



Short Communication

Tianjin Biosecurity Guidelines for codes of conduct for scientists: Promoting responsible sciences and strengthening biosecurity governance

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ABSTRACT

Formulated and endorsed by the international scientific community, the Tianjin Biosecurity Guidelines are a set of ten guiding principles and standards of conduct designed to promote responsible sciences and strengthen biosecurity governance at national and institutional levels. It may be used to develop new or enhance, supplement, and update the existing codes of conduct adaptive to a specific context and responsive to the bio-risks arising from the rapid advances in biological sciences.

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Rapid advances in biological sciences have called for globally recognized norms that national governments, research institutions, and industries can use to promote a culture of responsibility and guard against any accidental or deliberate misuse of biological sciences. States Parties to the Biological and Toxin Weapons Convention (BWC) have actively discussed this issue for over two decades. Some national governments, research institutions, and industrial organizations have already adopted codes of conduct

that address the potential misuse of biological sciences according to their own needs;¹ however, many have not. The Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists (hereinafter as "Tianjin Biosecurity Guidelines") have been developed to fill such deficiency in biosecurity governance by members from Tianjin University Center for Biosafety Research and Strategy (TJU), Johns Hopkins Center for Health Security (JHU) and the Interacademy Partnership (IAP), with support from the Chinese Ministry of Foreign Affairs and the U.S. Department of State.

The Tianjin Biosecurity Guidelines are a set of ten guiding principles and standards of conduct designed to promote responsible sciences and strengthen biosecurity governance at national and institutional levels. They elaborate the primary responsibilities of scientists to safeguard against the misuse of biological sciences in the entire process of their research and the responsibilities of relevant institutions in this regard.² Tianjin Biosecurity Guidelines are based on a working paper co-submitted by China and Pakistan to the BWC Eighth Review Conference in 2016 to develop "A Model Code of Conduct for Biological Scientists," drafted by experts at TJU,

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¹ For instances, American Society for Microbiology released a Code of Ethics and Conduct for its members in 2021, <https://www.asm.org/index.php/governance/code-of-ethics>; National Health and Medical Research Council, Australian Research Council and Universities Australia jointly released Australian Code for the Responsible Conduct of Research in 2018, <https://www.arc.gov.au/news-publications/media/communications/message-heads-nhmrc-arc-and-ua-about-release-australian-code-responsible-conduct-research-2018>; Malaysia National Science Council released Malaysian Code of Responsible Conduct in Research in 2017 https://accountancy.uitm.edu.my/images/e-Sharing/Booklet_The_Malaysian_Code_of_Responsible_Conduct_in_Research.pdf; Science Council of Japan renewed its Code of Conduct for Scientists in 2013, <http://www.scj.go.jp/en/report/code.html>; Royal Netherlands Academy of Arts and Sciences released a Code of Conduct for Biosecurity in 2007. (All weblinks in the article were accessible as of July 9, 2021).

² The full text of the Tianjin Biosecurity Guideline is available at: <http://tjusa.tju.edu.cn/info/1093/1443.htm>.

³with a follow-up document co-submitted in 2018.⁴ Since then, TJU has devoted itself to promoting this proposal worldwide. In June 2018, the BWC Implementation Support Unit (ISU), Ministry of Foreign Affairs of China, and TJU co-hosted an international workshop on “Building a Global Community of Shared Future for Biosecurity: Development of a Code of Conduct for Biological Scientists” in Tianjin, during which Mr. Ljupčo Jivan Gjorgjinski, the former Chair of the BWC Meetings of State Parties, suggested to name this proposal with the term “Tianjin” to recognize the successful organization of the workshop and the contribution of the TJU. Subsequently, experts from TJU were invited to periodically update the progress of the proposal at the Meetings of Experts (MX2).⁵

Since January 2021, the TJU, JHU, and IAP representatives have collaborated to develop the draft text. On April 8 and May 26, 2021, two virtual workshops on “Tianjin Biosecurity Guidelines on Codes of Conduct for Scientists” were co-hosted by the three institutions. More than 20 scientists from 16 countries across four continents, including several IAP Biosecurity Working Group representatives, participated in the discussion. On June 29, 2021, members from TJU and JHU jointly presented the draft text on the BWC MX2 webinar, which gained very positive feedback from the participants.⁶ This wide consultation enriched the contents and enhanced the prospects of the Tianjin Biosecurity Guidelines. It also helped raise awareness of individual scientists to have their minds on biosecurity and relevant institutions to create incentives for scientists to do responsible sciences.

On July 7, 2021, the IAP formally endorsed and certified the Tianjin Biosecurity Guidelines. The IAP Statements Governance Committee reviewed the Tianjin Biosecurity Guidelines and was fully supportive of the contents.⁷ Members of the IAP Steering Committee have also given their formal endorsement to the Tianjin Biosecurity Guidelines on behalf of IAP member academies, encouraging member academies and other scientific organizations to disseminate the Guidelines and integrate them into national and institutional biosecurity and biosafety codes of conduct.⁸ Following the IAP's endorsement, the Tianjin Biosecurity Guidelines will be submitted to the Ninth Review Conference of States Parties of the BWC in November 2021 (tentatively) to garner wider international recognition.

The guiding principles and standards of conduct laid out in the Tianjin Biosecurity Guidelines are fundamental to ensure responsible sciences and are inherently adaptable to diverse contexts. It may be used to develop new codes of conduct or enhance, supplement, and update the existing ones for further strengthening biosecurity governance at the national and institutional levels.

Given that emerging biotechnologies are becoming more accessible and widespread, the traditional ways used by states through law enforcement to control security are no longer sufficient.⁹ It is a shared responsibility for the global community to promote

responsible sciences and strengthen biosecurity governance before they become a significant threat to national and international stability and peace. Against this background, engaging scientists to safeguard any accidental or deliberate misuse of biological sciences is of paramount importance to strengthen biosecurity governance and the overall effectiveness of the BWC. Such engagement should begin with university education and continue into their careers through professional development. The Tianjin Biosecurity Guidelines contain actionable recommendations for implementation at institutional and national levels to reach that goal. Thus, they may serve as a focal point for education, training, and other measures to combat the bio-risks associated with advances in biological sciences, both now and in the future.

The COVID-19 pandemic has shown the urgency of this task by demonstrating the severe impact of a biological event on the loss of life and economic and political disruption on a global scale. It reminds us how fragile we are and how connected we are in the face of bio-risks. Formulated and endorsed by the international scientific community, the Tianjin Biosecurity Guidelines send a powerful message about individual scientists and relevant institutions' responsibilities on biosecurity at various contexts. We greatly appreciate all involved in the drafting, reviewing, and disseminating processes (including but not limited to the team members of TJU, JHU, and IAP and scientists from whom we have sought their suggestions and comments). We sincerely hope that the Tianjin Biosecurity Guidelines could be an inspiration and living instrument for national legislators, governments, research institutions, and industries to take action to induce safer and more secure developments in biological sciences for the benefit of humanity.

Conflict of interest

The authors declare no conflict of interest.

CRediT authorship contribution statement

Leifan Wang: Conceptualization, Writing – original draft, Writing – review & editing. **Jie Song:** Writing – original draft, Project administration. **Weiwu Zhang:** Conceptualization, Writing – original draft, Writing – review & editing, Funding acquisition, Supervision.

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³ BWC/CONF.VIII/WP.30.

⁴ BWC/MSP/2018/MX.2/WP.9.

⁵ The presentations are available on the ODA Meetings Place: https://meetings.unoda.org/section/bwc-mx-2020-mx2_webinar/.

⁶ The presentations are available on the ODA Meetings Place: <https://meetings.unoda.org/section/bwc-mx-2020-mx2-webinar2/>.

⁷ IAP endorsement letter and certificate is available at: <https://www.interacademies.org/news/iap-endorses-tianjin-biosecurity-guidelines>. As the global network of science, engineering & medical academies working together to provide independent expert advice on scientific, technological & health issues, the IAP has more than 140 national, regional and global member academies and 30,000 leading scientists, engineers and health professionals in over 100 countries, committed to advance sound policies, improve public health, and promote excellence and achievements in the relevant fields. See <https://www.interacademies.org/iap/about>.

⁸ Id.

⁹ Nuffield Council Report on Emerging Biotechnologies: technology, choice and the public good (2012), p. 2, para. 11. See https://www.nuffieldbioethics.org/assets/pdfs/Emerging_biotechnologies_full_report_web_0.pdf.