

A CHEMICAL OR BIOLOGICAL ATTACK—WE ARE NOT READY

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“The risk of interstate conflict, including among great powers, is higher than at any time since the end of the Cold War.”

— Dan Coates, Director of National Intelligence,
Worldwide Threat Assessment, February 13, 2018¹

The world’s experience with the COVID-19 pandemic has shown us that the United States is not prepared for a significant biological or chemical attack. Unfortunately, it has also shown this to our adversaries. This has shifted the deterrence calculation, accelerating the growth of the already increasing likelihood of such an attack. We can only conclude that such a scenario is not an *if* but a *when*. We must act now, both to prepare ourselves and to shift the deterrence calculation back in our favor.

The Threat

The United States possesses overwhelming military power. Once assembled, a U.S.-led coalition force can prevail in any contingency against a single adversary. Few adversaries believe they can win a conventional fight against the United States and our allies. As a result, our adversaries will continue to develop asymmetric strategies designed to keep conflicts below the threshold of war, while also threatening unconventional escalations in order to deter a U.S. military response and erode our political will.

Our adversaries have employed these asymmetric approaches, using all elements of power, in order to meet their national or organizational aspirations. Near-peer competitors are modernizing and building up their military capabilities to challenge the conventional dominance of the United States and our allies. Regional adversaries such as Iran and North

¹ Dan Coates, Director of National Intelligence Statement for the Record, Worldwide Threat Assessment of the U.S. Intelligence Community, Senate Armed Services Committee, February 13, 2018.
<https://www.dni.gov/files/documents/Newsroom/Testimonies/2018-ATA---Unclassified-SSCI.pdf>

Korea are pursuing nuclear, biological, and chemical weapons of mass destruction (WMD). At the same time, terrorist groups continue their efforts to develop and employ WMD capabilities to escalate the psychological effects of their attacks.

The list of asymmetric approaches available to our adversaries and terrorists is long. They include:

- Improvised use of industrial chemicals and traditional chemical agents,²
- Unconventional assassination attempts with chemical agents,³
- Design and proliferation of traditional and synthetic biological weapons,⁴
- Inspiring “frozen conflicts” to spread instability,
- Ballistic missile proliferation,
- Suicide and vehicle-borne bombs, and
- Influence and information operations.

Most of these asymmetric approaches are at the forefront of current national and global security discussions. However, the employment of chemical and biological (CB) weapons has not received the same attention, despite the fact that an attack would have devastating psychological consequences and would limit our military’s ability to effectively respond. CB weapons inspire fear due to their potentially gruesome effects and the challenges involved accurately detecting their employment. The tactical-level use of a CB weapon is particularly dangerous for two reasons: (1) tactical-level attacks almost always create strategic effects, and (2) tactical-level attacks can effectively neutralize the overwhelming capability and capacity of a multinational force. Finally, the employment of CB weapons by an adversary can escalate a conflict beyond conventional means without crossing the nuclear threshold.

Recently, potential adversaries have not been shy about displaying their chemical and biological capabilities. CB Protection Troops of the Russian Armed Forces took part in the Vostok-2018 drills in the Russian Far East.⁵ The units conducted an exercise to decontaminate toxic agents on armored vehicles. The Russian Army recently reported the fielding of improved CB reconnaissance vehicles and individual protection suits and deployed them in Syria. These overt displays of capability, coupled with a renewed interest in CB weapons research as reported in the *Washington Post*,⁶ show the intent to seek and use biological and chemical agents as an extension of their conventional capability.

² For example, chlorine and sarin (GB) nerve agents were used in attacks on unarmed Syrian civilians.

<https://www.nbcnews.com/news/mideast/u-s-has-blood-samples-show-nerve-agent-syria-gas-n865431>

³ VX (nerve agent) was used to kill a North Korean national in Malaysia in February 2017, and Novichok (next-generation agent) was used in an attempt to poison a former Russian spy in Salisbury, UK, in March 2018.

https://www.washingtonpost.com/world/national-security/poisoning-of-russian-ex-spy-puts-spotlight-on-moscows-secret-military-labs/2018/03/18/9968efb6-2962-11e8-b79d-f3d931db7f68_story.html

⁴ Ebola and anthrax are examples of traditional biological agents. Gene editing using the CRISPR-CAS method can produce novel biological agents. James Clapper, Director of National Intelligence Statement for the Record, Worldwide Threat Assessment of the U.S. Intelligence Community, Senate Armed Services Committee, February 9, 2016.

⁵ <https://www.almasdarnews.com/article/russias-nbc-protection-forces-participate-in-vostok-2018-drills-video/>

⁶ https://www.washingtonpost.com/world/national-security/poisoning-of-russian-ex-spy-puts-spotlight-on-moscows-secret-military-labs/2018/03/18/9968efb6-2962-11e8-b79d-f3d931db7f68_story.html

For an example of a potential biological attack, consider the scenario of a near-peer adversary wanting to delay or stop the deployment of U.S. military forces during increasing tensions. Imagine drones or missile attacks, similar to those used to attack a Saudi Arabian oil complex on September 14, 2019,⁷ but employed against multiple U.S. or allied military installations with warheads that release a genetically modified biological agent to spread illness among Service personnel and families. The onset of hemorrhagic fever symptoms could be enough to stop an Infantry Division or an Air Wing from deploying in support of a conflict. As we have seen with COVID-19, diseases caused by biological agents would likely overstress our medical system and response capabilities; the strategic effect could be even more significant if this were an engineered bioweapon, as our adversary may have countermeasures (e.g., a vaccine) that give them a military advantage. Reports on how the pandemic has affected military operations also provide these adversaries insight into our readiness and vulnerabilities.

Perhaps a chemical agent would be used when a near-peer adversary wants to deny access to overseas aerial ports and seaports of debarkation so they can limit our ability to surge combat power forward. A large-scale chemical missile strike would contaminate runways and docks, deny

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access to key facilities, and delay any attempt to quickly build combat power. This type of attack would limit or deny our ability to project power and thus create de facto spheres of influence, and in fact all CB threats pose risks to DoD's ability to conduct strategic maneuver.

Do the United States and our allies have sufficient resilience to recover rapidly from these types of attacks and take the offensive? Do we have the medical surge capacity necessary to detect, diagnose, treat, and mitigate threats to our forces? Would an allied nation be deterred from further conflict if such weapons were used? Would we be able to gain access if aerial and sea ports of debarkation are affected? Are our adversaries looking at the effects of COVID-19 and considering whether an engineered biological agent would have as devastating an impact? The answers to these questions depend on our ability to deter an attack, and if deterrence fails, to fight in a contested environment and overcome the effects of a large-scale chemical or biological attack to gain access. Any adversaries already considering CB attacks may now find the option more appealing, and the scenarios are numerous and plausible.

Our Readiness

The question we must ask is: *What if our adversaries decide to use advanced and sophisticated chemical and/or biological weapons against the United States and our allies?* We need to think about this in terms of three key aspects: (1) our ability to mitigate impacts of

⁷ <https://www.nytimes.com/2019/09/17/world/middleeast/iran-attacks-saudi-oil.html>

the attack itself; (2) our ability to recognize and attribute the attack; and (3) our response. All three of these aspects will also have implications on our ability to deter use of CB weapons.

We know from observing COVID-19 response that we are underprepared to mitigate an unconventional attack; in fact, the often-close quarters of our deployed soldiers and sailors will likely amplify its effects, and leadership may find itself torn between accomplishing objectives and saving the lives of their servicemembers. Our military medical system, public health, and emerging CBRN capabilities need to be integrated more fully to protect against, diagnose, treat, and mitigate illnesses, with a well-understood, rehearsed plan to employ all our health response capability to counter the disease and protect/extend medical capacity. ***We recommend a systematic review of lessons learned from the military's response to the pandemic with an eye toward implications for CB defense. Leveraging these insights will improve our ability to both protect our warfighters and preserve their ability to fight in altered conditions.***

We may also need to consider who needs training and equipment – and the answer is probably more than just the CB specialists. Just as the Iraq war changed our perspective on who was on the “front lines,” a paradigm shift may be needed on who needs what kinds of protection from chemical and biological agents. Coordinated with this systematic review, we need to understand and mitigate losses to effectiveness associated with using the proper protective gear and prophylactics so we can compensate and prevail even under altered circumstances, and integrate our biodefense and public health efforts for unity of effort.

The second aspect of our readiness is our ability to detect and correctly attribute the attack to the perpetrators. Biological attacks may very well mimic naturally occurring outbreaks, complicating this task, and difficulties with attribution could allow adversaries to operate below the threshold for response. A well-designed indications-and-warning system must focus intelligence efforts to help us understand adversary capabilities and tactics, techniques, and procedures, requiring close collaboration between the intelligence, science, and medical communities. This may require additional investments in biosurveillance tools and laboratories, as well as a good understanding of the hallmarks of a biological attack vs. naturally occurring outbreak. The worse the attack, the more pressure there will be to respond or retaliate sooner – perhaps before we have a clear understanding of the perpetrator(s). Investment in this capability is paramount, and attribution-related studies and improvements are also warranted for chemical, radiological, and nuclear threats.

Finally, we need to think through appropriate responses to attacks with unconventional weapons. What will the international response be? What psychological effect will a CB attack have on our Nation's and our allies' political will? Assuming the pandemic threat has passed (but left psychological scars), how willing will we – and our allies – be to subject soldiers to unconventional and harmful agents? The tactical and strategic impacts could be wide ranging and debilitating. A framework for decision-making that captures impacts, uncertainties, and adversary characteristics, and proposes various retaliation strategies commensurate with the

threat would expedite response and also may elicit creative and effective responses that would be difficult to develop anew in the direct aftermath of an attack. Our decades of preparation for chemical attack leave us in better position to deter, recover, and respond than to a biological attack; but we still need to improve in both areas due to the vulnerability that we face—even more evident now with the consequences of COVID-19.

The Deterrence Calculation

Deterring a CB attack depends on our ability to make adversaries believe any gains they hope to achieve will be outweighed by an overwhelming and devastating response. This calculation changes as they perceive increases or decreases in the value of CB weapon employment and/or the potential consequences of the attack.

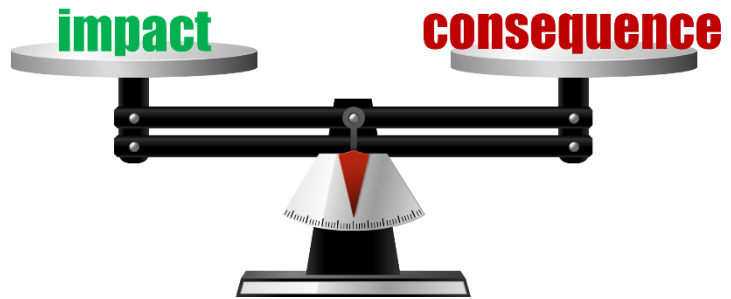


Figure 1. Adversaries will weigh the impact of their attack against the potential consequence. Movement on either aspect shifts the deterrence calculation.

It is worth examining, then, what the consequences have been for recent CB attacks. Did the United States and our allied partners respond effectively to the use of a Novichok agent in the assassination attempts in Salisbury, England? Despite the general acceptance that the Russian government was behind the attack, very little has been done to address Russian usage or enforce terms of the Chemical Weapons Convention treaty. Chemical weapons with escalating levels of lethality are also being employed more frequently to achieve strategic objectives elsewhere, and the risk of CB attacks increases as each progressive use goes unanswered. Absent large-scale retaliation or international scorn, each use shifts the risk paradigm for a sophisticated, large-scale CB attack from low probability of attack to a situation where deterrence is failing, increasing our adversaries’ likelihood of using such weapons.

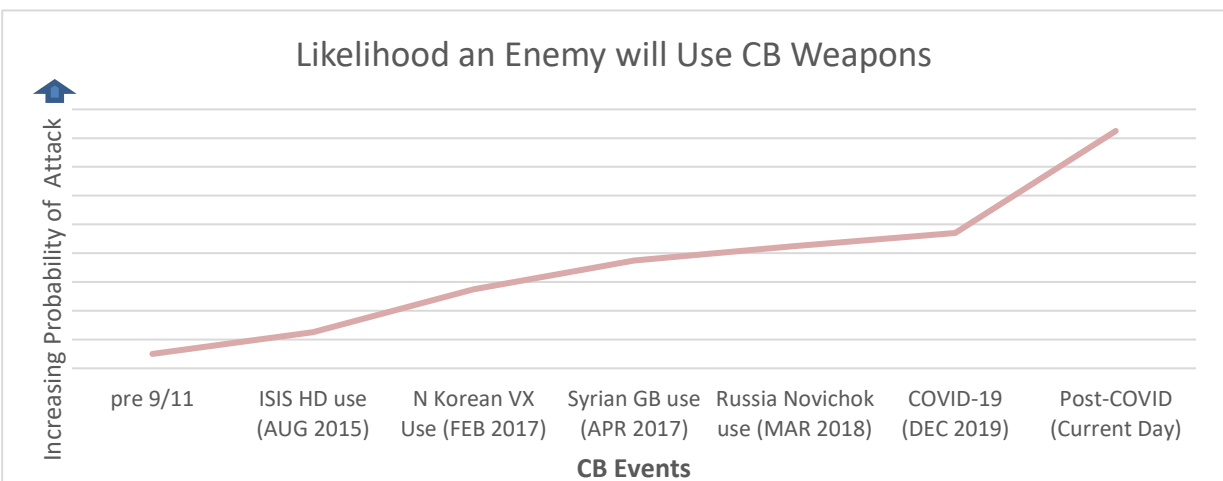


Figure 2. The likelihood of CB attacks has increased as each use has gone unchecked.

On the other side of the deterrence calculation, adversaries will weigh the impact of a CB attack. If our adversaries believe we are able to absorb and mitigate attacks, and are resilient enough to execute a follow-on military response, they will have little incentive to use these weapons. However, the trend on this side of the equation is as troubling as the one on the consequences side. Our adversaries have gained some level of intelligence on U.S. response capabilities by observing the impacts of COVID-19, and our response showed the United States may struggle to contain biological attacks. Significantly improving our preparedness to contain infections and contamination will demonstrate our resilience as part of a deliberate deterrence strategy.

We recommend a thorough review and update of our CB deterrence strategy in view of what we have seen throughout the COVID-19 pandemic. A rational deterrence strategy rests upon strategic policies and guidance that clearly communicate U.S. intent to respond with force; however, the message we have sent so far has undermined any attempt to make adversaries believe our response would be swift or devastating. They also have growing evidence that a CB attack may have a greater impact than previously assumed. When evaluating risk, CB threats have been historically characterized as low-probability events with high consequences – this characterization needs to be reassessed, since the probability has undoubtedly increased as the deterrence calculation has shifted.

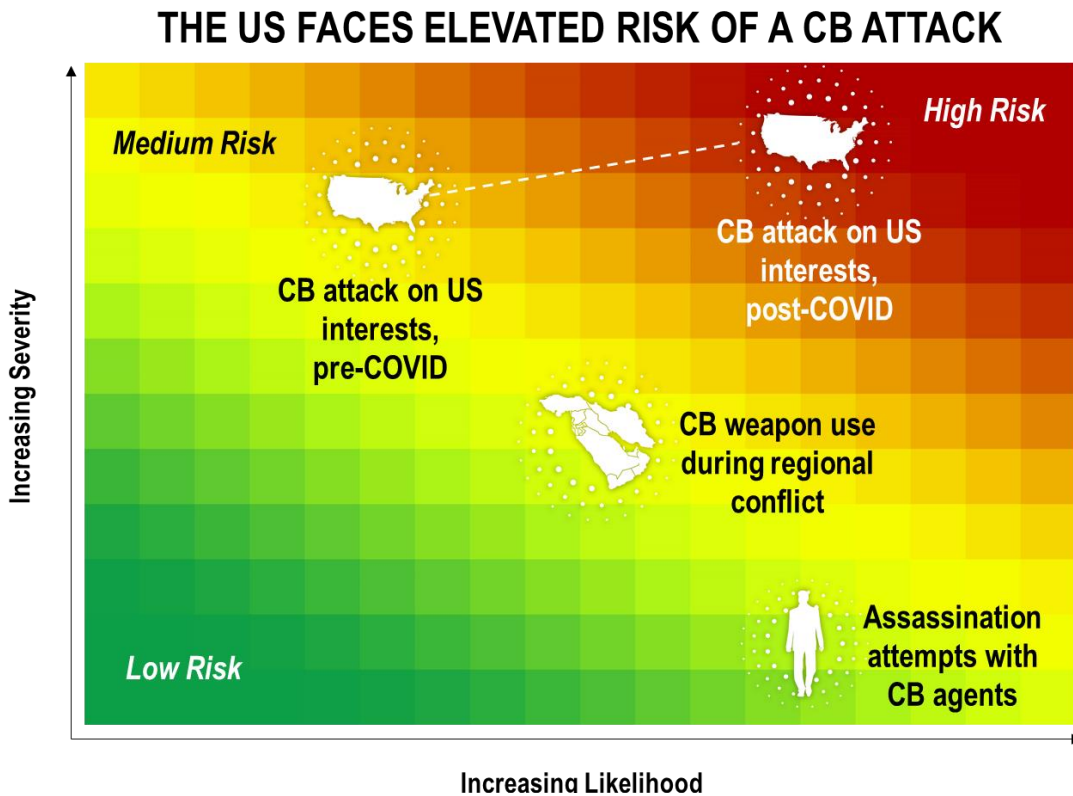


Figure 3. While absolute risk is difficult to measure, the lessons and impacts from COVID-19 suggest that a CB attack on US interests is more likely and will be more severe than previously thought, increasing overall risk.

Dual Benefit: Preparation as Deterrent

The Chairman of the Joint Chiefs of Staff, General Mark Milley, has given us his recipe for success in a future war: “We intend to seize and maintain the initiative, to gain positions of advantage, and breach (enemy) defenses in depth through combined arms maneuver in all domains and operate at speeds far faster than the enemy can react ... to disrupt, penetrate, disintegrate, and exploit the enemy’s anti-access systems and bring their fielded forces to operational paralysis.”⁸

The 2018 U.S. Intelligence Community Threat Assessment noted that competition among countries is expected to increase, and the risk of conflict is higher than at any time since the Cold War. The assessment also ominously predicted that “the threat of state and non-state use of weapons of mass destruction will continue to grow.” Instability introduced by the COVID-19 pandemic may also serve to heighten tensions, exacerbating this dynamic.

Therefore, it is logical to conclude that in order to accommodate General Milley’s view of war, we must be able to seize the initiative, breach defenses, operate, and disrupt *in a CB environment*. Potential adversaries will likely resort to CB weapons in order to deny the United States and its allies the ability to operate freely. Achieving this vision will require a focused effort by the Department of Defense (DoD) – we cannot wait until after an attack to fully prepare. And while preparation by itself is wholly necessary given the threat, it also acts to shift the deterrent calculation back in our favor. Investments in our CB enterprise serve to *reduce* the potential impact of a CB attack, while also *increasing* our ability to detect, attribute, and deliver consequences.

Investing in Full-Spectrum Preparedness

DoD investment and modernization strategies continually call for improving ballistic missile defense and preventing cyber-attacks. Budgets have increased greatly for those areas in the last two years, but budgets for CB defense have not. Despite warnings of the growing threat of CB attack, in real dollars the budgets for CB defense are smaller than they were in 2010, not even keeping up with inflation rates.⁹ It appears there is a strategic disconnect between alarming intelligence assessments and the allocation of appropriate resources. We are concerned that fighting and winning in a contaminated CB environment remains an underinvested warfighting capability. Steady investment in our CB enterprise and exploration of emerging technologies will ensure we get there – but this requires a mature governance process to shepherd the capability holistically. Currently, CB defense and public health enterprises have few structural points of connection, making adaptive planning difficult. There is no standing body which coordinates medical and non-medical biodefense initiatives, and multiple distinct DoD-funded acquisition programs operate, rather than a coordinated

⁸ <https://breakingdefense.com/2018/10/a-perfect-harmony-of-intense-violence-army-chief-milley-on-future-war/>

⁹ <https://comptroller.defense.gov/Budget-Materials/FY2020> (FY2010 budget can also be viewed here) and https://budget.dtic.mil/previous_reports.html

governance and acquisition strategy. Without a single DoD advocate for biodefense, Services are challenged to balance medical and non-medical biodefense priorities.

Full-spectrum preparedness for operating in a contaminated CB environment requires a coordinated strategy fully integrated with our concept for deterrence. But there is no overarching DoD biodefense policy, or unity of effort below the Secretary of Defense level. There is separate Office of the Secretary of Defense oversight and policy guidance for the Chemical Biological Defense Program, Defense Health Program, and Service Surgeons General.

In addition to a cohesive governance process, planning, training, equipment, education, war gaming, and operational exercises are needed to validate that we have sufficient capabilities and skills; COVID-19 has made clear the challenges associated with providing protective equipment and training *ex post facto*. Our Combat Training Centers and national-level war games must include determined adversaries employing CB weapons; our simulations must effectively model the effects of contamination; and we must test our abilities to detect agents and attribute them to the correct actors. Apart from actual conflict, this is our only means to assess our capability to fight in a contaminated environment and recover from CB weapon attacks, and to understand and mitigate losses to effectiveness associated with using the proper protective gear.

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Additionally, we must account for emerging and future delivery methods. As drones, missiles, and artificial intelligence proliferate, so will the options available to employ CB weapons. The delivery methods and scenarios are endless, and we are currently not prepared. The Services (Army, Navy, Air Force, Marine Corps) are not sufficiently organized, trained, or equipped to fight and win in a future CB environment. Effective training for our forces and demanding national exercises for our senior leaders could bridge the gap. Winning in a future contaminated environment requires a commitment from our leaders to invest in a responsive CB capability; it must start at the top, and it must employ a thoughtful, deliberate governance process.

A Governance Structure to Manage the CB Preparedness and Deterrence Mission Sets

During the Persian Gulf War (Operation Desert Shield/Desert Storm), the Military Services each set requirements for operating in a contaminated environment differently. As a result, the Services deployed with a varying array of equipment and different levels of individual protection. Inadequate preparation in equipping and training the force and lack of interoperability led Congress to establish the Chemical and Biological Defense Program (CBDP) in the National Defense Authorization Act (NDAA) of 1994. This law consolidated the CB defense spending accounts from the different Military Services into a single funding

program, directed and coordinated by a single office within DoD, with oversight by the Defense Acquisition Board (DAB) process. The law directed the Secretary of Defense to designate the Secretary of the Army to serve as the Executive Agent to coordinate and integrate research, development, test, evaluation, and acquisition requirements of the military departments for the DoD chemical and biological warfare defense programs. Currently, the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs oversees the CBDP in coordination with the Secretary of the Army.

In the face of future CB threats to our military, it is critical that we assess whether the CBDP is meeting Service needs and the changing modernization priorities driven by the threat, in order to achieve the force capabilities required by our military. Such an assessment might be requested by a Defense Acquisition Board, but there is no DAB or DAB-like process to conduct oversight of the CBDP. Additionally, there is no DAB-like process to ensure that integration and synchronization of the CBDP planning, programming, budgeting, and execution process is coordinated with the Services' strategies and modernization priorities within DoD, as outlined in NDAA 1994.

The CBDP currently develops and executes the program without direct participation of senior Service leaders. CB requirements and the budget submission are prepared by the Joint Staff, which is unlike the budget preparation of any other DoD program. As a result, Services have not placed CBDP modernization programs under the same intense scrutiny as other Service-led programs. The Army serves as the Executive Agent for the CBDP and has the authority to validate requirements and conduct a detailed review of the budget submission. Such a review is necessary and should be conducted every year. The CBDP recently participated in a Defense-Wide Review session led by the Secretary of Defense, Mark Esper. This is an admirable first step and reviews such as these – with direct representation from the Services to ensure priorities are being met – should be continued. Direct participation from the Services will lead to a more complete understanding and allow for the identification of the most critical modernization priorities.

We recommend the creation of a DoD CB Defense Warfighter Governance Board to manage these intertwined preparedness and deterrence mission sets holistically, and to enable greater Service participation in the CBDP. This Board would serve as a senior leadership panel that could give greater visibility to CB defense and establish the highest priority and adequate funding for Service CB defense requirements. The Board can be tasked with assessing our preparedness level, developing a deterrence strategy, and shepherding DoD investments that improve our preparedness and deterrence postures. In addition, the Board would ensure the individual Services' highest priorities for CB defense and countering weapons of mass destruction (WMD) are recognized and funded appropriately.

A properly aligned and funded CBDP could result in improvements in the U.S. military's ability to fight and win in a CB environment. We advocate that the Army, in their role as the Executive Agent, take on this challenge and lead the Board. Key leaders from the Services and the National Guard would serve as voting members, along with Special Operations Command in their role as the Countering WMD Integrator for the joint force. A panel manned at the three- and four-star level, along with members of the acquisition

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community to serve as advisors, would provide a venue to conduct the detailed review necessary to ensure our forces are adequately equipped and ready when a CB event occurs, and that our capabilities to mitigate impacts and deliver consequences are able to provide a deterrent effect commensurate with the threat.

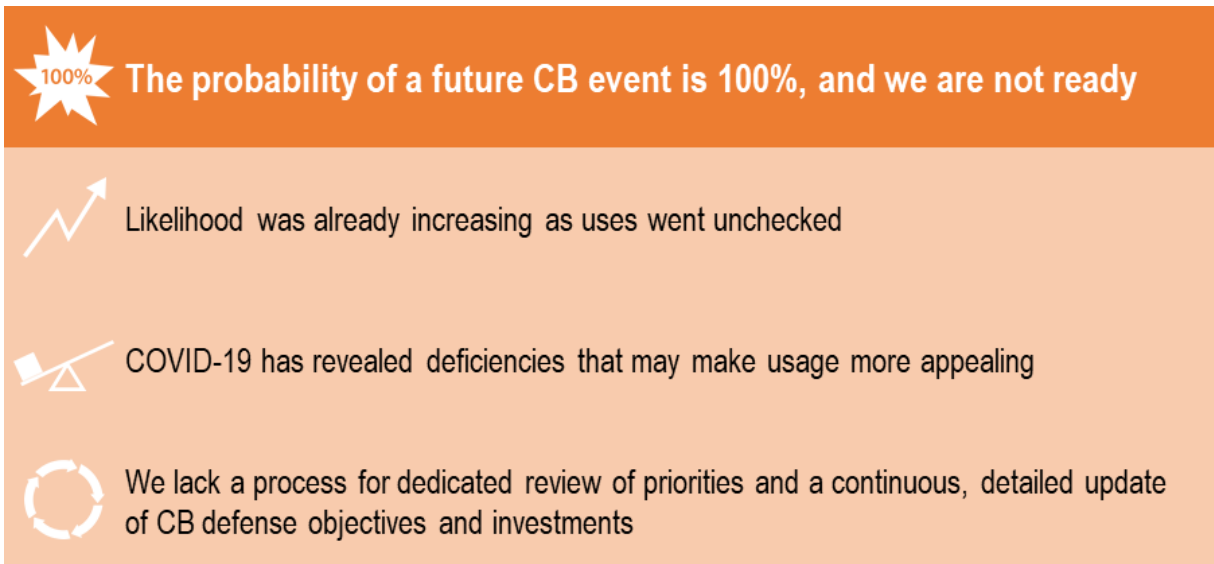
To make the necessary change, we recommend an update of DoD Directive 5160.05E, "Roles and Responsibilities Associated with the Chemical and Biological Defense (CBD) Program (CBDP)," July 18, 2019, or an appropriate DoD Instruction. A DoD CB Defense Warfighter Governance Board would assist the Secretary of the Army in accomplishing the DoD Executive Agent responsibilities for the DoD CBDP, which include a DAB-like process for the coordination, integration, and synchronization of the CBDP budget and an assessment of the capability to meet strategy objectives. This effort will establish a governance framework that conducts a detailed review of investments and ensures compliance with the National Military Strategy, the Department of Defense Strategy for Countering WMD, and the CB Deterrence Strategy mentioned previously, resulting in a CB defense program synchronized and integrated with the modernization and investment strategies of the supported Services.

With a dedicated review of priorities and a continuous, detailed update of CB defense objectives and investments, we can most effectively increase our ability to fight in a CB environment. It is time to advance the levels of individual and collective protection provided to our warfighters. It is time to improve medical countermeasure development and medical surge capabilities to protect our men and women from current and future CB threats. It is time to advance detection of advanced CB threats tied to a truly integrated early warning system to ensure our warfighters avoid the most contaminated areas and receive treatment promptly. It is time to advance decontamination strategies and equipment to allow for a rapid return to normal operations, or the ability to sustain measures as long as needed during an ongoing biological event. All of these advancements will demonstrate the resilience necessary to deter a future enemy from using a CB weapon, and would be a powerful counter-argument to any current perception that U.S. response to biological incidents might be subpar.




THE BOTTOM LINE—WE ARE NOT READY

In recent years, we have witnessed a willingness by both state and non-state actors to employ WMD, specifically chemical and biological weapons, to achieve political and military objectives. Meanwhile, the COVID-19 pandemic has demonstrated that there is no substitute for preparedness when operating in an environment with chemical and biological threats. The bottom line is that the threat of a CB attack is growing – it is no longer a question of *if*, but rather, *when*. This is underscored by the appearance of a major pandemic; an event that was long discussed and planned for but often considered “theoretical” or “low-probability” – until it happened.

What We Know



100% The probability of a future CB event is 100%, and we are not ready

-  Likelihood was already increasing as uses went unchecked
-  COVID-19 has revealed deficiencies that may make usage more appealing
-  We lack a process for dedicated review of priorities and a continuous, detailed update of CB defense objectives and investments

The question is whether we can learn lessons from our encounter with a viral agent, commit to investing in our preparedness to conduct military operations in the face of a CB threat, and reap the benefits to our deterrence posture that come with that readiness. With proper focus and funding, the U.S. military can be organized, trained, and equipped to meet the chemical and biological threat of the future.

WE CAN BE READY—HERE’S HOW

What We Need



A Governance Structure to Manage the CB Preparedness and Deterrence Mission Sets



Create a DoD CB Defense Warfighter Governance Board



Assess whether the CBDP is meeting Service needs for a CB threat



Update DoD Directive 5160.05E or issue new DoD Instruction



A Comprehensive Strategy to Deter and, if Necessary, Respond to Use of CB Weapons



Review and update CB deterrence strategy



Develop framework for response to CB attacks



Leverage preparedness investments to strengthen deterrence strategy



Investment in Full-Spectrum Preparedness



Review and leverage insights from the military’s response to the COVID-19 pandemic



Adequately train, educate, and equip DoD personnel beyond CB specialists



Emphasize the requirement to train and fight in a contaminated CB environment

Investment in the CB enterprise, through a thoughtful and strategic governance process, will demonstrate the resilience necessary to deter a future enemy from using a CB weapon, and would be a powerful counter-argument to any current perception that U.S. response to biological incidents might be subpar.