about the need to reduce the risk of nuclear terrorism.

In setting priorities, the administration had to decide whether an assertive approach to Russia and China would jeopardize the prospects for progress on North Korea and Iran. In other words, the risk was that such approach would preclude cooperation from Russia or China to deal with North Korea and Iran. There was also a risk that focusing on Russia and China might lead to stronger Russia–China rapprochement to balance US power. Conversely, focusing on North Korea and Iran meant that the USA could at least hope to get some cooperation from Russia and China. This approach also offered the advantage of creating a process to improve communication with Russia and China, and of reducing the incentives for further Russia–China cooperation.

That might explain why the Trump administration began its first months with a focus on North Korea. Although the administration also focused on Iran, the main policy direction took longer to materialize.[10] The fact that the North Korean crisis was intensifying in 2017, with North Korea conducting nuclear and missile tests and demonstrating its ability to strike the US homeland, also forced the administration to focus on North Korea issues first.

The Trump administration, in other words, began its foreign policy by putting its issues with Russia and China on the back burner to get cooperation from them on the North Korea problem. President Trump's focus when he first met Chinese President Xi Jinping was to ask that China put pressure on North Korea. President

[8] President Richard Nixon and Secretary of State Henry Kissinger did the opposite in the 1970s: they courted China to better balance the Soviet Union.

[9] US Department of Defense (note 5), p. 13.

[10] The Trump administration withdrew from the Joint Comprehensive Plan of Action (JCPOA) in May 2018.

Trump also explicitly said that he would be prepared to ignore for some time what he saw as unfair Chinese trade practices if China delivered on North Korea. Similarly, the administration lobbied China and Russia hard to pass new United Nations sanctions (Resolutions 2371 and 2375) against North Korea. Clearly, it expected to receive enhanced cooperation from China and Russia to push North Korea towards denuclearization.

To be fair, China and Russia delivered. China implemented a coal ban and increased scrutiny of Chinese commerce crossing the border with North Korea, and both China and Russia supported strict sanctions against North Korea.

But quickly the Trump administration made the assessment that neither China nor Russia had the ability or the willingness to pressure North Korea enough for it to denuclearize. As a result, the USA decided to go its own way by threatening to strike militarily and ultimately endorsing the initiative of President Moon Jae-in of South Korea to engage North Korea. This initiative led to summits between the North and South in the spring of 2018, and culminated in a summit between Donald J. Trump and North Korea's Supreme Leader, Kim Jong Un, in Singapore on 12 June 2018.

Discussing the results of these meetings is beyond the scope of this essay. So far there has been an end to escalating tensions and a de facto freeze on nuclear and missile tests by North Korea. That has led President Trump to argue that the threat is gone, despite the fact that the North Korean nuclear arsenal remains intact. After the second Trump–Kim Summit in Hanoi on 27–28 February 2019, which did not produce results (it was cut short), President Trump even argued that he was in no rush to make progress with North Korea. Instead, his focus seems to have shifted to the revisionist states, especially China. In recent months, tensions have quickly risen between the USA and China over trade, and the confrontation is likely to spread to other areas, including in the nuclear domain. For instance, the US decision to withdraw from the Intermediate Nuclear Forces (INF) Treaty was, according to US officials speaking on the condition of anonymity, driven by the need to respond to Chinese military developments, more so than by Russia's violation of the INF Treaty. This is likely to raise serious concerns in China.

In summary, over the past two years, there has been a shift in US priorities from the immediate challenge presented by rogue states to major powers, notably China.

Implications for US allies

The previous US administration talked about the need to work towards strategic stability with Russia and China, but it also stressed that alliances were a priority, which is why it focused on strengthening regional security architectures. In Asia, in that spirit, the USA established bilateral extended deterrence dialogues with Japan and South Korea. US allies were expected to step up their game and contribute more to their defence, but they were considered an integral part of US foreign policy making because the Obama administration regarded them as key to both its immediate and long-term interests.

The Trump administration has a different approach. The NSS, NDS and NPR explain that US alliances are critical to US security, but because of the administration's competitive, zero-sum-game worldview, they are deemed critical only insofar as they are seen to benefit the USA directly. That suggests that in an America First foreign policy, allies are 'not second', meaning that they do not rank any higher than other countries.[11] In other words, today the only metric that the Trump administration applies to all states is: 'What can you do for us, now?' That is why the administration has fought with allies over several issues, ranging from trade to defence.

In such an environment, US allies have three options. First, they can choose to explain and improve what they bring to the table, stressing how this benefits the USA in an effort to stay in its good books and to keep the administration on their side. Practically, that means taking a greater share of the deterrence and defence burden. This is particularly important for European allies given that the USA is prioritizing China over Russia; Europeans, in other words, are expected to do more vis-à-vis Russia. But that can also translate into reminding the USA that it cannot or should not ignore the fact that, for the time being, European allies cannot take on the Russia challenge alone, even if they increase their defence budgets. Similarly, Asian allies may want to explain that the North Korea challenge remains and should not be ignored.

Alternatively, US allies can choose to give up on the USA. Doing so can take two forms. One form is for them to look elsewhere and create new security partnerships or arrangements. The Philippines, for instance, has been cozying up to China and Russia, while maintaining ties with the USA. Giving up on the USA could also translate into US allies resorting to self-help and perhaps developing their own nuclear weapons. It may seem far-fetched at present. Yet if the USA decided to ignore the North Korea challenge completely, officials in South Korea or even Japan might go so far as to push for the development of independent nuclear weapons. If, alternatively, the USA decided to cut a deal with North Korea whereby it agreed to give up its long-range missiles (the ones that threaten the US homeland) but retain its short- and medium-range missiles (the ones that threaten South Korean and Japanese territories), then South Koreans and Japanese officials may want to develop nuclear weapons of their own, concluding that the USA is only interested in protecting its own interests and not those of its allies.

A third option is for US allies to wait for a new administration to take office and hope for a return to business as usual. A return to a more traditional US foreign policy is a possibility. Yet even if President Trump serves only one term, a form of America First is likely to survive. This is because the US domestic political landscape has shifted radically to the extreme ends of the political spectrum, and because the changed and changing international security environment is likely to drive the USA to demand more of its allies, not less, and, in some circumstances, to force them to make hard choices.

[11] Santoro, D., 'Note to US allies: America First is here to stay and you're not second', PacNet #40, 19 May 2017.

Conclusions

Many questions remain about the general direction of US foreign policy and national security priorities. Strategic competition with major powers is, on paper, the order of the day along with a shift towards the Indo-Pacific. China in particular is becoming the USA's primary focus. Yet the 'rogues' continue to dominate the headlines. As mentioned earlier, Donald Trump and Kim Jong Un recently held a second highly visible summit in Hanoi, Viet Nam, which was cut short because the two leaders failed to resolve their differences. Meanwhile, in the Middle East, the Trump administration is conducting a maximum-pressure campaign against Iran, with no clear end in sight. It remains to be seen if the USA will manage to give priority to the 'revisionist states', as outlined in the key US strategy documents. One thing is certain, however; in an America First foreign policy, US allies are in for a rough ride and face stark choices.

10. Conclusions

One critical part of the response to a chemical, biological, radioactive, nuclear (CBRN) incident is understanding how the incident occurred, including determining that the incident is the result of a malicious or illegal activities and then identifying the responsible party. The process of investigation and attribution is a complicated one, and requires cooperation among authorities responsible for different tasks. A systematic approach is, therefore, needed to analyse an agent or material used in the incident, as well as environmental and tissue samples. The investigation by law enforcement authorities is likely to involve international cooperation. The need to create effective systems to investigate and respond to incidents involving chemical agents has recently been underlined as part of the 193 countries' national implementation of the Chemical Weapons Convention (CWC). However, a national system for investigation, attribution and action needs to take account of all CBRN materials.

Meanwhile, the decision taken in June 2018 at the Fourth Special Session of the Conference of States Parties to the CWC empowered the Technical Secretariat of the Organisation for the Prohibition of Chemical Weapons (OPCW) to develop an on-call group based on a generic mandate to assist states with investigation and attribution of chemical weapon use on request. To ensure the effective implementation of the decision, states parties first need to understand their existing capability for attribution, what is lacking in their national system and how the OPCW might help them compensate for gaps.

East Asian and European countries have a mutual interest and responsibility to respond effectively to demonstrated cases of chemical weapons use. However, there is currently no agreed framework for discussing what an effective response would look like and how it could be promoted. As incidents have occurred in Asia and Europe recently, there is good reason for joint assessment of the implications of the June 2018 decision for national implementation of the CWC.

When it comes to nuclear risks in East Asia in particular, the political tensions and military activities in the region are increasingly complicating matters. The region has included nuclear-armed states and states with security arrangements based in part, for many years, on extended nuclear deterrence. However, the deterioration of key relationships has increased the role of nuclear weapons in regional security dynamics. Nuclear deterrence is one critical element in relations among China, Russia and the United States. With the application of new technologies to existing weapons systems, cross-domain deterrence is introducing new asymmetries into relationships with uncertain consequences for strategic stability. Containing North Korea's nuclear and ballistic missile programme, a long-standing issue in the region, remains a problem for the United Nations Security Council, including the effective implementation of sanctions and the prevention of secondary proliferation of knowledge, material or equipment.

Europe has a long-standing framework for security dialogue among states in the region, but extending participation in this framework to like-minded

countries in Asia would be mutually beneficial. There is a potentially rich agenda for discussion. In military matters, joint analysis of deterrence-related issues, military-to-military contact, assessment of military risk reduction instruments and the analysis of military exercises could provide an agenda for cooperation. The USA is moving towards a new generation of military technology. The European approach to regulating technology is sometimes different from that of the USA, and whether Europe or Japan and the Republic of Korea (South Korea) should follow this trend merits further discussion. A dialogue with South Korea and Japan on the regulation of emerging technologies could be of mutual benefit. Meanwhile, Europeans increasingly see the need for a deeper understanding of the implications of China's global initiatives, and their implications for Europe. Interaction with Japan and South Korea would provide essential knowledge and perspectives.