Heightened risk of disease as a means of terrorism, say international security experts

Deliberately-caused disease as a means of terrorism is a major threat which the scientific community and policymakers are not currently prepared to mitigate, say experts from the Biological Security Research Centre (BSRC) at London Metropolitan University.

A particular concern, they say, is the currently weak state of the Biological and Toxin Weapons Convention (BTWC) which is the cornerstone of the international efforts to prevent biological warfare.

States Parties of the BTWC have sought ways to strengthen the Convention, such as a science and technology review of the risks and benefits of advances in the life sciences and a code of conduct for life scientists under the Convention. However, successful implementation of these measures will require a considerable improvement in the currently low level of awareness about biological security among life scientists around the world

Professor Lijun Shang, Director of the BSRC said, “Although the COVID-19 pandemic has heightened concerns about the impact of disease outbreaks on modern society, there is not enough awareness among scientists about the real extent of the dangers from natural, accidental and particularly deliberately-caused disease to humans, animals and plants.

"Scientists play a key role in any technology development, including the development of any potential “weapons” - even if they do not intend their research to be used for harmful purposes. Therefore, it’s imperative to educate scientists and raise awareness of the risk of ‘dual use’- the ways in which benignly-intended research can be repurposed to deliberately cause harm.

"There is a pressing need for innovative means of effectively and efficiently communicating these dangers and what might best be done to minimise them to scientists, policymakers and the general public. This is particularly relevant to life scientists who could see their benignly intended work misused by others for hostile purposes.”

Professor Malcolm Dando, Associate Member of the BSRC and Leverhulme Emeritus Fellow of Biology and International Security at the University of Bradford said, “The problem of dual use – the fact that benignly-intended knowledge and technologies could later be used by others for hostile purposes - can be seen in the history of biological weapons, as the focus of attention in the offensive programmes moved from pathogenic bacterial to pathogenic viruses, as we gained a better understanding of viruses in the last century.

“There has been much discussion over the last ten years about so-called gain-of-function research on deadly viruses. The work is intended to facilitate knowledge, understanding and eventually disease prevention and cure, but could clearly be put to other uses.

“The United States is on recent record of stating concerns about the compliance of China, Iran, North Korea and Russia with the BTWC and the Chemical Weapons Convention (CWC). We do know that a good number of major states did weaponise pathogens and toxins effectively during the last century, and the biotechnology revolution is almost certainly making it easier for more people to have the necessary capabilities.”

A variety of efforts have been made to find efficient and effective ways of improving biological security awareness and education amongst life scientists in different countries, but this is a massive as well as an important task so innovative methods have to be found to achieve better and faster results.

One of the ways they are working to educate the science and policy communities innovatively is through the dissemination of a series of cartoons outlining the risks of scientific research being misused for nefarious purposes. Taking advantage of scientists’ familiarity with illustrative material – graphs, histograms, pie charts, diagrams, flow charts, and even graphical abstracts of papers in key journals - these cartoons were produced (with a little humour) in order to provide a means by which life scientists themselves could become better engaged with helping to improving biological security.

Each cartoon consists of two pages and successively addresses Preventing Biological Weapons, Codes of Conduct, Education and Awareness, Evaluation and Integration. Although designed specifically for university lecturers and students in order to advance university-level biological security education, the cartoons should also be useful in other contexts such as in schools and for sharing amongst the interested general public. The cartoons are available in 13 languages, to expand their international impact.

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Professor Lijun Shang and Professor Malcolm Dando are both available for interview over Zoom or email.