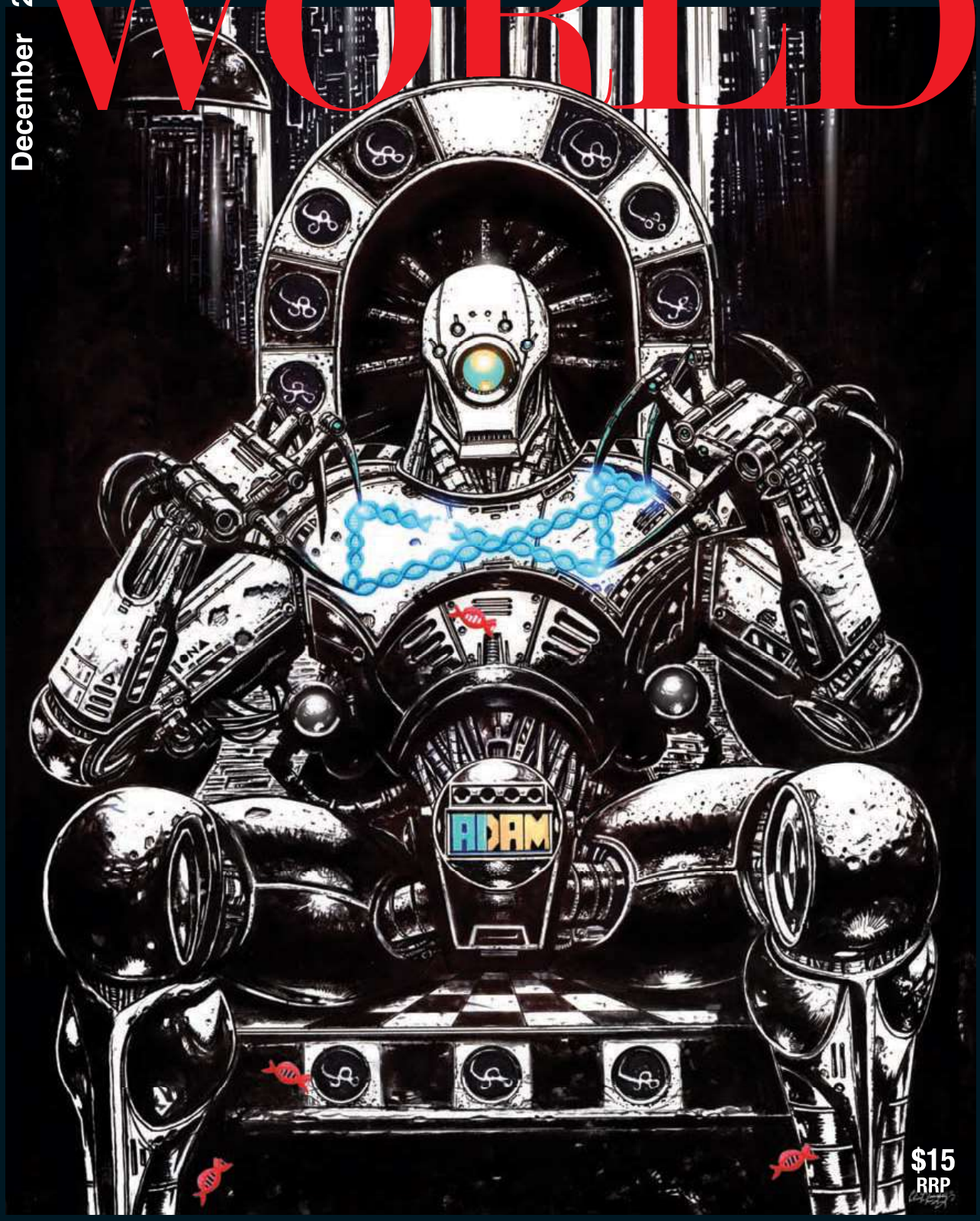
# CBRNe WORLD

December 2024

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**AI had not known sin…**
Zak Kallenborn on AI in CBRN

**I am fearless, and therefore powerful**
A-234 and the Dawn Sturgess inquiry

**We shall be monsters**
Detecting terrorist plots

Eight experts offer CBRN advice and suggest priorities for the incoming US president

# The Whether Report

In 2016 (*CBRNe World* 2016-6) we asked eight US CBRN experts from a variety of disciplines to imagine that they could sit down with incoming President Trump and in an 'elevator pitch' give him a quick blast of what they thought his priorities might be. Love or loathe him, Trump has shown himself to be an iconoclast, there are very few sacred cows that he won't kick off a cliff. So, eight years later, we thought it a good idea to gather a group for their thoughts on what they think his priorities should be, and what might be for the chop.

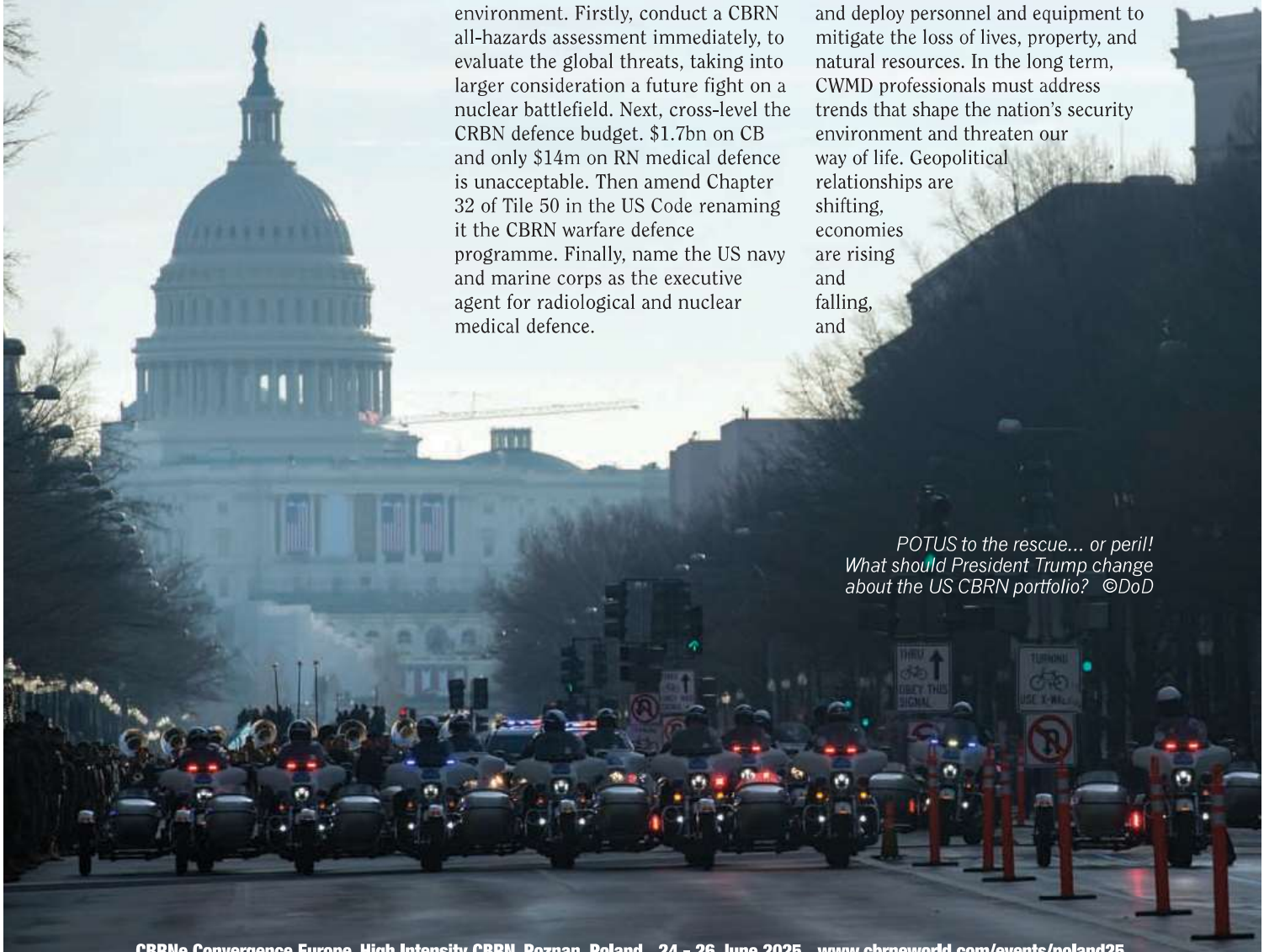
**David Lasseter, founder Horizons Global Solutions, ex-deputy assistant secretary of defence for policy at the Department of Defence (DoD).**

Nuclear weapon use in a future conflict is real. With three of the nine nuclear powers (plus Iran on the brink) collectively thumbing their noses at everyone else, America must be prepared for nuclear conflict on the battlefield. President Trump's incoming DoD political leadership must require the following so that its warfighters are better enabled to survive, fight and win in any CBRN contaminated environment. Firstly, conduct a CBRN all-hazards assessment immediately, to evaluate the global threats, taking into larger consideration a future fight on a nuclear battlefield. Next, cross-level the CRBN defence budget. $1.7bn on CB and only $14m on RN medical defence is unacceptable. Then amend Chapter 32 of Tile 50 in the US Code renaming it the CBRN warfare defence programme. Finally, name the US navy and marine corps as the executive agent for radiological and nuclear medical defence.

While nuclear weapon modernisation and deterrence policy also need immediate, deliberate and heightened attention, the new leadership cannot lose sight of a core responsibility to ensure our warfighters are adequately prepared for a nuclear battlefield.

**Brigadier General (ret.) William King, Senior Fellow and Principal – Director, Booz Allen**

CWMD work involves an evolving array of CBRNE threats. In the short term, defense and security leaders must calculate risk, assess courses of action, and deploy personnel and equipment to mitigate the loss of lives, property, and natural resources. In the long term, CWMD professionals must address trends that shape the nation's security environment and threaten our way of life. Geopolitical relationships are shifting, economies are rising and falling, and



*POTUS to the rescue... or peril! What should President Trump change about the US CBRN portfolio? ©DoD*

# The Whether Report

rapid technological advances are fueling militaries' modernizations at scale. At the same time, external factors like climate change and pandemics are changing the way people live, work, and go to war. We cannot continue to operate as we have for the last several decades hoping for a different outcome. Across scenarios, situational awareness is often limited, and coordinating multiple national and international organizations to reduce blind spots and strengthen responsiveness and resilience is a complicated endeavor but MUST be fully embraced and implemented.

Timely, effective CWMD decision making requires access to data earlier and at all levels. This involves joint and combined data sharing across the defense community and with allies and partners. Technology is part of the solution: software, computing and networking infrastructure, data architecture, AI, autonomous systems, and more. The other part — a critical part — of the solution involves people. We focus on whole-of-government and society with both the mission expertise and linkages across silos, and we bring together all kinds of expertise that are not reliant on a single person, a single technology solution, or a specific organization. All dimensions of the mission—policy, management, technology, operations, and people—are critical and crucial to success in CWMD. Skilled, dedicated professionals in all areas are urgently needed. This is a very unstable world, and it's getting more and more so every day.

**Al Mauroni, senior analyst, ex-director, USAF centre for unconventional weapons studies.**

My previous advice to President Trump,was develop a national strategy to counter WMD, to better articulate US policy objectives among the executive agencies and firmly identify terms of reference to clarify government definitions of WMD and mass casualties. I also recommended a national security adviser to coordinate these efforts. Today, these objectives remain as important as they were then.

Without a national strategy, CBRNE priorities will be developed arbitrarily and will continue to be underfunded. A new national strategy should clarify how military biodefence capabilities must be developed, distinct from public health priorities such as pandemic preparedness. By focussing DoD chemical and biological defence programme on military biodefence requirements and leveraging the Biomedical Advanced Research and Development Authority (BARDA) for disease prevention measures, defence funding would be better directed toward productive outputs.

Where should the money be spent? The departments of defence and homeland security (DHS) need to review and increase funding for chemical and biological defence capabilities that address deliberate CBRNE attacks. Double funding for the DoD chemical and biological defence programme would significantly advance CBRNE programmes currently being stretched out in research and development.

The funding required would be insignificant when compared to other major defence acquisition programmes. The DoD should cut $1bn from the Missile Defence Agency's budget to fund chemical and biological defence priorities, which could be accomplished without significantly reducing national missile defence capabilities. Similarly, the president should not cut the DHS countering WMD programmes, the National Biodefense Analysis and Countermeasures Center, and Chemical Security Analysis Center in lieu of increasing funds for the DHS border control mission. These DHS agencies should at least maintain their levels of funding to complement national preparedness against WMD threats.

**Ian Pleet, lead associate, Booz Allen Hamilton.**

The next four years present an opportunity to significantly enhance our CBRNE capabilities in response to urgent foreign and domestic threats. Modernising early detection systems like BioWatch can better mitigate biological risks and strengthen our public health infrastructure in anticipation of future pandemics. Improved training for emergency responders will be vital in ensuring their effectiveness when managing CBRNE incidents. Addressing the vulnerabilities in our critical infrastructure, especially ports and urban areas, demands expanding rapid response teams and implementing comprehensive training programmes tailored to CBRNE threats. Such proactive measures will significantly bolster our preparedness and secure our communities.

Internationally, we face pressing challenges from state and non-state actors seeking access to WMDs. This highlights the need for global cooperation. It's not a choice but a requirement. Strengthening partnerships with Nato allies and expanding cooperative threat reduction programmes are essential to secure and dismantle nuclear materials, marking crucial steps in safeguarding our future. Moreover, we must prioritise funding for advanced research and development of CBRNE countermeasures. We can avoid potential dangers by investing in vaccines against emerging biological threats, deploying uncrewed autonomous systems for chemical plume monitoring, and utilising AI-driven data analytics for intelligence sharing.

Ultimately, the strategic allocation of funds will be paramount to success. Our priorities must be clear: foster resilience, reduce response times to CBRNE events, enhance US leadership in global threat reduction, and secure our supply chains for medical countermeasures. By prioritising these efforts, we can effectively integrate innovative technologies, strengthen international treaties, and ensure that our first responders are well equipped and trained to maintain public safety against evolving CBRNE threats. Together, we can build a safer, more secure future.

**Rick Edinger, chairperson, NFPA Hazardous Materials/WMD Response Standards Committee and ex-deputy fire chief.**

Most people acknowledge that government's greatest responsibility is protecting its citizens. The US does this through its capable military and vast network of local, state and federal public

safety agencies run via highly trained and dedicated staffers and volunteers.

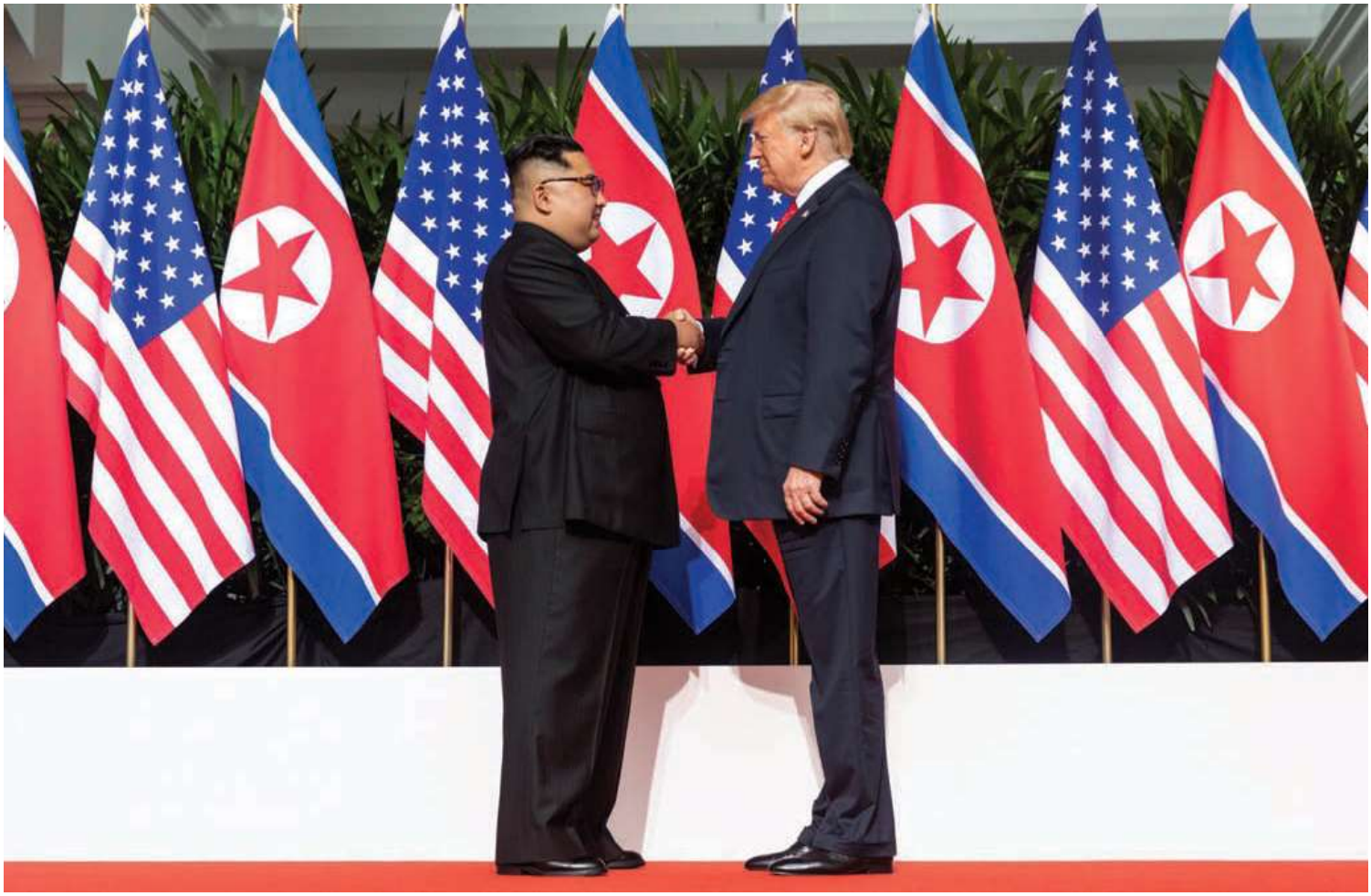
We live in dangerous times, with various state actors manufacturing CBRNE weapons. Those who respond to and mitigate CBRNE and hazmat incidents rely on government funded training programmes to develop their skills and hone their craft through programmes managed by various agencies at local, state and federal levels. Due to its specialised and complex nature, the training necessary for CBRNE and hazmat response, cannot typically be funded at local government level.

Your re-election to the office of president brings the prospect of significant change, including the Department of Government Efficiency (DOGE) effort to streamline government costs. As the DOGE project progresses, caution is needed when considering cost-cutting opportunities. While cost-cutting is likely at all levels of federal government, funding cuts to federally supported law enforcement, the fire service, and hazardous materials/CBRNE training could degrade these programmes to the detriment of our citizens, who depend on well-trained emergency responders for protection. A scalpel rather than a meat cleaver would be the best DOGE approach here.

**Professor Philipp Bleek, nonproliferation and terrorism studies programme, Middlebury Institute of International Studies, Monterey.**

There is something approaching consensus that nuclear weapons dangers are growing, even as perspectives on the threat, and the necessary responses, differ in meaningful ways. The next president has an opportunity, and profound responsibility, to guide the country through this increasingly challenging time in a way that ideally avoids, and at least mitigates, horrifying near-term outcomes, and puts the country, and world, onto a sustainable as possible longer-term trajectory.

Nuclear weapons are powerful, and that power can seem exciting. But the real world consequences of detonating nuclear weapons in war are almost unfathomably awful. I wish I believed that reality weighed heavily on the



*Relations with DPRK are as bad now as they were in Trumps first term. What does the future hold for the old 'axis of evil' under Trump ©White House*

# The Whether Report

incoming president's shoulders. Were this a movie, he might dream of melting faces and bodies poisoned by radiation, then awake sobered by his extraordinary responsibilities to both the country that elected him leader, and humankind more generally.

There are likely to be calls for renewed nuclear testing. Should others - most plausibly Russia - test first, the political imperatives to test also will be considerable. If the US is contemplating testing - especially before others do so - I hope the president thinks hard about whether that is actually in the country's interest, and has the confidence to consider a full range of opinions.

As for the chemical and biological domains, worry about chemical or biological agents, and or mis/disinformation about them, in asymmetric/grey zone conflict contexts. Worry about sabotage, a tactic that Russia has increasingly deployed - often via proxies - against Ukraine's European supporters. That includes potential chemical, biological and/or radiological sabotage, like attacking chemical facilities or nuclear waste transports. And related to sabotage, worry about poisonings with chemical, biological, or radiological agents, including as a tactic to sow broader discord.

Finally, while people are worthy of worry, do so at least as much about Mother Nature as the true bioterrorist, ie about future disease outbreaks, including potential pandemics.

**Milton Leitenberg, senior research associate with the Center for International and Security Studies at the University of Maryland (UMD)**

The Soviet Union has provided the greatest threat of biological weapon usage since the Biological Weapon Convention (BWC) was signed in April 1972 and then ratified and entered into force in March 1975. That nation built an enormous infrastructure to develop and product biological weapons and stockpiled them, in violation of the BWC. As best as is publicly known and despite promises made in the early 1990s, the Russian government, has never entirely dismantled its offensive biological weapons programme. Therefore, the situation has remained unchanged since 1985, a 40 year span during which alarms predicting imminent 'bioterrorism' by non-state groups grew constantly louder.

In 2012, President Putin decreed that the Russian Ministry of Defence should develop "…weapons based on new physical principles," with 'genetic' one of the five disciplines specified. The Russian Ministry of Defence subsequently initiated an expansive programme of building new research facilities at its major biological weapon research and development labs. The greatest threat of biological weapon


*"If I was going to test, it would be the biggest, most amazing test, seriously, nobody tests their nuclear missiles like me..." ©DoD*

# The Whether Report

usage now comes from the government of Russia, as it did under the Soviet Union.

**Professor Malcolm Dando and Dr Michael Crowley, School of Social Sciences, Bradford University**

According to extensive media reports, Russian military forces have repeatedly used riot control agents against the Ukrainian military during the current conflict. On 18 November 2024 the Organisation for the Prohibition of Chemical Weapons' (OPCW) technical secretariat published a report confirming the presence of the riot control agent (RCA), CS gas, in samples of a grenade and soil from a trench, after a drone attack, without attributing responsibility. What is clear is that Article I.5 of the Chemical Weapons Convention (CWC) - banning RCAs in warfare - has been broken. Of course, Ukraine is no isolated case. In recent years a variety of toxic chemicals have been used as weapons - on and off the battlefield - in Malaysia, Russia, Syria and the UK. It is reasonable to ask where the erosion of the CWC might end in the coming years of increased tension and conflict, which will also see a period of rapid scientific and technological change?

One area of benign research that has radically advanced recently is neuroscience - the study of mechanisms within the brain that underly our behaviours and what happens when the mechanisms go wrong. Such research can also provide technologies that could be misused, for example in development of novel central nervous system (CNS) acting chemical agents.

Since the second world war states have sought to use advances in our understanding of the brain to produce CNS-acting weapons. Current advances, for instance in our knowledge of psychedelic drugs and auto-immune diseases affecting the CNS, suggest extensive possibilities for future misuse. Significant attention to preventing further CWC erosion in this area is urgently needed.

**Markus K Binder, unconventional weapons and technology group programme lead at UMD**

As the new Trump administration prepares to take up its multifarious responsibilities it faces many CBRN challenges.

Over the past four years the US government has developed fresh, and relatively urgent, concerns regarding the pursuit of offensive BW capabilities by Russia, China and others. Russia will present a more general challenge for the new administration over its ongoing use of CW against Ukraine, and its far-reaching disinformation campaigns. Furthermore, the incremental progression of the Iranian nuclear weapons programme is rapidly approaching a crisis point that is not amenable to the international solutions attempted in the mid-2010s. The tightening Russo-Iranian alliance backstops Iran diplomatically at the UN and International Atomic Energy Agency (IAEA), while increasing potential for transformative technical exchanges to enhance Iran's delivery capabilities.

Having the right leadership to address these highly technical challenges while building international support to press for transparency and compliance with the BWC will be critical.

The Assad regime's sudden collapse has potentially transformed the long-festering Syrian CW issue, and related biological, and nuclear weapons questions. Efforts to bomb-away the Assad WMD legacy, as attempted by the Israeli government, while immediately satisfying, are unlikely to be capable of dealing with the problems of trained personnel and institutional knowledge. Building a sufficiently cooperative relationship with a new Syrian government, which will inevitably include factions the US and other governments regard as terrorists, will be politically uncomfortable, but could gain OPCW and IAEA inspectors the access required to verify the elimination of Syria's WMD programmes. Failing to seize this opportunity risks repeating the disaster that was post-Saddam Iraq.

**Dr Christina Baxter, CEO Emergency Response Tips, ex-CBRNE Program Manager at the DoD**

First, understand the real CBRNE Problem Space. The offensive use of chemicals, both traditional warfare agents and toxic industrial chemicals, has escalated rapidly over the last decade. In most cases, these events have been targeted resulting in localized exposures versus mass destruction. In parallel, we are in the midst of a biotechnology revolution that brings both exceptional promise as well as an increasing threat of misuse as much of the innovation is occurring in Asia where controls are not in place.

Develop a resilient, non-duplicative CBRNE capability to protect the United States. Review the requirements and the capabilities at the local level in partnership with federal entities. Review of all "military support to civilian authorities" programs in coordination with local authorities to ensure that mission sets are realistic, necessary, and supported. Future federal grants for capability development should focus on regional capability building and tie back to specific operational gaps.

Minimize duplication of efforts within the US RDT&E community by developing a central program within the US Department of Defense, with visibility by all partner agencies, to catalogue and coordinate (not manage) all research, development, test, and evaluation (RDT&E) activities with a CBRNE nexus across the US Government.

Focus RDT&E spending on technology adoption and adaptation wherever possible. Increase joint Government-Industry work with small businesses who are agile in their development processes but are hampered by the Government flow-down bureaucracy.

All CBRNE procurement programs should have an end-to-end supply chain review to minimize the effects of disruptions. Where critical components cannot be procured from within the USA or from close allies in non-contested regions, consider building a stockpile of required components. Enhance the roles of unpaid special experts (Defense Science Board, Army Science Board, InterAgency Board, etc.) to gain unbiased insight into the Government spending within the CBRNE enterprise.