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VERTIC BRIEF • 32 • JULY 2019

B R I E F

The OPCW's role in chemical security

Approaches and lessons learned from the IAEA's Nuclear Security Plans

Alberto Muti, VERTIC

VERTIC

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Introduction

Since the third Review Conference for the Chemical Weapons Convention concluded in April 2013, the international community has witnessed a score of attacks conducted using chemical agents, primarily in the context of the Syrian conflict, amid growing concerns for a weakening of the international norms against chemical warfare. One of the dimensions of this problem is the threat of chemical weapons use on the part of non-state actors. The CWC's focus largely rests on dismantling state-owned chemical weapon stockpiles and preventing states from reconstituting covert chemical arsenals; however, less attention has been paid to preventing non-state actors, such as terrorist groups, from gaining access to chemical weapons. This, traditionally, has been the remit of chemical security, defined by the Organisation for the Prohibition of Chemical Weapons (OPCW) as "measures to prevent deliberate releases of toxic chemicals and to mitigate the impact if such events occur", as well as "policies to prevent attempts to acquire toxic chemicals or chemical weapons precursors."

In 2011, the Sixteenth Session of the CWC Conference of States Parties identified capacity-building on chemical safety and security as a component of the agreed framework for the full implementation of Article XI of the Convention.[1] Article XI provides for economical and technological development of CWC states parties, especially with regards to the development of chemical industry and international trade in chemicals for purposes not prohibited under the convention. As such, the 2011 decision highlighted that preventing malicious use of chemicals is key to enable the development of the chemical industry worldwide. The Third Review Conference to the CWC reaffirmed this principle in 2013, noting the role of the OPCW as assistance provider while recalling that states parties bear the 'prime responsibility' for chemical safety and security.[2]

Leading up to the Fourth Review Conference to the CWC in 2018, concern with non-state actor uses of chemical weapons has been recognised by the OPCW Executive Council[3], as well as by the CWC States Parties during the Fourth Special Session of the CWC Conference of States Parties.[4] The issue has also featured prominently in several preparatory documents and proceedings of the Fourth Review Conference.[5] This paper aims to contribute to the debate on what actions the OPCW can take to reinforce the global chemical security regime by reviewing the efforts by the International Atomic Energy Agency to improve nuclear security worldwide. Of course, there are significant differences between the chemical and nuclear industries, and both the IAEA and the OPCW have their distinctive history and practices, so the author is not suggesting that IAEA approaches could or should be just copied in the OPCW context. In addition, future studies may gain useful insights from examining experiences, models and how challenges were overcome in other sectors. However, a comprehensive review highlighting successes and lessons learned from the IAEA case, of which this paper is a first step, could inform the OPCW in the establishment of its own initiatives. Furthermore, the ways that the OPCW goes about developing effective activities in this area can in turn serve to inform other sectors.

The paper will first outline the key OPCW goals in terms of chemical security activities; then, it will examine the general institutional framework for nuclear security within the IAEA, and how it changed over time; after that, it will review a selection of IAEA initiatives.

OPCW stated goals on chemical security

The renewed interest in chemical security by the OPCW is attested by a number of documents and reports dedicated to the issue, published in the last few years, as well as discussion of the issue in several fora. An increased OPCW role in the chemical security sector, centred on capacity-building and coordination, is described in the Report of the Third Review Conference of the CWC (OPCW Document R3.3*) and in the Medium-Term Plan Of The Organisation For The Prohibition Of Chemical Weapons 2017 – 2021 (EC-83/S/1). Other relevant documents are the 2016 Discussion Paper On The OPCW's Role In The Field Of Chemical Security (S/1395/2016), the 2018 Discussion Paper on The Implementation of Article Vi as a Contribution to Countering Chemical Terrorism (S/1622/2018), as well as the stated goals of specific capacity-building programmes within the organization, such as the Chemical Safety and Security Programme and the programme on Chemical Safety and Security Needs Assessment and Best Practices.

Given their diverse scope and purposes, most of these documents articulate the key goals and priorities for the OPCW in the field of chemical security in different ways; however, some recurring themes are particularly evident and worth commenting on.[6] These are:

1. Providing direct assistance and capacity-building;
2. Coordinating assistance efforts and enabling cooperation on chemical security;
3. Facilitating the exchange and spread of experiences, good practices and guidance;
4. Assisting states in assessing risks and needs in their internal chemical security regimes.

Many of the IAEA approaches reviewed below can provide examples of how to support one or more of these goals, and have been reviewed with this intention in mind.

It must be noted that goal number 1, the provision of direct assistance and capacity-building, refers to a very large area of activities both for the IAEA and for the OPCW. The authors are aware that the OPCW is already conducting assistance on chemical security through workshops, in-country missions and other means;[7] however, while valuable, a review of the contents, approaches and planning of all the workshops and direct assistance missions conducted over the years by the two organisations would fall well beyond the scope of this paper. As such, considerations on goal number 1 will mostly focus on the funding, mandate and planning structures put in place by the IAEA to support its efforts.

Nuclear Security in the IAEA context

One reason why the IAEA's approach to improving nuclear security is of particular interest for the current debate within the OPCW is that it, too, emerged in response to rapidly changing international concern; in the case of nuclear security, this happened after the 9/11 attacks that struck the United States of America in 2001.

Traditionally, the IAEA's focus encompassed facilitating technical cooperation on the use of nuclear technology and on nuclear safety, as well as its Safeguards programme, verifying nuclear non-proliferation commitments worldwide. Nuclear Security, often referred to as "physical protection of nuclear material", occupied a minor role in the agency's Department of Nuclear Safety and Security. Internationally, physical protection of nuclear material first became a matter of concern after the fall of the Soviet Union, as it was feared that economic collapse and political turmoil may enable theft or misuse of nuclear material in the post-Soviet area. Responses to this threat came mostly at the bilateral level, with "cooperative threat reduction" programmes

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such as the US Nunn-Lugar Cooperative Threat Reduction, started in 1991.

After the terror attacks that struck the United States on 11 September 2001, international terrorism rapidly became one of the key security issues in the international debate, and considerable attention was paid to the prospect of terrorist gaining control and using weapons of mass destruction, especially nuclear and radiological. In response to these concerns, the IAEA approved its first Nuclear Security Plan in 2002, to guide activities between 2003 and 2005. This was followed by plans for the periods of 2006-2009, 2010-2013, 2014-2017, and 2018-2021. The planning and activity framework adopted by the IAEA has evolved with every planning cycle, but the 2003-2005 plan laid out some of the basic principles of the IAEA's approach to nuclear security.

Mandate and Responsibilities

One of the key matters that the 2003-2005 plan identifies is that primary responsibility for nuclear security rests with the states. The plan clarifies that the IAEA would not take that responsibility upon itself, but rather, provide assistance to its member states in fulfilling it, and only upon request. This means that the IAEA operates in nuclear security as an assistance provider, as well as a forum for coordination and cooperation, rather than a transnational "regulator" of sorts – this is the same role that the OPCW has taken for chemical security.

The plan also identified the need for a separate source of funding and resources for nuclear security assistance: while the IAEA's technical cooperation (TC) programme could have been an ideal vehicle for assistance in nuclear security, it is meant to follow requests by member states based on their own priorities.[8] As such, it was decided that nuclear security activities would be funded through a separate fund. Given that the IAEA, like many international organisations, is funded by contributions from its member states, and usually seeks to maintain its budget on stable levels, the Nuclear Security Fund was created as an extrabudgetary, voluntary fund.

The 2003-2005 plan also outlines the 4 key threat scenarios that nuclear security measures were meant to thwart. These are:

- theft of a nuclear weapon;
- acquisition of nuclear material;
- acquisition of other radiological material;
- violent acts against nuclear facilities.

The plan notes that none of its member states possessing nuclear weapons had requested assistance in securing them to the IAEA, and as such, that scenario was not allocated any action.

It is important to note that the IAEA has established nuclear security as a largely independent area of activity, distinct not only from non-proliferation (safeguards), but also from nuclear safety. The OPCW approach, as established so far, is different, as the organisation is pursuing assistance work on chemical safety and chemical security as a single area of activity, focusing on risk-based approaches that can be used to mitigate both the possibility of accident and that of malicious action. This combined approach is very well placed to exploit synergies and reduce the possibility of tensions between the requirements of safety and security, and should be maintained, as increasing efforts in the IAEA to provide integrated training and capacity building activities involving all the "three S" attest.

IAEA assistance activities in the Nuclear Security Plans

The nuclear security plans issued since 2003 have used different frameworks to categorise assistance activities in various "areas" or "programmes". Over the years,

these have grouped activities together in different ways;[9] for greater clarity and consistency, this paper will focus on specific types of assistance activities, grouped under the four key goals identified for the OPCW above (with the understanding that activities in these broad areas may, and often will, support two or more of these goals at the same time). Some of the most relevant will be examined in greater detail later in the paper.

Providing direct assistance and capacity-building

Enhancement of physical protection at nuclear facilities: The IAEA supports its member states by assisting them in enhancing the physical protection measures at facilities housing nuclear material. This includes developing methodologies, training security staff, and providing resources to conduct improvements at sites in member states. This approach, often called "guards, gates and guns", had been the key focus of nuclear security since the 1990s; its importance was balanced by the recognition, starting with the 2006-2009 plan, of a need to focus on the human elements of security and to build security culture.

Human capacity development: starting with the 2006-2009 plan, human resource development and security culture were identified as crucial to maintain a strong level of nuclear security at facilities, with the understanding that improper use of equipment, lack of training and awareness in staff and insider threats could degrade the effectiveness of even the most sophisticated security equipment.

Coordinating assistance efforts and enabling cooperation on chemical security

Coordination of assistance: as efforts to improve the nuclear security regime gained traction internationally and other assistance providers emerged, the IAEA also assumed a coordination role, to avoid duplication of work and conflicting priorities. The Integrated Nuclear Security Support Plan (INSSP – see below) is used as the key reference to coordinate assistance by the IAEA and other bodies.

Promotion of international instruments: the IAEA has promoted the introduction and uptake of a range of binding and non-binding international instruments on nuclear security. The 2003-2005 plan included the goal of completing work on drafting an amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM); the amendment, completed in 2005, significantly strengthens the requirements the convention places on its member states. The IAEA also developed a non-binding Code of Conduct on the Safety and Security of Radioactive Sources in 2004. Promoting the ratification and implementation of these instruments, as well as the 2005 International Convention on the Suppression of Acts of Nuclear Terrorism (ICSANT), UN Security Council Resolution 1540 and others, is a key goal of every nuclear security plan so far. The CPPNM amendment entered into force in May 2016, after reaching the agreed number of ratifications by member states.

Facilitating the exchange and spread of experiences, good practices and guidance

Development of guidance: Developing international guidelines and collecting best practices is one of the IAEA's main functions in nuclear security. The IAEA Nuclear Security Series, established in 2006, includes more than 20 different works. The agency's work on developing and spreading guidance documents is analysed in depth below.

Assisting states in assessing risks and needs in their internal chemical security regimes

Needs assessment: Given that the IAEA provides assistance upon request, considerable attention has been given to assessing the needs of member states and formulating

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plans for targeted assistance, in order to deliver effective and efficient support. The IAEA uses a model called Integrated Nuclear Security Support Plan (INSSP), which is reviewed below.

Advisory and review services: through its Advisory Services, the IAEA carries out comprehensive and in-depth reviews of performance, with teams of experts analysing and evaluating, upon request, a state's performance against international nuclear security requirements and IAEA guidelines, and presenting an in-depth report at the end. This is used to inform a country's INSSP and plan follow-on assistance. A specific type of advisory service, the International Physical Protection Advisory Service (IPPAS), is analysed in depth below.

Funding of IAEA Nuclear Security activities

Coverage for nuclear security activities in the IAEA ordinary budget has historically been limited. Before 2003, it amounted to approximately $1 million/year, as a budget line under the IAEA's verification programme. After 2003, the budget has been moved to the "Nuclear Safety and Security programme", while remaining quite small: starting at just over $1 million out of a total programme budget of approximately $20 million in 2003, today it comes to approximately $5 million out of a total budget of $35 million. While this has been a steady increase, it would not have been sufficient to cover the projected assistance activities: the 2003-2005 plan indicated an initial projected need of $11 million per year, plus another $20 million per years for improvements and procurement (equipment and other physical improvement work at facilities).

As mentioned above, in order to procure the resources for expanded nuclear security assistance activities without substantially altering or expanding the agency's ordinary budget, the IAEA established an extra-budgetary fund, to which member states contribute on a voluntary basis. The fund has no yearly target. This fund has provided most of the resources for the agency's assistance activities. The Nuclear Security Fund started by receiving approximately $15 million per year, and grew to over $40 million by 2013. These contributions still come from a relatively small group of IAEA member states: in 2017, these were 16 member states, plus the European Commission.

The IAEA also receives in-kind contributions from its states parties; for nuclear security, these amount to roughly $100-200,000/year.

The OPCW is likely to face the same concerns about expanding its annual budget to allow for new efforts on chemical security as the IAEA faced after 2001. Creating a Voluntary Fund for Chemical Safety and Security may be an option for the organisation to support an expanded programme of activities.

Overview of specific IAEA initiatives on Nuclear Security

The following IAEA programmes and initiatives are of specific interest to the debate on the four OPCW goals outlined above, and especially on goals 2-4.

Development of guidance documents

The IAEA has a long-standing practice of producing guidance documents, implementation guidelines and other forms of documentation to support its states parties. The first IAEA document on nuclear security was issued in 1972 as Information Circular 225 (INFCIRC/225), titled "The Physical Protection of Nuclear Material". This document has been amended and revised over the years, and its current version, INFCIRC/225 Rev.5, is still one of the key references for nuclear security, focusing on physical protection measures (the aformentioned "guards, gates and guns"). In 2006, the IAEA established the

Nuclear Security Series, a series of technical publications exclusively dedicated to Nuclear Security. Currently, the Nuclear Security Series features 26 titles, with several more works in development.[10]

The Nuclear Security series is structured in four sets:

- The Fundamentals, a single text outlining the key elements and goals of a nuclear security regime;
- Recommendations, covering broad categories of materials;
- Implementing guides providing guidance on implementing the Recommendations; and,
- Technical guidance, with each document focusing on a specific issue or methodology in depth.

The first step in the preparation of a new publication is a "Document Preparation Profile" (DPP), indicating the background for the proposed publication, justifying the need for its development, outlining the scope (and possibly a table of content) of the document, and the goals it aims to reach. The DPP also includes an intended production schedule for the guidance. The document is then drafted by IAEA experts. The finished draft is open to comments by member states for a period of 120 days. The IAEA has also established a Nuclear Security Guidance Committee, composed of experts nominated by its member states, which advises on the drafting and publication of guidance documents.

IAEA guidance document have become a key reference for regulators and practitioners worldwide, and have significantly shaped the implementation of nuclear security measures across the globe. Part of their utility is that they represent a shared touchstone that experts across the globe know and understand, and in many cases, that they have been involved in shaping. Collecting successful approaches and good practices in guidance documents with the OPCW imprint could help them be circulated and received.

Needs Assessment

The INSSP is a "systematic and comprehensive" framework which aims to analyse a state's nuclear security regime and to highlight areas where improvement is needed, providing a basis for improvement work and assistance.

The INSSP includes a series of actions that the State should take to improve its nuclear security regime, providing a timeline and identifying the government body responsible for that action. The aim is to have a comprehensive and sustainable programme of work, which can be used to plan and coordinate follow-on assistance by the IAEA, as well as internal efforts by the member state, and support by other assistance providers such as NGOs, donors and other states.

INSSPs usually present six different "functional areas of work" for assistance activities:

- legislative and regulatory framework
- threat and risk assessment
- physical protection regime
- detection of criminal and unauthorized acts involving material out of regulatory control
- response to criminal and unauthorized acts including material out of regulatory control
- sustaining a nuclear security regime

The IAEA drafts an INSSP upon request and in coordination with the state. The assessment of the country's current performance is based on work conducted by the member state, previous IAEA assistance and technical visits, and the result of IAEA review services; this is compared to requirements found in international commitments the State has signed up to, as well as IAEA recommendations and guidance and good

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practices. drafts of the INSSP are shared with all relevant government agencies within the member state for comments before the plan is finalised. The final document is confidential, but the state can choose to share it with other assistance providers as required to facilitate coordination.

The OPCW has established its own needs assessment form,[11] through which states can report on the assistance they received and on their current identified needs and gaps. This is an important step, as it provides states with a clear channel to the organisation through which they can discuss their progress and their current gaps. However, some states, especially the ones that lack expertise at the government levels, may not be able to conduct a full gap analysis of their own implementation efforts; as such, the cooperative methodology developed by the IAEA for the INSSP may be useful, as the OPCW could support these states and assist them in properly identifying and assessing their current needs. Moreover, the INSSP has proven to be a useful instrument to coordinate assistance activities between the IAEA and other assistance providers, increasing efficiency and effectiveness of assistance. This would support the OPCW goal of acting as a coordinating body for assistance in chemical security.

Review and Advisory Services

Upon request by its member states, the IAEA provides its member states with in-depth reviews of their national nuclear security regimes. One such review is the International Physical Protection Advisory Service (IPPAS). IPPAS was initiated in 1995, before the IAEA started its nuclear security planning cycle, and as of 2017, it has run missions in 81 countries. The IPPAS approach has been codified in an IAEA publication, Nuclear Security Series N. 29.

IPPAS teams are composed of international experts, and provide a "peer review" of a state's practices and framework.[12] During an IPPAS mission, experts review practices at the national level and within specific facilities, provide advice to government authorities and operators on fulfilling their requirements, and identify good practices that the member state could share with others. The IAEA has highlighted that IPPAS missions are not audits or formal evaluations against a strict "checklist" of criteria, but are based on a more comprehensive, experience-sharing approach.

IPPAS missions are always started by a formal request by the member state (they are an entirely voluntary service, as the IAEA's mandate in nuclear security is just to provide assistance upon request). After such a request, a preliminary meeting is held between the IAEA and the host country to discuss the preparations and scope of the mission. At this stage, government authorities of interest to the mission are identified, and advance information on the member state is requested to form a pre-mission information package. Logistics and scheduling are also discussed.

The IPPAS team includes only one IAEA staff member, as technical officer. The IPPAS team leader and the team members are selected among international experts of renown coming from IAEA member states, and subject to the final approval by the host country. Expertise in the team is selected according to the scope of the mission, and may include legal and regulatory experts, physical protection specialists and response forces, specialists in nuclear material accountancy and control, computer security experts, and experts on issues such as specific types of nuclear facilities, or security of radioactive sources. During a mission, the IPPAS team reviews documents and information provided by the host country, interviews staff at nuclear facilities and relevant government authorities, conduct visual observation of processes and activities at the facilities.

IPPAS analysis is based on international requirements and IAEA guidance recommendations. In the mission report, the IPPAS team assesses the national practices, evaluates the national legal framework, and identifies recommendations, suggestions and good practices. A draft of the final report is provided to the host country for comments before finalisation. After a mission, the host country and the IAEA can consult on follow-up activities like other review services and provision of assistance. A follow-on IPPAS mission can be held 3-5 years after the first, to review the changes effected by the host country on the basis of the IPPAS mission report.

IPPAS missions are modular, and their scope and contents are agreed between the IAEA and the host country. The key IPPAS modules are the following:

- Module 1: National review of nuclear security regime for nuclear material and nuclear facilities
- Module 2: Nuclear facility review
- Module 3: Transport review
- Module 4: Security of radioactive material and associate facilities and associated activities
- Module 5: Information and computer security review

The IPPAS review service is a useful tool both for assisting countries in assessing their need for assistance, and in collecting and analysing good practices emerging from IAEA member states. As such, its methodology could be very useful in the OPCW context. Moreover, the principle of using expert staff from other member states, rather than IAEA staff, could be leveraged by the OPCW: by conducting "peer review" mission through expert member states staff offered as in-kind contributions, valuable assistance can be delivered with limited impact on OPCW resources.

Conclusions

The OPCW is increasingly taking on a leadership and coordination role in improving standards of chemical security worldwide and combating the threat of chemical terrorism, including through its capacity-building activities. The organisation's commitment to this task is evident in the prominence it was given at the Fourth CWC Review Conference, in November 2018. In preparation for the conference, the OPCW Secretariat issued a list of recommendations to bolster the organisation's capacity-building regime, including in the field of chemical security.[13]

Looking at the IAEA's role in nuclear security, the key insights and lessons learned from initiatives and activities described in this paper can be summarised in a list of recommendations and proposals for the OPCW Secretariat. The authors welcome the secretariat's recommendations as appropriate and timely, and believe our own proposals to be complementary and supportive of the direction set out by the OPCW in the report.[14]

Recommendations and Proposals

In almost two decades, the IAEA has established a large programme of work, delivering nuclear security assistance to its member states. As an assistance provider with a mandate limited to responding to requests for assistance, a key driver of the IAEA's approach has been that of providing information, guidance and best practices to its member states, and helping them identify key needs, analyse gaps in their national nuclear security regimes, and plan improvement work in a sustainable and effective way.

In order to support an expansion of its activities in chemical safety and security, the OPCW could consider establishing a dedicated, voluntary Chemical Safety and Security Fund. Some key issues to consider would be whether the fund should have

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yearly targets, and what kind of terms and conditions should be tied to the provision of funds. The IAEA had an internal debate which considered the implications of these and other issues, which could be studied. In the short term, in-kind contributions from states parties in the form of expert staff could provide a rapid increase in capacity. These could contribute to the further development of guidance documentation, and to OPCW review and capacity-building missions.

The OPCW could build on its existing needs assessment processes by adapting some of the key principles behind the IAEA Integrated Nuclear Security Support Plans (INSSP). Involving the OPCW in the needs assessment process (while maintaining it a strictly voluntary measure for states to undertake) would help member states, especially developing countries and smaller states with little internal expertise, to carry out accurate, comprehensive assessments. Moreover, turning the results of the needs assessment into a plan of required assistance and activities can help the OPCW coordinate capacity-building effort with other assistance providers and enhance its role as the global platform for coordination and exchange on this matter.

"Peer Review" and advisory services, to be provided upon request, can also be employed to improve needs assessment practices, and are an effective way to identify, analyse and record good practices among member states.[15] Some OPCW documents[16] identified review missions as a measure that could be launched in the medium term, once the OPCW acquired more resources; as noted, involving experts from member states (through in-kind contributions) and civil society can help reduce the burden on OPCW budget. The IAEA IPPAS service is not the only initiative of this kind, but is notable because its methodology has been analysed in depth and published by the IAEA.

The OPCW's mission to support the spread of experience and good practices could also be bolstered by developing and publishing guidance documents. These would not have to be an alternative to a "living compendium" of country practices like the envisioned OPCW Chemical Security Portal, but could complement it: for example, OPCW guidance documents could lay out "fundamentals" and key principles to follow (compiled both from expert advice and from analysing good practices among member states), and collected member state practices, presented through the Chemical Security Portal or in reports such as the recent Report on Needs and Best Practices on Chemical Safety and Security Management,[17] could provide examples of how these principles are applied in practice. Moreover, the OPCW could include measures and requirements related to chemical safety and security in its legislative guidance documents, such as the National Legislation Implementation Kit.

Lastly, the OPCW's current model of working on safety and security as close, interrelated fields, provides a strong basis to develop integrated, risk-based approaches and ensure that safety and security measures support and bolster each other. By establishing integrated safety-security assistance from the start of its activities, the OPCW could carry out innovative work on safety-security synergies that may well become an example for other sectors to follow.

Summary of recommendations and proposals

- Consider establishing a voluntary fund to support OPCW chemical security activities;
- In the short term, encourage in-kind contributions from states parties in the form of expert staff, to work on developing guidance documents and assistance material and to take part in capacity-building missions;

- Consider examining the IAEA INSSP methodology to build upon the existing OPCW needs assessment form; in particular, consider the INSSP process of engagement between the IAEA and the requesting country, and the development of an improvement and capacity-building plan, in priority order, as a guide to assistance activities by both OPCW and other assistance providers;
- Consider establishing "peer review" missions: these can both serve as an in-depth complement to the initial needs assessment tool, and as an occasion to collect and spread good practices. The IPPAS model, recruiting non-IAEA expert staff, can be useful as it allows to leverage expertise in the international community and civil society. Several other international bodies and arrangements employ peer review mechanisms. It could be worthwhile considering what ideas and examples these may offer, and any technical, resource-based or policy challenges they faced when being established and implemented.
- Develop OPCW guidance documents. The IAEA NS series can provide a template for such work, starting with a fundamentals document, and then producing additional material in a systematic way. The IAEA process guarantees input by member states. Collections of good practices from member states in the envisioned Chemical Security Portal can showcase examples of practical implementation of guidelines. A Guidance Committee could be established within OPCW, and drafting and development could be supported by in-kind contributions from member states at the beginning. Chemical safety and security could also be included in legislative guidance documents such as the National Legislation Implementation Kit.

Endnotes

1 C-16/DEC.10, https://www.opcw.org/sites/default/files/documents/CSP/C-16/en/c16dec10_e_.pdf

2 See par. 9.126 of R3/3*, https://www.opcw.org/sites/default/files/documents/CSP/RC-3/en/rc303__e_.pdf

3 EC-86/DEC.9, https://www.opcw.org/sites/default/files/documents/EC/86/en/ec86dec09_e_.pdf

4 See Par. 21 of C-SS-4/DEC.3, https://www.opcw.org/sites/default/files/documents/CSP/C-SS-4/en/css4dec3_e_.doc.pdf

5 See for example WGRC-4/S/1, https://www.opcw.org/sites/default/files/documents/CSP/RC-4/en/wgrc4s01_e_.pdf; RC-4/DG.1, https://www.opcw.org/sites/default/files/documents/CSP/RC-4/en/rc4dg01_e_.pdf; and C-23/DG.16, https://www.opcw.org/sites/default/files/documents/2018/11/c23dg16%20orc4dg04%28e%29.pdf

6 This synthesis is not meant to include every objective and area of activity that the OPCW is working towards in terms of chemical security, as such an analysis would likely fall beyond the scope of this paper. Rather, it focuses on some issues and themes that emerged, and that seemed particularly relevant in terms of comparison with the IAEA model.

7 For a recent overview, se the OPCW's report on 'Needs and Best Practices on Chemical Safety and Security Management', https://www.opcw.org/sites/default/files/documents/ICA/ICB/OPCW_Report_on_Needs_and_Best_Practices_on_Chemical_Safety_and_Security_ManagementV3-2_1.2.pdf

8 The Technical Cooperation programme supports the application of nuclear science and technology for issues such as industrial development, water management, health and food production, and most of its recipient states are developing countries.

9 For example, by grouping activities based on the type of material (nuclear vs. radiological), or by looking at different "stages", in a structure that included assessment, prevention, and response.

10 A full list of titles in the series, as well as titles under development, can be found here: http://www-ns.iaea.org/security/nss-publications.asp

11 Needs Assessment And Compilation Of Tools, Guidance, And Best Practices In Chemical Safety And Security Management (S/1603/2018)

12 IPPAS and similar systems are often referred to as "Peer Review" in the sense that the review offered is non-binding and it is carried out on a voluntary basis upon request by the state, by groups of practitioners and experts from other IAEA member states. The authors are aware that in the OPCW context, the term "Peer Review" is used in a different way, to indicate support projects in which, broadly speaking, two states are partnered so that one of them can provide in-depth training and capacity-building.

13 These appear in the 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, OPCW Document C-23/DG.16, https://www.opcw.org/sites/default/files/documents/2018/11/c23dg16%20orc4dg04%28e%29.pdf

14 At the time of writing, the OPCW report had not yet been published.

15 As noted above (see footnote 10), the term "peer review" is already used in the OPCW context; thus, initiatives modeled after IPPAS may be referred to with other terms, such as "technical review" or "expert review".

16 See for example S/1935/2016

17 https://www.opcw.org/sites/default/files/documents/ICA/ICB/OPCW_Report_on_Needs_and_Best_Practices_on_Chemical_Safety_and_Security_ManagementV3-2_1.2.pdf

Editors
Larry Macfaul

Design and layout
Rick Jones

ISSN
1740-8083

About this paper

This paper has been produced by VERTIC under a project funded by the Swedish Government. The project aims to contribute to the debate on the OPCW's role and initiatives in supporting chemical security and preventing non-state actors from employing chemical weapons. This initiative has analysed approaches and lessons learned from the IAEA experience in improving the global nuclear security regime. The paper presents a set of recommendations and proposals.

This paper forms a pair with VERTIC Brief 31 'Securing a diverse global industry: key lessons from the field of radiological security to support OPCW chemical security efforts'.

Additional studies may be carried out in the future, dealing with topics outlined in this paper in more depth, or looking further afield for useful experiences and models as well as challenges overcome.

The authors would like to thank colleagues, including Yasemin Balci and Larry MacFaul among others, who provided helpful advice.

VERTIC
The Green House, 244–254
Cambridge Heath Road,
London E2 9DA,
United Kingdom

Tel +44 (0)20 3559 6146
E-mail vertic@vertic.org
Website www.vertic.org

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