

Rigid Structures, Evolving Threat

Preventing the Proliferation and Use of Chemical Weapons

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THE ISSUE

Chemical weapons are back. Today, old actors are employing new forms of chemical weapons, and new chemical weapons (CW) states are employing them in new ways. Meanwhile crude forms of chemical weapons have fallen within the reach of non-state actors. The willingness of some state and non-state actors to use or acquire chemical weapons appears to have increased, and the potential for state or non-state actors to field CW capabilities is growing rapidly. Unless the international nonproliferation regime can adapt to address the threat of chemical weapons, these concerning trends will almost certainly intensify in the foreseeable future as proliferation networks and emerging technologies with CW implications mature.

This study examines the evolving and changing nature of chemical weapons and how the system of restraint—comprised of norms, taboos, deterrence, and denial of benefit—must adapt to ensure that the proliferation and use of chemical weapons do not reemerge as endemic features of the global security landscape. The study provides a framework for structuring the problem, identifies gaps and challenges, and puts forward options for improving the global effort to prevent the proliferation and use of these weapons.

THE EVOLVING CW LANDSCAPE

By 2010, the establishment and entry into force of the Chemical Weapons Convention (CWC), the declaration and elimination of most known CW programs, and a sustained period of non-use of chemical weapons had driven concern about chemical weapons to a few esoteric corners.¹ As the number of states possessing chemical weapons steadily declined, the CWC appeared to be in the final technical stage of implementation, and some countries began questioning the sustainability of the Organization for the Prohibition of Chemical Weapons (OPCW), the implementing body of the treaty. It seemed that chemical weapons had been successfully managed and controlled through a robust international system of treaties, laws, and cooperative arrangements that led to a near universal CW disarmament. For many it was time to “declare victory”

on chemical weapons and focus on other more pressing threats—nuclear, biological, and even cyber.

Unfortunately, this optimistic view has proven unwarranted. Syrian use of chemical weapons persisted even as the Assad regime joined the CWC and the international community embarked on a large-scale effort to remove and destroy the country’s declared CW stockpiles and facilities. Since 2015, the numbers and types of CW attacks have increased, with at least 336 documented cases in Syria alone.² While the overwhelming preponderance of uses have occurred throughout the Syrian conflict, CW attacks have occurred in three other countries—Iraq, Malaysia, and the United Kingdom—for a variety of purposes and involving a variety of agents.

The prospect of large-scale, state-on-state chemical warfare has continued to fade, but states have pursued and employed chemical weapons for a variety of tactics and strategies that

include counterinsurgency, assassination, coercion, terror, collective punishment, and signaling. Even more alarming, such use has not been confined to states operating outside of the CWC. Rather, states parties to the CWC, specifically Syria and Russia, have used and enabled use of chemical weapons despite their status as treaty adherents. Small-scale, high-impact use of chemical weapons has been used to suppress internal conflicts, intimidate or eliminate political adversaries, and engage in grey zone conflict in ways that challenge the ability of countries to respond effectively.

Additionally, non-state actors have developed and used “military agents” (specifically sulfur mustard, though it is unlikely as pure as traditional military-grade sulfur mustard agent) and chlorine with a range of improvised delivery systems. ISIL demonstrated that access to territorial safe havens, facilities, and personnel could be leveraged into more advanced chemical agent and delivery capabilities, which the group used in targeted regional military or insurgent operations rather than in classic terrorist attacks.

CW users have also employed significant improvisation—agents, munitions, delivery systems, and concept of operations—even when more traditional options are available. Such improvisation—from chlorine barrel bombs to perfume bottles filled with thousands of lethal doses of advanced military nerve agent—is a hallmark of the evolving utility and application of chemical weapons to contemporary conflicts. Meanwhile, international organizations such as the United Nations and the OPCW have shown little ability to enforce obligations or hold perpetrators accountable. Moreover, the little progress made has required a shift to more contentious forms of diplomacy and resulted in the collapse of consensus within the OPCW Executive Council. Finally, chemical agents that fall outside of the traditional schedule of military agents—such as chlorine and other TICs, fentanyl and other incapacitants

and opioids, and Novichoks—are demonstrating growing potential for use. Meanwhile, advances in chemical engineering and rapidly expanding global supply networks are making weaponized chemicals increasingly accessible.

All of these trends suggest that chemical weapons remain a persistent and evolving challenge to the global nonproliferation system, with implications and lessons that stretch far beyond the relatively obscure niche these weapons generally occupy.

THE CW SYSTEM OF RESTRAINT

This evolving landscape suggests the traditional concepts, tools, and institutions that comprise the anti-CW regime must evolve and adapt as well to prevent the proliferation and use of these weapons. A 2018 CSIS report, *Restoring Restraint: Enforcing Accountability for Users of Chemical Weapons*, describes how the global system “shapes nations” behavior and encourages restraint through several different, often mutually reinforcing mechanisms: taboos, lack of benefit, norms, and deterrence.³ Each of these mechanisms simultaneously plays a role in decisionmaking and helps inform how the international community must work to prevent the proliferation and use of chemical weapons.

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The system of restraint provides a framework for structuring the problem, identifying gaps and challenges, and hopefully developing options to improve our ability to prevent the proliferation and use of chemical weapons. It also seeks to enhance accountability and enforcement when prevention fails by better understanding how and where to apply tools of enforcement and compliance.

NORMS

Norms emanate from a system of recognized and institutionalized laws and rules designed to shape behavior and encourage restraint through a mix of legal, political, and sometimes

Taboos

The moral, societal, or political costs associated with CW proliferation and use are so high that restraint is the natural outcome.

Norms

The institutionalized laws and rules that prohibit or control CW proliferation and use are sufficient to encourage and reward restraint.

Lack of Benefit

The tactical, operational, and strategic benefits of chemical weapons are so low that restraint is the natural outcome.

Deterrence

The expected punitive response to CW use or proliferation imposes costs that far exceed any potential benefits such that restraint is encouraged.

military carrots and sticks.⁴ Most actors or states conform to these rules or laws because they value credibility or legitimacy in the system, value the restraining effects of these rules on the behavior of others, or fear the costs of their enforcement.

Chemical weapons face one of the most robust normative structures in the international system: a web of national and international laws and regimes that spans more than 100 years and includes a comprehensive ban in a nearly-universal treaty. Additionally, the norms against CW use are woven extensively throughout international humanitarian and war crimes law.

Though Syria and Russia's continued violation of the treaty from within the institution has not met significant consequence, it is highly corrosive of these norms and their restraining value. In addition, actors that operate outside of the treaty, both state and non-state, such as North Korea and ISIL, face little normative restraint. Moreover, while the treaty's central prohibitions on the possession and use of chemical weapons encompasses *any* chemical agent used as a deadly weapon, the growing number of chemical agents and precursors that lie outside of the existing control and verification schedules (e.g., chlorine, novachuks, and PBAs) further complicates the effectiveness of the system. Finally, repeated small-scale use of chemical weapons effectively raises costs for responders and lowers costs for users, further degrading the normative structure over time.

LACK OF BENEFIT

Potential users and proliferators of chemical weapons can also be restrained through a perception that these actions fundamentally lack benefit or utility in terms of meeting desired objectives. If an actor fundamentally believes chemical weapons have no utility or functionality, then the motivation for their use is low, and restraint is a natural outcome. Furthermore, enhanced CW defenses or protection offer additional ways of reinforcing perceived lack of benefit, leading to what some call deterrence by denial.

However, it is impossible to deny the benefits of CW use if their utility to the adversary is fundamentally misunderstood. Projected bias and unchallenged assumptions about the utility of chemical weapons have led to a serious underestimation of their utility for counterinsurgency, special operations, intimidation, coercive grey zone or hybrid tactics, and large-scale civilian terror operations. This faulty analysis has been fostered by a tendency to evaluate the efficacy of chemical use solely in terms of direct lethality or tactical impact rather than as a psychological weapon of terror or intimidation. Additionally, in the case of Syria, the role chemical weapons play in

combined chemical and conventional military operations has been underappreciated. Discounting the "logic" of CW use based on misperceptions of benefit to the user can also aid proponents of false flag conspiracy theories and other disinformation tactics.

DETERRENCE

Deterrence encourages restraint when an actor can convince an adversary that punitive response to an action, in this case the use or proliferation of chemical weapons, will produce costs that exceed any benefits the actor might hope to gain.⁵ Effective deterrence relies on the existence of a mutually understood, credible threat. In many cases, enforcing deterrence involves the imposition of punishment by force, but it can also be punishment through economic, political, or other means. Above all, attribution is critical to deterrence: a threat cannot be enforced if the perpetrator cannot be identified.

Historically, deterrence has not been a strong feature in the CW system of restraint. In the case of Syria, the threats that existed, such as the now infamous Obama red line, lacked appreciation of the utility of the weapons and credibility with the user. Subsequent instances of cost imposition (air strikes) failed to impose costs in excess of benefit and were applied selectively and inconsistently, without clear understanding of thresholds.

The Syria case exposes another serious challenge we face in deterring CW use: limited or small-scale use. In these scenarios, benefit accumulates over time with each successive CW use. Even when a particular use event has triggered a punitive response, this response is shaped entirely by the "last" use rather than the accumulated benefit of all prior instances of use. Our traditional deterrence toolkit assumes an adversary behaves like a mass murderer—dramatic, visible, and attributable. Yet CW use seems to be following a different playbook: a serial killer approach, which uses selective, targeted use to achieve its coercive or punitive goals. Small-scale or limited use also complicates the attribution process by making it more difficult to investigate and assess.

Finally, deterrence is even more problematic when applied to the proliferation of chemical weapons. Among other problems, verifying and attributing such transfers is extremely difficult and may not rise to a level of consequence required for a credible deterrence threat. Along these lines, no such threats have been issued to North Korea with respect to its assistance to the Syrian CW program. When it comes to proliferation prevention, thresholds may be too difficult to define, and perpetrators may be too difficult to identify for punitive deterrence to be credible.

TABOOS

Taboos exist when an action is perceived to carry such high moral, societal, or political cost that self-restraint is the natural outcome.⁶ Taboos tend to build over time as leaders internalize the potential risks.⁷ Taboos are most effective when perceptions are more universally held and globally understood. In addition, taboos naturally become fragile when violations do not result in the anticipated costs and the user's legitimacy with essential stakeholders does not suffer.

In general, taboos have had limited restraining value in terms of CW use, and where they have existed, they have been temporary and regional in effect. Some believe the physical and psychological damage inflicted by weaponized chemicals during World War I built a sense of taboo around these weapons in Europe, but such a taboo clearly did not extend to the extensive use of gas chambers throughout the Holocaust or the repeated use of chemical weapons in the Middle East in the late-1980s and in recent years. In part, the CW taboo is undermined by many actors, both state and non-state, that lack understanding or have bad information on CW use, their effects, and the impacts on the system or that see such threats as unimportant. Further, the growing impunity surrounding chemical weapons—the ability to use them without severe internal or external penalty—is fostered by the lack of political, moral, or societal costs associated with their use.

EMERGING CHALLENGES TO THE CW SYSTEM OF RESTRAINT

Today's shifting security environment has revealed emerging challenges to and increased pressure points on the ways in which norms, taboos, denial of benefit, and deterrence might restrain future CW proliferation and use.

SMALL-SCALE AND LIMITED USE

Traditionally, the presence of costly, industrial-scale military CW programs—such as those possessed by the United States and Russia prior to joining the CWC and used extensively by Iraq during the Iran-Iraq War and against the Kurds of Iraq—animated the international system and drove international efforts to ban and eliminate these weapons. Today, with the glaring exception of North Korea, industrial-scale, battlefield-oriented CW programs have largely vanished and with them much of the prospect of large-scale, state-on-state chemical warfare. Unfortunately, CW use is making a comeback, albeit generally in small-scale and limited-use scenarios, including assassinations, special operations, and insurgency/counterinsurgency. Such scenarios greatly complicate the system of restraint by challenging legal verification approaches given the small quantities needed; complicating

deterrence with low use thresholds; increasing the perception of benefit or utility of such weapons to users; and eroding societal or moral costs associated with these weapons.

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EVOLVING CW ACQUISITION PATHWAYS

The majority of modern state and non-state CW programs do not require the production-scale facilities or large bulk quantities of agents or precursors of the past. Research and development-level (R&D) infrastructure that can be hidden in dual-use facilities and combined with on-demand surge capacity to make small-scale CW capabilities sufficient for almost all scenarios. In addition, advances in R&D and production techniques enhance speed, precision, and ease of concealment. Advances in chemical science and engineering are also rapidly expanding relevant chemicals and compounds outside of the CW control regime. Over 100 million new chemical substances have been created since the establishment of the CWC Schedules of Chemicals, growing by about 15,000 substances per day.⁸ Under the CWC, precursor trade is monitored and controlled, but 3 of top 10 chemical-producing countries in the world—Russia, China, and Brazil—are outside of the control regime.⁹ Furthermore, back-integration—the process of synthesizing precursor chemicals from simpler, unregulated, or domestically available chemicals—has become easier to accomplish. Finally, diffuse procurement networks facilitate the ability to identify and deceive suppliers, especially with the growth of e-commerce options.

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NEW AND EMERGING AGENTS

In addition to new technology, there are new and emerging agents, as well as old agents being used in new ways. Many such chemical agents—chlorine and other TICs, fentanyl

and other deadly pharmaceutically-based agents (PBAs), and Novichoks—are not fully included on the CWC schedules and can be transferred and used in ways that challenge or elude traditional verification and controls. For example, chlorine is too ubiquitous to control, and a significant number of actual and potential CW agents, like fentanyl, lie outside of the CWC schedules. Following the Skripal attack, some Novichoks formulations were added to Schedule 1, but it is not clear if and how precursors to these agents can be regulated. In addition, PBAs, such as fentanyl, are a growing concern because they are easily produced, acquired, and weaponized and can be highly lethal. Fentanyl is 50 times more potent than heroin and, in drug-trafficking operations, is frequently mixed with heroin and cocaine or made into counterfeit pills.¹⁰ Fentanyl seizures have made headlines in recent years, with millions of lethal doses being confiscated in single drug busts. In August 2019, a three-state drug bust seized 30 kilograms of fentanyl—enough to kill roughly 14 million people.¹¹

DISINFORMATION

Today, international efforts to prevent CW proliferation and use take place in an information warzone. The growing accessibility, maturation, and diffusion of online platforms and digital tools have democratized information but also contributed to easy manipulation and misuse, undermining credible and authoritative sources of information. While the CW system of restraint benefits greatly from a robust verification system, such verification-based arms control generally requires an ability to establish agreed facts and trust authoritative sources of information, including sensitive national information often from intelligence sources. Verification without an ability to validate and trust factual information is virtually impossible.

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Syria, Russia, and state and non-state supporters have been particularly successful in their systematic attack of authoritative information and institutions. The attacks are meant to: deny the occurrence of events or actions perpetrated; misidentify the victims and targets; discredit or falsify the motives and identities of witnesses and responders; and elevate “authority figures,” who seek to promulgate counter-narratives through disinformation. While awareness of the disinformation challenge is growing, there is little

consensus on the best ways to counter it; detailed, tit-for-tat responses often simply give more ammunition, while infrequent responses leave a vacuum to be filled.

OPEN-SOURCE INVESTIGATION AND VERIFICATION

Open-source intelligence (OSINT) analysts working independently or within NGOs, international governmental organizations, or other entities are rapidly expanding and increasingly sophisticated. OSINT analysts use techniques that were previously confined to intelligence or law enforcement communities working within classified information networks. OSINT products have substantially increased response time, public awareness, transparency, and accountability. However, with this rapid growth, efforts to protect and validate sources of analysis have struggled to keep up.

The arms control arena has reaped many benefits of OSINT analysis in monitoring and verification procedures, as the OPCW, IAEA, national governments, NGOs, and private citizens have increasingly benefitted from this independent, publicly available information over the last two decades. Credible analysis outside of national governmental controls can provide greater access, transparency, and independence, especially in terms of matters of compliance. However, this environment also enables the production and spread of counter-truth phenomena—sometimes called alternative facts—as hostile actors may seek to manipulate and attack the data, tools, and techniques used by OSINT analysts in hopes of degrading the reliability of OSINT work or manipulating outcomes.

ENFORCEMENT AND ACCOUNTABILITY

Without an ability to hold violators accountable, neither threats nor rules can sustain a dissuasive power. National authorities and law enforcement provide vital accountability mechanisms, but recent investigations and prosecutions have shown mixed results. In Japan, Aum Shinrikyo members responsible for a CW terrorist attack in 1995 were ultimately convicted and given the death penalty, but the decades-long process reduced deterrent value. In Malaysia, the most significant perpetrators of the assassination of North Korean leader Kim Jong-un’s half-brother, Kim Jong-nam, with VX nerve agent evaded capture. The two captured perpetrators avoided prosecution or received a token sentence, a strong indication of political and diplomatic interference. In the United Kingdom, exceptional police work and emergency response minimized injury and led to rapid attribution and identification of perpetrators in the Novichok nerve agent Skripal attacks, but arrests and prosecution seem unlikely after perpetrators fled the country and their identities were revealed.



Members of Malaysia's Hazmat team conduct a decontamination operation at the departures terminal of the Kuala Lumpur International Airport 2 (KLIA 2) in Sepang on February 26, 2017.

Source: Manan Vatsyayana/AFP/Getty Images

Internationally, the establishment of the Investigative and Identification Team (IIT) by CWC states parties demonstrated that the norm against CW use remains of value and is worthy of political investment, even in the face of costly obstructive efforts by Russia and its allies. Efforts to ensure that information is shared with the International, Impartial and Independent Mechanism, a UIN initiative to investigate and prosecute crimes in Syria since 2011, will help to ensure that evidence is protected, and that investigative information can support future legal recourse for victims.¹²

However, Russia's persistent willingness to use its veto power to prevent accountability for CW use suggests that little recourse can be found there. In all likelihood, accountability for Syria's CW use and other atrocities will only occur under the auspices of a broader national or international tribunal process in the future. While most aspects of treaty enforcement have focused on use, trends in acquisition and diversification of threat agents away from the traditional schedule agents will increasingly challenge the regime's ability to enforce proliferation norms as well.

LACK OF KNOWLEDGE OR INTEREST IN CHEMICAL WEAPONS ACROSS MANY "QUIET MIDDLE" STATES

Following the establishment and entry into force of the CWC, the limited pre-existing knowledge and expertise about chemical weapons in much of the Global South declined precipitously. Only the wealthier states of NATO

and some states in the Middle East and Asia maintained CW defense programs in anticipation of potential conflicts with CWC outliers. Even these national investments have declined steadily over time, resulting in a widespread lack of technical expertise in these countries. Arms control and nonproliferation experts have similarly shifted focus away from chemical weapons, both at the national level and across much of the nongovernmental space. Given the priority of nuclear nonproliferation, most countries place their limited arms control expertise in Geneva or Vienna, leaving representation at the OPCW at The Hague in the hands of their bilateral embassies. The lack of knowledge and expertise on chemical weapons across allies, partners, and organizations contributes to the presence of a "quiet middle" of countries that stay largely silent and on the sidelines regarding

CW issues in international fora. This lack of expertise also heightens the vulnerability of these countries to the growing challenge of disinformation, information warfare, and conspiracy theories, which seek to sow doubt and mistrust in institutions and leaders.

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NORTH KOREA: THE OUTLIER STATE

North Korea is one of four remaining countries yet to accede to the CWC and is believed to have the largest active CW stockpile in the world. It is also generally believed to be the only state that continues to value chemical weapons as a tool for battlefield war-fighting in state-on-state conflict. It possesses the ability to threaten Seoul and its large vulnerable civilian population with chemical weapons from long-range artillery along the Kaesong Heights. North Korea possesses a wide range of blistering, blood, nerve, and choking agents

and delivery systems, including artillery munitions, aerial vehicles, and ballistic missiles.¹³ The condition of the overall stockpile is uncertain, but the DPRK's continued proliferation of CW expertise and equipment and its CW-based targeted assassination of Kim Jong-nam suggest significant capability, not only to produce chemical weapons on-demand in small scale but also to maintain its CW stockpile. Crisis, war, or diplomatic breakthrough could all produce urgent requirements to inspect, monitor, secure, remove, or destroy all or parts of the DPRK CW program. Planning and consultation with international organizations, key partners, and possibly China on the technical, operational, political, and legal challenges associated with chemical weapons is essential ahead of any crisis or opportunity. Treating chemical weapons as the lesser-included case under the rubric of denuclearization could lead to greater risk in crisis and missed opportunities in peacetime.

RECOMMENDATIONS

ADAPTING THE CW REGIME TO NEW REALITIES

Enhance and amend the regime to address small-scale, limited quantity/limited use, newer, and improvised agents. The treaty's verification system must be adapted to account for new realities and include new additions to the schedules. Adding some Novichok agents to Schedule 1 chemicals (the most dangerous and highly controlled chemicals) was a positive first step, but more additions will probably be needed. A step-by-step process to weigh the costs and benefits of these is essential.

Reframe the mission of the CWC. The mission of the CWC should address how to manage chemical threats to security instead of focusing exclusively on preventing the reemergence of chemical weapons.

Improve and support OPCW laboratories to improve technical capabilities and resources for diagnostic purposes. It is essential to raise standards and capabilities of OPCW-designated laboratories in terms of the chain of custody, investigatory standards, and new techniques and procedures, as well as improved security and protection against cyberattacks, tampering, and disinformation. This will require sustained investment by states parties and a commitment to complete the new Centre for Chemistry and Technology as scheduled.

Reform the Australia Group (AG) to cover additional agents and reduced-quantity challenges for existing agents. The AG includes a more select group of participants, which may facilitate the usefulness of the forum but also means the dominant suppliers exist outside of the group. The AG must

expand its efforts to not only consider approaches to more dual-use agents but also support innovations that might provide greater accountability for rapidly expanding online suppliers that operate in or through their countries.

Consider establishing an Additional Protocol to the CWC. The CWC lacks meaningful "carrots" for many states to engage in higher levels of transparency, control, and compliance since there are few benefits in terms of safely and securely accessing the peaceful uses of chemical science, technology, and commerce. An Additional Protocol could seek improved control and verification of the newer agents, improvised agents, and smaller quantities which fall outside of current declaration and verification requirements. States that commit to higher standards could in turn receive greater safe and secure access to commercial opportunities afforded by chemical science and technology. Through such a protocol, participating states could agree to additional, voluntary challenge inspections and other measures while also gaining more favorable access to technical assistance, preferential commerce, and information sharing.

IMPROVING ACCOUNTABILITY AND ENFORCEMENT

Look beyond traditional arms control to build the legal basis for accountability for CW use. It is essential that arms control and humanitarian/war crimes communities work collaboratively to maximize national and international prosecutorial pathways.

Build and support national capacities for enforcing CW norms. National authorities will always be the accountability pathway of first resort. It is vital to make better use of national tools and authorities, especially in coordination and collaboration with law enforcement entities across governments. This must include efforts to raise national technical and forensic capacities for diagnostics and chain of custody. Targeted capacity-building efforts through the Global Partnership, European Union, and U.S.-based cooperative threat reduction programs could pay big dividends.

Protect access and security of evidence repositories, including reports, forensic evidence (including samples), and witness and victim testimonials. These repositories will be attacked and sabotaged, but there will also be efforts to limit the availability of legitimate legal proceedings outside of the UN Security Council. Be mindful of the unintended consequences of burying evidence.

Leverage open-source analysis when feasible and accurate. Open-source analysis and evidence repositories will play an increasingly vital role in accountability. Work remains to better understand and support the relationship between

these efforts and national law enforcement so that open-source disclosures and public confirmations of individual perpetrators do not impede effective arrest and prosecution. Furthermore, in order to leverage civilian capabilities, there must be guidelines and best practices developed for open-source verification. Open-source analysis is absolutely legitimate for legal enquiry and in many cases may be admissible as evidence, so finding ways to support and strengthen rather than censor the information is essential.

ADAPTING DETERRENCE APPROACHES

Identify tailored deterrence measures that can be applied proportionately and repeatedly. The United States, along with its partners and allies, must develop a menu of possible punitive, pre-coordinated responses, such as detailed sanctions or penalties. If done ahead, tailored responses to specific behaviors can be developed to shape future behaviors rather than to simply be punitive.

Coordinate national responses and synchronize actions. These actions should complement and support or enhance international institutional responses using various forms of accountability, including legal, sanctions/economic, political, and military actions.

Investigate and expose every credible case. Selectively engaging with cases encourages risk-taking by users; certainty is more dissuasive than severity in most cases. Consequences in all cases are important, but not all

consequences must be military in nature. The United Kingdom's tailored nonresponse to the Novichok attack suggests nonmilitary tailored deterrence has a role to play.

REDUCING BENEFIT AND UTILITY TO USERS

Improve civilian, military, and international capacity and cooperation by working collaboratively across the military and civilian sectors. New agents—Novichoks and fentanyl especially—will force the international community to up its game in terms of detecting, protecting, analyzing, diagnosing, treating, and attributing CW threats. This requires collaboration between local law enforcement and first responders with international partners to improve detection, protection, and treatment in the event of an attack.

Enhance capacities for response and attribution across the alliance, in partner countries, and in international institutions. Domestic responders, especially those in countries that may not have highly advanced or sophisticated chemical defense expertise, must be better equipped to safely recognize and treat these types of chemical agents. Some of these capabilities are far too expensive for smaller countries, but on-demand diagnostics, technical cooperation agreements, and surge capacities can improve preparedness and response.

Build and enhance capabilities to investigate and attribute CW events. Enhance national *and* international technical and operational investigative and response capacities. Novichoks are more demanding from a technical perspective, so it is essential to have adequate defense and response capabilities. The United Kingdom's ability to quickly identify the agents, treat the victims, and persuasively develop conclusions about the attribution of the attack proved highly effective and may have a dissuasive impact on future Novichok use since it is not clear that the agents can be used in a nonattributable fashion. That said, few countries have the technical capacity to detect and respond to these threats in a similar fashion.

Ensure that domestic responders can be better equipped to safely recognize and treat these types of chemical agents. This is especially important for those in countries that



British Military personnel wearing protective coveralls work to remove a vehicle connected to the March 4 nerve agent attack in Salisbury, from a residential street in Gillingham, southeast England on March 14, 2018.
Source: Adrian Dennis/AFP/Getty Images

may not have highly advanced or sophisticated chemical defense expertise. The Skripal attack and Kim Jong-nam's assassination demonstrate that even when these weapons are used for targeted violence, they can have much broader impacts for responders, medical providers, law enforcement, and others. But the Aum Shinryko attack showed similar things many years earlier. We should not have to keep relearning lessons on the importance of domestic response and domestic law enforcement. Moreover, all these cases—Malaysia, Skripal, Aum Shinryko, and even Amerithrax (the anthrax attack in United States)—demonstrate that the economic and societal costs can far exceed the impact in terms of fatalities. Responses need to create perceptions that benefits will be denied, not enhanced.

PREPARING FOR ARMS CONTROL IN AN ERA OF GREAT COMPETITION

Contest in the face of noncompliance. CW use is a manifestation of hybrid warfare, and while it is important to find areas for cooperation among states, contesting in the face of noncompliance is essential. Contestation in these arenas is simply part of the broader competitive environment. Using the rules and procedures in the CWC to press compliance reinforces norm resilience and reduces the risk of conflict or crisis at higher levels of escalation.

Do not value the institutions (or treaties) beyond their purpose. Threats by Russia and others to walk away from the CWC in response to growing compliance concerns has some country's questioning whether reducing conflict in the Executive Council and prioritizing consensus is necessary to preserve the treaty. Such approaches risk reducing the treaty to a "paper tiger" while doing little to eliminate discord and tensions overall. The CWC offers the benefits of multilateralism: all stakeholders have a role and a vote. As a result, countries like Russia and the United States pay much higher costs for walking away, which means losing the ability to shape outcomes from within. This only works, however, if countries understand the stakes and exercise their rights through the treaty's procedures and mechanisms.

PREPARING AND CONTESTING THE INFORMATION BATTLEGROUND

Engage a sustained, multilateral counter-disinformation campaign. Call out disinformation where it is observed and counter it with facts to support the rules-based order by repeatedly issuing consistent, verifiable information. Do not wait to react. Anticipate attacks and develop responses to disinformation challenges that are aggressive, collective, asymmetric, and rapid and that can be readily deployed when needed.

Fill the research and analysis gap. Rigorous, data-driven research and analysis is desperately needed to detect and recognize disinformation, understand why its effective, and appreciate how it can best be stopped and countered. Case studies to capture insights and lessons-learned studies are also needed. In the wake of the Skripal poisoning and subsequent Russian disinformation campaign, the United Kingdom's Foreign & Commonwealth Office put out videos that attempted to explain and counter the false narratives. These efforts are a start, but far more data and analysis are needed. Disinformation will be a persistent feature of multilateral diplomacy and arms control for the foreseeable future. It is time to take it much more seriously.

Focus on noncompliance in messaging. There is quite a bit of disagreement on appropriate strategies, but the focus must be kept on noncompliance. Detailed responses sometimes give adversaries more to pick apart, but not responding enough leaves a vacuum that is filled by other narratives. Techniques of repeatedly issuing consistent information seem useful.

PREPARING FOR CW CONTINGENCIES

Plan and prepare for the North Korean CW challenge. The technical, operational, legal, and political hurdles associated with the North Korean CW program require dedicated planning and preparation. In conflict, North Korea could determine that chemical weapons are more usable than its nuclear weapons and consider their employment early to weaken resolve in South Korea.

Engage critical partners and allies on the DPRK CW problem and planning for chemical disarmament. A North Korean decision to abandon its chemical weapons is not impossible, either as part of a comprehensive denuclearization agreement or perhaps independent of one. Regardless, such an effort would be technically complex, dangerous, and expensive. It is essential to anticipate these scenarios, identify critical capability gaps, build partnerships, and address challenges in advance to be able to respond to future crises or opportunities involving these weapons.

BROADENING AND ENGAGING THE INTERNATIONAL COMMUNITY

Provide greater education opportunities and training within and outside of The Hague. This includes offering opportunities in national capitals, security discussions, partnerships, and alliances (e.g., NATO) and through consortium outreach to address a fundamental lack of knowledge and expertise across many countries.

Awaken the "quiet middle." There is a huge number of nonvoting and abstaining countries in the OPCW that

should be tapped into by improving their understanding of the stakes of CW procurement and use and providing more education and awareness on the facts to move states off the sidelines. It is vital to raise states' comfort levels with contested outcomes by reiterating that in the face of evolving yet persistent CW threats, using the tools of the treaty in support of compliance is a sign of resilience, not failure.

Protect and defend the anti-CW norms and the institutions that support them. Every alliance member bears a responsibility to stand up for the legitimacy, objectivity, and credibility of the anti-CW regime, including the OPCW. Attribution and the pursuit of compliance are central to the treaty's viability over time—arms control appeasement will ultimately fail. ■

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