



**NOTE BY THE DIRECTOR-GENERAL**

**RESPONSE TO THE REPORT OF THE THIRTY-THIRD SESSION  
OF THE SCIENTIFIC ADVISORY BOARD**

1. This Note presents the Director-General's comments on the report of the Thirty-Third Session of the Scientific Advisory Board (SAB) (SAB-33/1, dated 18 November 2022) and the ongoing work of the Board.
2. Understanding the impact of scientific and technological evolution is a key aspect of the full and effective implementation of the Chemical Weapons Convention (hereinafter "the Convention"). The ongoing work of the OPCW requires scientific guidance. The SAB continues to serve as a critical source of scientific advice, assisting the Director-General, the Technical Secretariat (hereinafter "the Secretariat") and, ultimately, the States Parties in monitoring the key scientific and technological developments that are relevant to the Convention.
3. The Director-General expresses his appreciation to the SAB for its continued efforts during these uncertain times. He appreciates the willingness of the Board to convene virtually, over many time zones, to discuss topics relevant to the Secretariat. It is important that while the SAB provides scientific advice to the Director-General and the Secretariat, it also receives updates on matters within the Secretariat; these provide the Board with an understanding of the current matters the Secretariat is seized with, and, ultimately, assist the Board in its provision of advice.

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SCIENTIFIC ADVISORY BOARD**

4. The SAB met virtually for its Thirty-Third Session from 15 to 18 November 2021. The session was chaired by Dr Christophe Curty, supported by Vice-Chairperson Dr Andrea Leisewitz. The report of the session was issued as SAB-33/1.
5. In his opening remarks (paragraphs 5.1 to 5.5 of SAB-33/1), the Director-General began by expressing his regret that the Board was unable to meet in person for the session. He appreciated the Board's continued enthusiasm for conducting its critical work in spite of the ongoing challenges and restrictions. The Director-General briefed the SAB on relevant developments at the OPCW following the Board's Thirty-Second Session in June 2021 (SAB-32/1, dated 17 June 2021). To begin, he provided the Board with an update on the ongoing construction of the Centre for Chemistry and Technology (ChemTech Centre), explaining how the ChemTech Centre will allow the Secretariat to conduct research, training, and capacity-building activities that were not previously



possible. He asked the Board to dedicate some time and consideration during the Session to brainstorming and proposing appropriate scientific activities that could potentially be considered for the ChemTech Centre.

6. The Director-General then provided an update on the draft decision entitled “Understanding Regarding the Aerosolised Use of Central Nervous System-Acting Chemicals for Law Enforcement Purposes” that was adopted at the Ninety-Sixth Session of the Executive Council (EC-96/DEC.7, dated 11 March 2021). He recounted the prior consideration and advice the Board provided on the topic of central nervous system-acting chemicals (CNS-acting chemicals) and reminded them that if the decision is adopted at the upcoming Twenty-Sixth Conference of the States Parties, he will ask the SAB to continue to review and report on developments in science and technology related to CNS-acting chemicals.
7. The Director-General then remarked on the ongoing work of the SAB. He noted the good progress being made by the Temporary Working Group (TWG) on the analysis of biotoxins and looks forward to continued updates. He then turned to the upcoming Fifth Review Conference,<sup>1</sup> likely to be scheduled in the spring of 2023. He reminded the Board of the importance of its accompanying Report on Developments in Science and Technology for the Fifth Review Conference, which will be expected in the autumn of 2022. He conveyed to the Board that this Report is critical for the Review Conference and has asked the SAB Secretary to prioritise this effort and provide any assistance required to facilitate their work.
8. The Director-General closed by reiterating his appreciation of the SAB and its work. Given that six Board members were completing their second (and final) terms on the Board, he thanked them for their hard work and dedication over the term of their service. In particular, he noted the efforts of Professor Zrinka Kovarik, who served as Vice-Chairperson of the SAB in 2020, and Dr Christophe Curty, who served as Vice-Chairperson of the Board in 2019 and as Chairperson both in 2020 and 2021.

#### **UPDATES FROM THE TECHNICAL SECRETARIAT (PARAGRAPHS 6.1 TO 6.19 OF SAB-33/1)**

9. The Board received updates from Secretariat staff on developments at the OPCW relevant to the work of the SAB, and in particular on activities related to counter-terrorism and ongoing efforts at the OPCW Laboratory. The Director-General encourages Secretariat staff to continue to provide periodic updates to the Board on ongoing work relevant to their mandate. Topics such as the ongoing work of the OPCW in counter-terrorism and the scientific work under way at the Laboratory are vital to the OPCW’s continued efforts to rid the world of chemical weapons. They are also crucial for the Board to hear about for its consideration and rumination. Certainly, the experience and expertise of the Board is welcome when considering these themes.

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The Fifth Conference of the States Parties to Review the Operation of the Chemical Weapons Convention.

**DISCOVERY OF CHLORINE GAS EXPOSURE BIOMARKERS FROM VEGETATION (PARAGRAPHS 8.1 TO 8.7 OF SAB-33/1)**

10. There are certain chemicals of concern that are especially challenging when it comes to determining whether they were misused as a weapon in a given situation. This may be because there are difficulties in sampling or detection at a location, due to a lack of time or permission to visit the site, or because the chemical does not persist long enough for proper sampling or detection. These difficulties often apply to the alleged use of chlorine. It is therefore of interest to monitor research that aims to overcome these difficulties in terms of detecting the use of chlorine as a weapon. One such approach is to identify biomarkers of chlorine exposure, in plants or people, that can be detected over a longer window of time, thus overcoming some of the aforementioned challenges.
11. It should be noted that the Secretariat has several ongoing projects related to biomarkers. One is the Plant Biomarker Challenge, funded by the European Union, where six research teams have been awarded funding to investigate novel approaches to detecting biomarkers associated with toxic chemical exposure in plants.<sup>2</sup> In addition, the OPCW Laboratory has collaborated with Vrije Universiteit Amsterdam on research related to human biomarkers for chlorine exposure.
12. The Director-General noted with interest the work of Dr Mason and the research her team has completed to date on how vegetation can be used as a source of biomarkers to confirm the release of chlorine gas in the environment. The Director-General is interested in being kept apprised of this and other approaches to detect chlorine exposure and looks forward to future reports from the SAB on this topic.

**GUIDANCE FOR EFFECTIVE MANAGEMENT OF RISK ASSOCIATED WITH HIGHLY HAZARDOUS CHEMICALS (PARAGRAPHS 9.1 TO 9.5 OF SAB-33/1)**

13. The consideration of risk when thinking about enhancing chemical safety and security measures at chemical facilities, whether they be in industry, academia, or government, is a critical step in preventing the misuse of chemicals. The Director-General appreciates the presentation of Dr Stewart Behie, who provided a comprehensive overview on guidance for the effective management of risks associated with highly hazardous chemicals. The Director-General notes the importance of prevention efforts affiliated with chemical safety and security, especially in the counter-terrorism context, and encourages the Board to continue to monitor efforts in this area.

**SCIENTIFIC ADVISORY BOARD MEMBER PRESENTATIONS (PARAGRAPHS 10.1 TO 10.24 OF SAB-33/1)**

14. Equally important to having the Secretariat staff brief the SAB on developments relevant to the Board's work is the sharing of research and information by SAB members among each other and with the Secretariat. The SAB is comprised of esteemed experts across various fields of science and engineering of relevance to the Convention. It is fitting that they periodically provide overviews of their professional work and research so that the Board and the Secretariat can be kept apprised and learn from their

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<sup>2</sup> For more information on the Plant Biomarker Challenge see: <https://www.opcw.org/biomarker>.

efforts. The Director-General read with interest the summaries of the presentations by Dr Daan Noort, Dr Robert Mikulak, and Dr Christophe Curty on their continued work in the areas of detection and analysis, non-proliferation, and disarmament.

15. The recent work by Dr Noort and his team at the Netherlands Organisation for Applied Scientific Research (TNO) in threat detection, analysis, and protection is very valuable to the OPCW. It is appreciated that OPCW designated laboratories, such as the TNO, continue to work on the frontiers of research related to chemical weapons, publishing high quality, peer-reviewed journal articles that can benefit all States Parties and society at large. The innovative approaches on detection, analysis, and protection shared by Dr Noort are very relevant and useful to the work of the OPCW.
16. Likewise, the efforts of Spiez Laboratory in Switzerland also contribute greatly to the OPCW's mission. Spiez Laboratory has contributed to a variety of the Secretariat's training activities, periodically provides critical data to add to the OPCW Central Analytical Database, and continues to advance science monitoring efforts through its Spiez Convergence conferences series.<sup>3</sup> The Director-General thanks Dr Curty for providing an overview of the work at Spiez Laboratory.
17. As a sister organisation to the OPCW, the Implementation Support Unit of the Biological Weapons Convention (BWC) is tasked with providing administrative support to meetings of the States Parties to the BWC, as well as comprehensive implementation and universalisation of the BWC and the exchange of confidence-building measures.<sup>4</sup> There is renewed discussion among States Parties to the BWC to establish a scientific advisory mechanism. The Director-General supports this initiative, noting the continued value that the OPCW's own Scientific Advisory Board provides. The Secretariat remains prepared to contribute to the discourse through outlining the modalities around the SAB's functioning and sharing the benefits of an independent scientific advisory body.
18. The Director-General appreciates Dr Mikulak's updates on both the ongoing discussions within the context of the BWC, as well as on the ongoing efforts to strengthen the United Nations Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM) via continued training, proficiency testing, and scenario-based exercises.<sup>5</sup>

#### **UPDATES ON SCIENTIFIC ADVISORY BOARD-RELATED BUSINESS (PARAGRAPHS 12.1 TO 12.10 OF SAB-33/1)**

19. The SAB will seek to hold three sessions in 2022, with a view to finalising its scientific report in support of the Fifth Review Conference to be held in early 2023. The Director-General appreciates the continued progress the Board is making towards this report, and fully supports the Board members' continued gathering of information and planned topical workshops to better inform them about particularly exciting areas of science and technology of relevance to the Convention.

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<sup>3</sup> <https://www.spiezlab.admin.ch/de/home/meta/convergence.html>.

<sup>4</sup> <https://www.un.org/disarmament/biological-weapons/implementation-support-unit/>.

<sup>5</sup> <https://www.un.org/disarmament/wmd/secretary-general-mechanism/>.

20. The TWG on the analysis of biotoxins is making steady progress on its terms of reference.<sup>6</sup> The area of biotoxin analysis is one that requires additional consideration; the fundamental approaches and analytical techniques used in toxin analysis can differ from analysis of traditional chemical warfare agents. The TWG met three times in 2021, with numerous additional intersessional meetings. The Director-General thanks Dr Daan Noort and Dr Suzy Kalb for their continued guidance of the TWG as its Chairperson and Vice-Chairperson, respectively. The dedication of the entire TWG has been outstanding, and the Director-General anticipates some pertinent advice and recommendations from its work.
21. The Director-General thanks Dr Christophe Curty as Chairperson and Dr Andrea Leisewitz as Vice-Chairperson for their leadership of the Board in 2021. The Board successfully held three sessions and continued to provide advice that has helped guide the OPCW. As this was the last SAB session of the year, the Director-General congratulates Mr Günter Povoden on his election as Chairperson and Dr Andrea Leisewitz on her re-election as Vice-Chairperson of the SAB for 2022. The Director-General looks forward to the SAB's activities in 2022.
22. The Director-General thanks the European Union for its Council Decision 2019/538, dated 1 April 2019, which provides funding for both the Plant Biomarker Challenge and the work of the TWGs.

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<sup>6</sup> The TWG Terms of Reference can be found in an annex to the Report of the SAB at its Thirty-First Session (SAB-31/1, dated 4 March 2021).