

EDITORIAL

CBRN News

Waxing CBRNE, Waning humanity

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Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) concerns across the globe have waxed and waned over recent decades, as they have done stretching back into antiquity. The relentless march of technological innovation, discovery and emergence is tightly coupled to the potential use or mis-use of that knowledge for the benefit or harm to humankind. These past few years has seen a sudden proliferation of old and new CBRNE capabilities used for nefarious purpose: the willingness of actors in the Middle East to develop and use traditional chemical agents – chlorine, mustard, and others – to generate terror and inflict terrible injuries on non-combatants and combatants alike, the murder of Kim Jong Nam in Kuala Lumpur with the potent nerve agent VX in 2017, and the murders and attempted murders in Salisbury, England with the novel Novichok agents in 2018. These, however, are just the most prominent examples of a multitude of CBRNE agent use, development, accident and capability changes that have occurred over that same period. CBRNE is a small component of a wider and accelerating competition between rivals. Gone are the days of a bipolar or unipolar world order that seemed to be a more tractable strategic problem. The implications of these momentous geopolitical changes are significant and affect every part of our current and future lives.

In addition to CBRNE development, much effort is being expended to develop new forms of offensive weaponry to deliver or disseminate CBRNE agents. Autonomous and remotely piloted aircraft or undersea craft, which incorporate various types of Artificial Intelligence capabilities, are now able to deliver payloads – including CBRNE offensive payloads – to locations without human intervention and through complex and changing environments, even at hypersonic speeds. The ballistic missile technologies of the Cold War may be soon redundant, as far greater flexibility and reliability can be achieved with either airborne or seagoing autonomous delivery options.

Given that much attention is focussed on the importance of radiological, nuclear and chemical

weapons proliferation, attention on biological weapons proliferation and potential harm to humanity is often relegated to a less prominent position. However, recent technological innovations and discoveries in the biological arena are creating risks to humanity significantly greater than those currently posed by radiological, chemical and even nuclear weapons. The recent development and use of CRISPR-Cas9 to edit the germ line of two embryos subsequently born has significant near-term and long-term implications for humanity. Widespread commercialisation of gene editing technologies could easily be an existential risk to the diversity, integrity and sustainability of the human genome for future generations. Given the long timeframes involved in measuring or observing outcomes and limited abilities for prognosticating risk, our lack of understanding of the genomic risks of modification renders unregulated germ-line engineering at best unjustifiable and unethical, and at worst a major risk to future generations.

One asks if proponents of germ-line engineering, at this early stage of sophistication, would be comfortable for their own children to procreate with altered individuals? What are the rights of such children? Are the ethical, leadership and practical obligations of the scientific community to the wider corpus of humanity being met? These are just a few of many important questions that now confront us.

In sum, we do indeed live in interesting and rapidly evolving times. Given the risks emerging in a changing world, the role of the enlightened and ethical researcher has never been greater, and the need to highlight and explore the risks of CBRNE proliferation and impact so acute. I ask researchers interested in CBRNE impacts and implications to consider exploring the implications of the recent developments and proliferation, ask deep and probing research questions, and communicate evidence and analysis through forums such as this so that the benefits of CBRNE and related developments can be realised, while avoiding the harms.



About the author

Associate Professor David Heslop is the Director of Health Management at the School of Public Health and Community Medicine, at UNSW Sydney. He retains significant military responsibilities as Senior Medical Adviser for CBRNE to Special Operations Headquarters Australia and to Australian Defence Force (ADF) joint senior leadership. He is also a clinically active vocationally registered General Practitioner, a senior trainee in Occupational and Environmental Medicine with the Royal Australasian College of Physicians, and a fellowship candidate for the Academy of Wilderness Medicine. During a military career of over 12 years he has deployed into a variety of complex combat environments, and has advanced international training in Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) Medicine. In 2014, he was appointed as Senior Medical Officer for Special Operations Command, and was the Officer Commanding and Senior Medical Officer to the ADF CBRNE medical incident response element at Special Operations Engineer Regiment from 2012–2015. He has direct experience in planning for and management of major disasters, mass casualty and multiple casualty situations. He participates in the development and review of national and international clinical and operational general military and CBRNE policy and doctrine and in complex systems modelling.