OPCW, Education for Peace:
New Pathways for Securing Chemical Disarmament

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Promoting Awareness and Education on Bio-Chem Convergence

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Biology ⟷ Chemistry

Advances in biotechnology, nanotechnology, bioengineering, as well as in the chemical synthesis of molecules of biological origin, have brought to a growing convergence between biology and chemistry.

- This introduces new threats and challenges for the organizations dealing with the prohibition of biological and chemical weapons.

- The risk of a "Trojan horse" challenge in Chem: exploiting a new category of "hybrid chemical weapons (CWs)" in the cross-cutting of Bio and Chem, once an entire system of "classical CWs" has been eliminated.

- In addition, new strategies and new instruments must be adopted to educate the scientific and the institutional communities to this developing bio-chemical trend.

BTWC → ← CWC

In response to the evolving bio-chemical convergence, the BTWC and CWC should combine efforts to analyze the existing norms/guidelines against biological and chemical weapons and to develop new regulatory mechanisms for bio-chem safety and security.

A joint BTWC-CWC organism could lead the State Parties in the engagement of all relevant stakeholders in the bio-chemical field (from government, industry and academia); as well as in the promotion of raising awareness initiatives, trainings and dissemination of best practices.

Multidisciplinarity as a Tool

Multidisciplinary Research Teams (MRT) are becoming a widespread working methodology in an everyday more interlaced scientific environment.

Such groups may include experts in biology, chemistry, and physics, but also in mathematics, IT and engineering, with the purpose to tackle scientific research (and its consequences) from different points of view.

Multidisciplinarity therefore represents:

- An efficient way of dealing with bio-chem convergence issues;
- The necessary expertise to educate and raise awareness in this area.

The CBRN Centres of Excellence approach

In line with a multidisciplinary approach, the EU CBRN Centres of Excellence (CoE) Initiative has adopted an innovative strategy, by establishing National CBRN Teams in the participating countries, which not only address bio-chem issues but also nuclear and radiological issues, therefore including the entirety of CBRN risks. This also allows to keep into account new and emerging technologies in the cross-intersection of bio and chem, such as nano.

An enhanced coordination at all CBRN levels can indeed improve preparedness against illicit non-state actors that could take advantage of a fragmented or disconnected expertise.

Multidisciplinary Consortium

As part of the CBRN CoE Initiative and managed by the Landau Network - Centro Volta,

Project 18: International Network of Universities and Institutes for Raising Awareness on Dual-use Concerns in Biotechnology

has developed a **Multidisciplinary Consortium** of 18 Universities and Institutes in 14 countries, with the purpose to promote awareness of biosafety, biosecurity and dual use among students at various stages of higher education.

Multidisciplinary Consortium

Through an interaction with the established National CBRN Teams and with relevant national stakeholders, the Multidisciplinary Consortium provides the project with a range of different expertise:

Science, Biotechnology, Biochemistry, Ecology,
Political Science, Law, Philosophy, Bioethics,
Public Health, Agriculture, Medicine, Bio∩Chem

thus facilitating the implementation of a number of activities, including gap analysis, students' seminars and regional meetings, following an holistic approach.

Bio-Chem International Network

A similar structure could be put in place to promote awareness and education on the growing bio-chem convergence (BioՈChem) based, inter alia, on the following specific elements:

- Formation of mixed groups of bio, chem, IT specialists (the quoted MRT) to teach and assess the development of emerging enabling technologies - such as synthetic biology and nanotechnologies - that pose threats to the CWC and BWC;

- Development of BioՈChem educational modular courses to introduce Master/PhD students and young scientists to this new security environment;

- Elaboration by the MRT of codes-of-conduct and guidelines for BioՈChem to be tested in serious gaming scenarios.

- Thank you for your attention -

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