Lessons learned from INSEN and beyond

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Outline

- History and challenge facing nuclear security

- Establishment of the nuclear security education network and recent developments
  - Overview of the Nuclear Security training developed by INSEN
  - Recent development of the INSEN

- Challenges faced by the INSEN: how to build a sustainable network
  - Coordinating members from different backgrounds
  - Diverging approaches to nuclear security education

- Implications for biological security education

- Conclusion

Established in 2010, as an essential component of the IAEA's nuclear security programme, INSEN dedicates to promote education and training in the area of nuclear security. With the rapid advances in technologies and life science, biological security is now similarly at a defining moment as nuclear security 15 years ago. The mandate of the 2022 Biological and Toxin Weapons Convention (BTWC) 9th Review Conference emphasised the urgent need for new tools to strengthen the Convention. This paper reviews the development and work of the International Nuclear Security Education Network (INSEN) in order to draw examples of best practice for the implementation of the newly founded International Biological Security Education Network (IBSEN). With our new initiative to build up IBSEN, we believe that continuous engagement of its members, development of different materials fitting to different stakeholders, and adopt of new methodologies are essential to develop global biosecurity education.

History and challenge facing nuclear security

- The Nuclear Non-Proliferation treaty was first proposed by Ireland at the meeting of the General Assembly of the United Nations in 1961
- The Nuclear Non-proliferation treaty was subsequently signed in 1968 and entered into force in 1970.
- The treaty originally had a time limit of 25 years, however, was extended indefinitely in 1995
- The 911 attack and its subsequent impact on international security played a significant role in the creation of the INSEN.
- The Convention on the Physical Protection of Nuclear Materials (CPPNM) in 2005
- The first Nuclear Security Summit was organised in April 2010.

Establishment of the nuclear security education network

- The 2009 Nuclear Security Plan agreed by the International Atomic Energy Agency (IAEA) Board of Directors emphasized the need to develop educational programs in nuclear security.
- A workshop organised in March 2010 by the IAEA brought together academics, International Organizations, and governmental representative to discuss this complementarity and to deliberate on the foundations of the Network.
- INSEN defined its mission in 2012 to develop educational materials (peer-reviewed textbooks, online teaching tools and instructional material, including exercises and materials for laboratory work), collaborate internationally at different levels (faculty, academics, and students), quality insurance (consistency with IAEA defined terminology) and assessment mechanisms (assess the effectiveness of nuclear security education via evaluation, coordination, and improvement).
- The INSEN is, as of 2023, constituted of 204 institutions members from 72 IAEA member states and 13 observers

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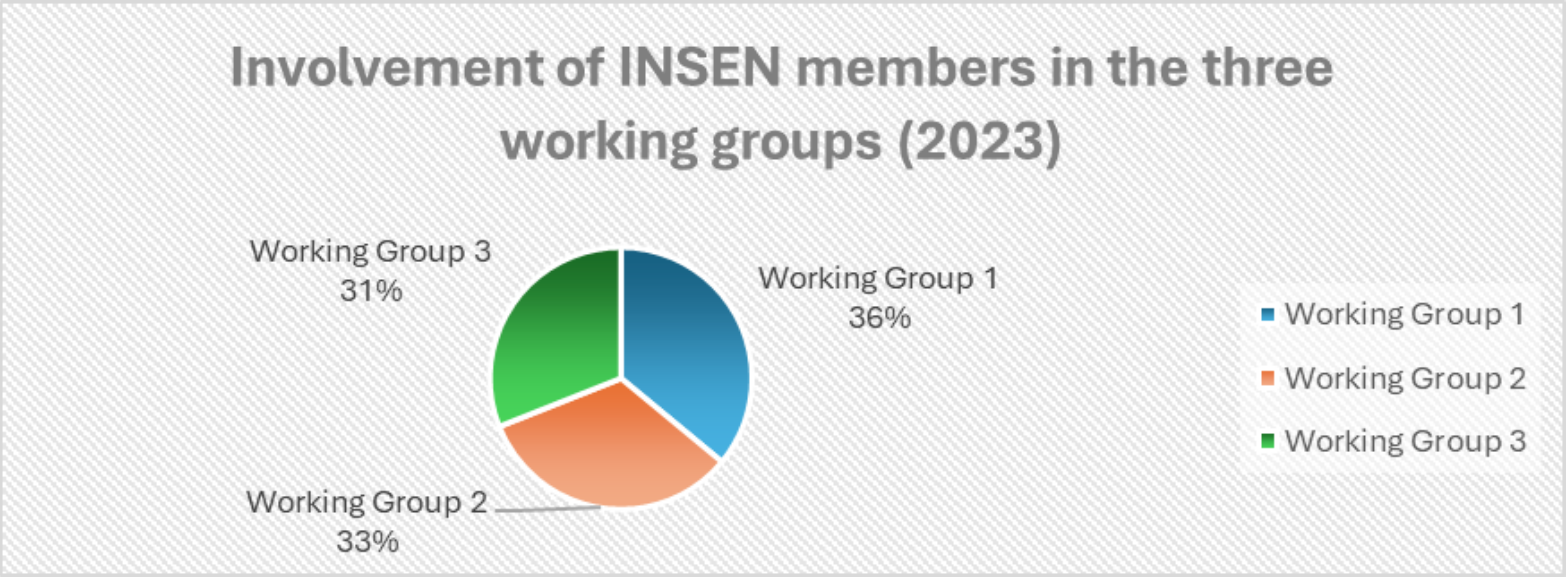


Figure 1 Involvement of INSEN members in the three WGs, “exchange of information and development of teaching materials for nuclear security education” (working group 1), “Faculty development and cooperation among universities” (working group 2), and “promotion of nuclear security education” (working group 3)

Training course examples

- Training courses were since developed to target students with a range of academic backgrounds and included MSc programmes, two-week schools, and short courses.

- the Joint ICTP-IAEA International School on Nuclear Security overseen by the IAEA and the International Centre for Theoretical Physics (ICTP).

- King's College London pioneered the development of the Professional Development Courses (PDCs) within the Network. INSEN also provides training in the form of Faculty Development Courses (FDCs)

- The MSc programmes are guided by the curriculum put forward by the IAEA Nuclear Security Series No 12 - Educational Programme in Nuclear Security (2010)

- The Model Academic Curriculum in Nuclear Security released in 2021 included new technical guidance

Recent development

- The Annual Meeting of the International Nuclear Security Education Network (INSEN) – Chair's Reports 2022 and 2023 highlighted the recent developments in INSEN

- The recently published Oxford Handbook of Nuclear Security illustrates the significant role which researchers have played in enhancing nuclear security education within this new framework

- INSEN members have also placed emphasis on their commitment to gender parity within the network and field of nuclear security. This can be seen through the initiatives Women in Nuclear Security and the Marie Sklodowska Curie fellowship programme.

Successes of INSEN

- The IAEA Nuclear Security Plans give high priority to nuclear security education and assist IAEA's member states in establishing educational programmes

- The network also benefits from significant outreach and promotion strategies with members regularly presenting at diverse conferences

- INSEN members also promote the network and its research locally which leads to a multiplier effect and a regionally focused approach

  - the initiatives Women in Nuclear Security and the Marie Sklodowska Curie fellowship programme

Challenges of INSEN: how to build a sustainable network.

- Coordinating members from different backgrounds

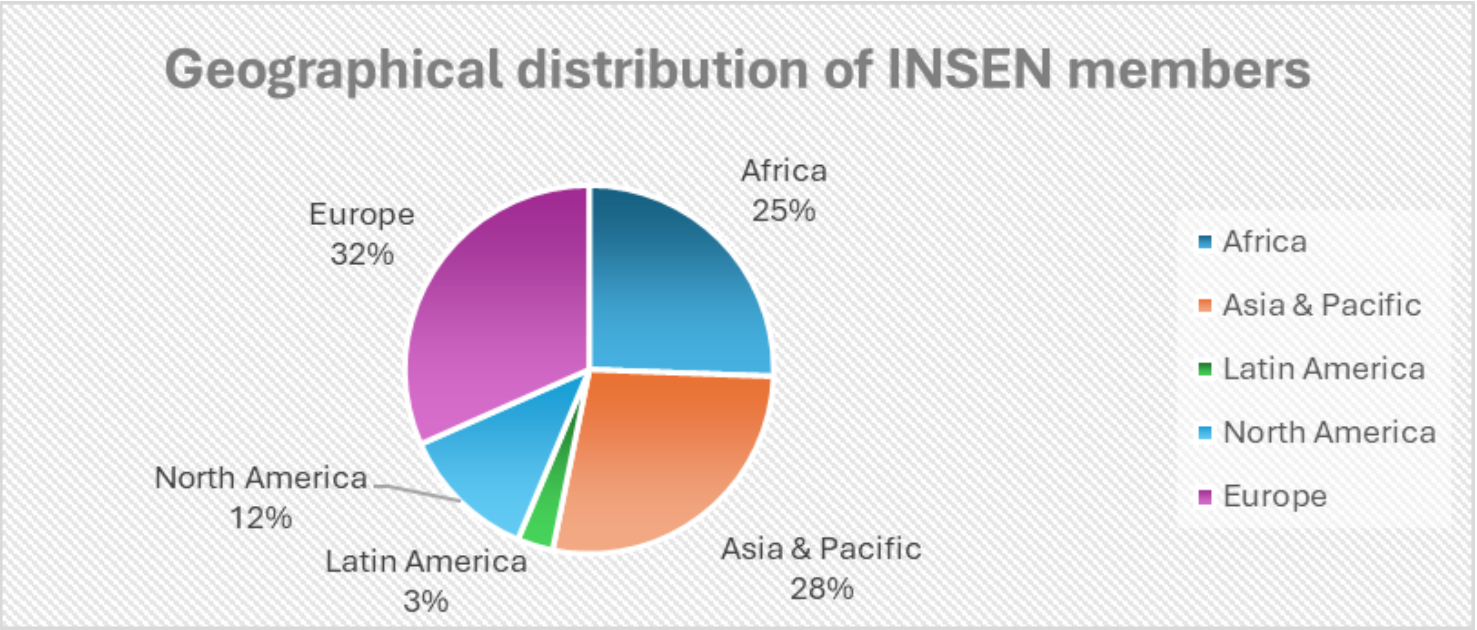


Figure 2 Geographical distribution of INSEN members, as of 2023

- Diverging approaches to nuclear security education

Implications for biological security education

The necessity of including biosecurity education within the framework of BTWC was highlighted during the Side Event *From the Tianjin Biosecurity Guidelines to an International Biosecurity Education Network* organised by LMU BSRC and Tianjin University at the 2023 Meeting of BTWC State Parties.

Current efforts in the field have been fragmented and geographically limited.

Initiatives previously developed in biosecurity education include the resources and methodologies designed by The Bradford Disarmament Research Centre, University of Broadford (UK), the postgraduate courses in biosecurity education at National Defence Medical College in Japan, the joint projects on fostering the biosecurity norm with the Landau Network Centre Volta in Italy and the work of the Biological Security Research Centre, London Metropolitan University (UK).

Although each such initiative developed good practices, they were also limited due to the difficulty to coordinate their actions and share adapted resources in biosecurity education

Lessons for IBSEN from the INSEN experience

Affiliation	An organisational affiliation can provide support and sustainability, but it could also impose restrictions according to the organisation's mandate.
Participation	Worldwide participation is desirable but could also cause problems in co-ordination.
Interdisciplinarity	Security education is difficult as it requires natural science and social science teaching expertise and equally broad interest in the students.
Focus	Security education needs to be implemented in different ways, but too broad a range of activities risks loss of focus on key elements.
International structure and regional application	Centralised control of activities is desirable but risks lack of adaptation to diverse local circumstances.
Evaluation	The importance of clear evaluation targets and methods.

International Biological Security Education Network

Dual-use oversight: Is the scientific community fit for Purpose? What should be done if it is not?

"The rapid advances in biology and the diversity of life sciences combined with technology development add extra challenges for biological security education, in particular how to keep up to date, as well as manage global dissemination and effectiveness. All these issues should be addressed during the development of the IBSEN. If this work is successful, it could significantly improve the possibility of implementation of the BTWC's new strategy on the review of science and technology and State Parties' national policy on the Biological Security Strategy in the coming years…"

The IBSEN Website

- The IBSEN project started **in Feb 2024** and its website is **live since March 2024.**
- It will host the ***Quarterly Newsletter*** and the educational tools developed as part of the project.
- It is the **essential tool to engage with an academic community and policymakers** and raise awareness about the work of the IBSEN.

QR code to the IBSEN website

IBSEN Quarterly Newsletter

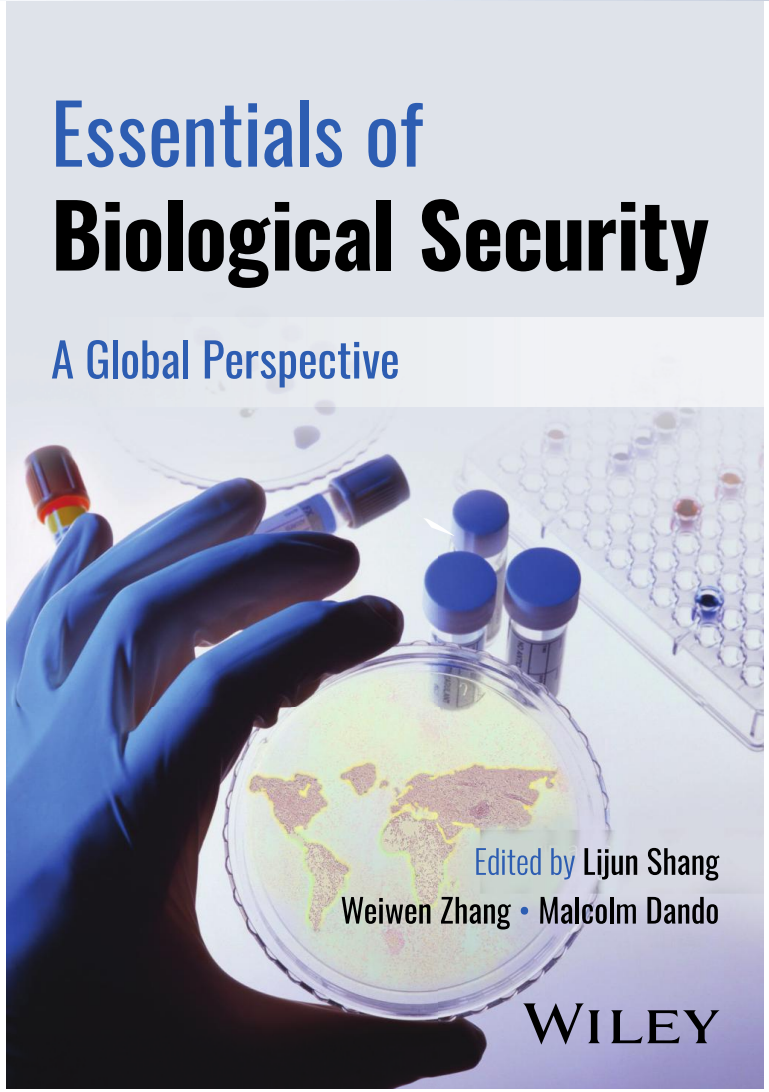
- *Quarterly Newsletters* over two years will be **the main means of engaging a large number of interested people.**

- First Newsletter published in **May 2024** and the main article discussed the lessons learned from the **International Nuclear Security Education Network (INSEN).**

- Second Newsletter published in **Oct 2024** focus on **the work of the ABEO and implication to IBSEN.**

- **Publication** mainly stored on the website and **Newsletter** to be sent via email to the contact database.

Essentials of Biological Security: Textbook Required



Objective

To rapidly produce a one-stop-shop resource to help people teach biological security in support of the Tianjin Guidelines.

Design

Authors asked to keep a very tight schedule of outline, first draft, and final draft so as to have a book published within a year.

Five sections and 20 chapters. All chapters short (5,000 word suggested limit) with key points, summary and few references (5 suggested limit and key ones starred).

Aim to enable translations into multiple languages and to engage authors from around the world.

Future works

- More integration issues on Newsletter
- Translation of the book to different languages including 5 other UN official languages
- projects linked to the book i.e. developing education materials
- Workshops to discuss the biosecurity education according to national and cultural circumstances
- Developing a handbook on implementation and assessment

Conclusion

Similarly, to nuclear security education in 2010, biosecurity education is now at a defining moment.

The rapid advances in life science and technologies require sustainable biosecurity education to meet the developing challenges.

Biosecurity education cannot be implemented as a ‘one-size-fits-all’ framework.

The IBSEN will therefore have the significant responsibility of connecting relevant actors in biosecurity education to help them developing educational tools adapted to local circumstances

An integrated collaborative approach to CBRNe security education is essential .

It is also necessary to develop new methodologies and implementation tools to address the rapid advancements in science and technology.

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Short Communication

Lessons for biosecurity education from the International Nuclear Security Education Network

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Thank you!