



CENTER FOR THE STUDY OF WEAPONS OF MASS DESTRUCTION



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ARE WE PREPARED?

FOUR WMD CRISES THAT COULD TRANSFORM U.S. SECURITY

KEY THEMES

This paper summarizes key themes that emerged from the National Defense University (NDU) Center for the Study of Weapons of Mass Destruction's ninth annual symposium, Are We Prepared: Four WMD Crises That Could Transform U.S. Security, held at NDU on May 6-7, 2009. The views presented here do not necessarily reflect those of the National Defense University, the Department of Defense, or any other U.S. Government agency. The Center's own assessment and recommendations with respect to U.S. preparedness for WMD crises will be available in book form in July 2009. See the Center's website at www.ndu.edu/WMD Center

Important strides have been made in countering weapons of mass destruction threats, but significant gaps in coordination and capability remain. The last several years have seen steady progress in the nation's ability to counter WMD dangers through a wide array of prevention, denial, defense, and response activities, and supporting governance structures. Innovative approaches have yielded new strategies and modes of cooperation in battling tough proliferation problems. Yet, counter-WMD efforts overall are not effectively integrated, resulting in a continuing degree of confusion and miscommunication across the government on terms and definitions, institutional relationships, and lines of authority. To lay the groundwork for more complete unity of national effort, a common strategic framework must be established that plainly ties together the conceptual, operational, and organizational elements of the national counter-WMD mission. The hallmarks of such a framework include the following:

Balance the prevention, defense, and response elements of strategy, and close critical capability gaps in each. Policy development, resources, and senior leader attention should strive for an appropriate balance across all elements of our strategy. Prevention is our "first line of defense" but uncertainties regarding WMD threats dictate a high degree of preparedness for defending against and responding to attacks. In each area, critical gaps in capability require priority attention – for example, detection, interdiction, forensics and attribution, and consequence management.

Adopt a whole-of-government approach. A national strategic framework for countering WMD must be grounded in the recognition that more must be done to marshal

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the capabilities of the entire federal government. The new emphasis on “smart power” provides a basis for moving in this direction, but the costs and time required to develop broad-based operational capacity across the interagency community will be significant.

Engage in practical international cooperation. Weapons of mass destruction represent a global threat that no one country can manage or defeat. The scope of required cooperation includes not only strengthening the international treaty regime, but also sustaining a range of activities focused on practical security cooperation and capacity-building among like-minded nations.

Prepare for complex contingencies. Most challenging will be large-scale, complex WMD contingencies requiring the tight integration of military, civilian, international, and even private sector efforts, in one or more countries or regions. Such contingencies are not likely to be managed effectively “on the fly.” While there will always be an unavoidable degree of improvisation in crisis management, recent history demonstrates that failure to plan properly for complex contingencies can be costly. Senior leaders must be given the opportunity to gain greater awareness of the challenges and decisions they will face during or after a WMD crisis.

Consider the social and psychological dimensions of WMD events. Planning in the United States for WMD events tends to focus on areas of traditional strength: development of strategy and guidance for crisis management, military-style contingency planning, high quality scientific analysis, and deployment of relevant equipment and technologies. Less emphasis is given to preparing for the social and psychological effects of WMD events, and to the varied requirements of long-term recovery after a major or catastrophic incident. More needs to be done in this area.

Encourage innovation. The WMD threat is dynamic and responds to the political, legal, technical, and operational barriers erected by the international community. The search for solutions must be equally dynamic, and requires the active encouragement of innovative concepts and a culture of policy entrepreneurship.

Align nuclear and countering WMD strategies. U.S. nuclear policy and the nation’s nuclear posture must be consistent with and help advance non- and counter-proliferation objectives. This means reconciling two important strategic goals: on the one hand, maintaining a credible nuclear force that can reassure allies and deter adversaries from brandishing or using WMD and, on the other, asserting global leadership in nonproliferation by taking concrete and visible steps to reduce reliance on nuclear weapons. This challenge will be a central focus of the forthcoming Nuclear Posture Review.

Improved WMD intelligence is essential to achieving counter-WMD objectives. The strategic priorities defining the current U.S. approach to WMD – increasing barriers to proliferation through enhanced non-proliferation efforts, identifying and tracking new and emerging threats, deploying layered, integrated defenses, and managing threats from failed WMD states – all place significant demands on strategic and tactical intelligence.

Thus, improving intelligence collection, analysis, and dissemination is a major cross-cutting priority. Limitations in WMD intelligence have been well-documented in recent years. While there are recognized oases of excellence and examples of major success, there also have been significant failures and systemic shortfalls due to problems such as weak operational art, lack of horizontal integration, excessive focus on current intelligence, inadequate use of available collection and analysis tools, insufficient accountability, and aging WMD expertise.

Going forward, efforts to enhance WMD intelligence will face a number of challenges. For one, there are limited available intelligence, surveillance, and reconnaissance assets outside of Iraq and Afghanistan. Additionally, WMD intelligence targets remain difficult to detect and monitor – in particular high value individuals and networks, activities in urban areas, and underground facilities and tunnels. Adversary denial and deception efforts are increasingly sophisticated. These challenges must be overcome if WMD intelligence is to enable an overall strategy that seeks to find and resolve WMD threats as close to their source and as early in their development as possible. To make progress, the Intelligence Community should develop and implement a WMD Intelligence Campaign Plan as a priority. This plan should feature integrated, multi-disciplinary collection and target development enterprises keyed to major WMD challenges and gap areas; increased emphasis on both long-term and alternative analysis; stronger interagency and international partnerships and cooperative programs; and preparations for crisis action plans, such as investigative support for WMD elimination missions.

The nuclear nonproliferation regime is under significant stress. Shoring it up and avoiding a more systemic breakdown will require navigating a number of complex issues. It has become commonplace to predict the collapse of the nuclear nonproliferation regime. Some observers of the current moment, fueled largely by deep pessimism about North Korea and Iran, fear that the various stresses on the regime will prove impossible to overcome. The result would be an unleashing of proliferation pressures, a crisis of confidence in global governance and, among many, a strong belief that American leadership in international security has suffered a profound blow. For others, current challenges are more tractable, and the image of collapse is seen as a powerful way to seize the attention of global leaders, policy elites, and the attentive public so as to motivate and mobilize a more vigorous attack on the proliferation problem. Studies, commission reports, and fact sheets detail the agenda for reforming and strengthening the regime. The upcoming NPT Review Conference in 2010 provides a ready focal point around which to spin both hopes and fears for the future of the global nonproliferation project.

Formulating and executing a strategy to strengthen the regime will require balancing and integrating a number of dynamic factors and potentially competing strategic interests.

North Korea and Iran. It is difficult to see how the regime can be strengthened without an acceptable resolution of these cases. It is important to reach some accommodation on North Korea and Iran that reassures the world that the worst case proliferation outcomes for these two countries will not materialize, and

demonstrates that the regime has the capability to enforce compliance. This means some meaningful form of rollback in North Korea and some meaningful limit on Iran's nuclear potential. Failure to achieve at least this could deepen a sense of crisis surrounding the NPT. Yet, failure seems all too possible, so serious consideration needs to be given in advance to what can be done to contain the damage and sustain meaningful constraints of further proliferation.

NPT Reform. The agenda for repairing and strengthening the Treaty is now well-developed: universal adherence to the Additional Protocol, tougher rules on treaty compliance and withdrawal, and new approaches to the fuel cycle that limit access to the most sensitive technologies that would support diversion to a weapons program. Viable fuel cycle concepts are particularly important in light of growing interest globally in nuclear power and the proliferation risks inherent in the further spread of enrichment and reprocessing technologies. But any scheme offering alternatives to indigenous enrichment and reprocessing must be viewed as non-discriminatory if it is in fact to bolster the regime rather than create new fissures.

Article VI and Abolition. Realistically, advancing the reform agenda – intended to shore up the *nonproliferation* dimension of the NPT – will require movement on the Treaty's *disarmament* elements. In recognition of this, President Obama has embraced the vision of “global zero,” committed to nuclear force reductions through a reinvigorated strategic arms control process with Russia, and committed to pursue aggressively a Comprehensive Test Ban Treaty. Thus will a core proposition of the nonproliferation community be tested: that by reasserting leadership in global nonproliferation efforts and demonstrating nuclear restraint the United States will create the conditions for strengthening the regime. The Review Conference will be an early opportunity to assess whether this premise appears valid. It is essential that disarmament and nonproliferation remain linked: in shaping the abolition debate U. S. leaders must be clear that progress toward global zero is inextricably tied to greater progress in stopping proliferation.

Extended Deterrence. The vision of global zero must also be balanced with the continuing requirement to deter adversaries, reassure allies and provide nuclear security guarantees. President Obama has recognized the importance of maintaining an effective nuclear deterrent as long as others possess nuclear weapons. Historically, U.S. nuclear security guarantees have played a vital role in containing proliferation pressures in strategically important regions. Allies who have chosen to rely on U.S. extended deterrence will now be watching U.S. rhetoric and actions closely. Too tight an embrace of abolition may lead them to conclude that the United States, intentionally or not, is placing disarmament ahead of deterrence and thereby devaluing nuclear security guarantees and the psychological importance of possessing “second to none” nuclear forces. This could become a particularly dangerous dynamic if North Korea's nuclear program cannot be rolled back and Iran's nuclear potential cannot be contained. Under these circumstances, the U.S. could find itself confronting new demands for

extended nuclear deterrence at the precise moment it is advocating for global zero. Now is the time to identify those friends and security partners most likely to generate this demand and to begin thinking through how best to enhance their security so they have a clear alternative to acquiring their own nuclear weapons. Creative thinking will be required here. The model of extended deterrence that developed in NATO may not be appropriate in many other settings. Moreover, the United States is not the only possible provider of nuclear security guarantees. The role of the United Kingdom, France, and Russia – or of the P-5 as a whole – may need to be considered.

Russia and China. Indeed, U.S. leadership, however robust, is not on its own likely to be sufficient in the effort to strengthen the nonproliferation regime and forestall a crisis in the NPT. Both Russia and China have constructive roles to play if they choose, and part of the challenge facing U.S. policy is to determine how to motivate the right choice and bring this leverage to bear. Iran and North Korea are only the most prominent problems whose ultimate resolution could well depend on the posture that Moscow and Beijing, respectively, adopt. Any effort to confront Iran, finally and definitively, with a clear strategic choice between integration and isolation will have a greater chance of generating a positive response if Russia is fully engaged in putting that choice to Tehran. Likewise, finding a path forward with North Korea – whether by de-escalating the current atmosphere of crisis through revival of the diplomatic process or by increasing the pressure on Pyongyang through punitive action – is likely to succeed only if China is fully engaged. Gaining more complete “buy-in” from Moscow and Beijing and putting their full weight behind resolving the hardest proliferation problems will neither be a simple thing to accomplish nor cost free to the United States. Here, Washington needs to consider the “puts and takes” and policy trades likely to characterize these discussions.

The collapse or failure of a WMD-armed state presents a set of strategic challenges the United States and its allies may not be well prepared for. As an example of a complex WMD contingency, consider a scenario in which a state possessing nuclear weapons and possibly chemical and biological stockpiles, as well, faces imminent or actual collapse. Some believe this type of scenario is increasing in likelihood, and could be influenced in not entirely predictable ways by factors such as regional conflicts, the global economic downturn, natural disasters, the rise of ungoverned spaces, and crises in health, energy, or the environment.

Facing such a situation, the United States would need to consider whether to undertake operations to secure and/or recover these assets in order to ensure that WMD did not fall into the hands of other states or non-state actors. Depending on specific circumstances, U.S. military operations could involve a significant deployment, possibly in the context of ongoing large-scale deployments of U.S. forces elsewhere. Any deployed force, large or small, would need to operate in a state of constant readiness for WMD use by hostile elements. At the political level, the diplomacy surrounding this scenario likely would be highly sensitive and complex, requiring the United States to balance specific counter-

WMD objectives with broader considerations related to regional stability, great power relations, and longer-term threat reduction concerns. Conceivably, other regional powers could seek to exploit the crisis for their own advantage, counter to U.S. objectives. It is by no means clear that the United States would have complete freedom of action. Consideration of political and military courses of action would be shadowed by multiple and often competing demands, a great sense of urgency, and a high degree of uncertainty.

Today, the United States is not well prepared for this type of contingency. Specialized plans, capabilities, and command and control elements that would support the required operations have matured in recent years (e.g., as embodied in the WMD Elimination mission), but still appear geared toward relatively small and isolated events rather than a larger, more complex failed state scenario. The latter could thus easily overwhelm U.S. and international responses. Improving readiness involves addressing this type of contingency in both deliberate and crisis action planning, ensuring there are sufficient specialized units and assets to cope with a larger-scale event, and developing and exercising coordination mechanisms for complex contingencies in which the integration of interagency and international players is vital to success.

Nuclear terrorism in an American city remains the “nightmare scenario” and requires a balanced approach to prevention, consequence management, and attribution.

Whether as the result of a collapse of the nonproliferation regime, a failed state, or some other set of circumstances, a nuclear detonation by a terror group in a major American city remains our most acute WMD fear. The varied efforts in place to address this security challenge tend to fall into one of three bins. Among these, *prevention* efforts have received greatest attention, and seek to attack the problem as close to its source as possible by securing nuclear materials globally and establishing a comprehensive detection architecture to identify unconventional nuclear threats well before they approach the United States. Significant progress has been made since the end of the Cold War in securing and protecting fissile materials in Russia; while some work remains, the potential vulnerability of nuclear materials in other locations (e.g., Pakistan, India, China) now demands equal if not greater attention. Also important are improving the security of Western civil nuclear programs, strengthening anti-smuggling capabilities, and controlling nuclear expertise and the growing availability of design information and computational tools. Continued action to disrupt the organizations, finances, and operations of terrorist adversaries will also help to limit the prospects for nuclear terrorism.

In parallel, the global nuclear detection architecture seeks to deny terrorists access to the international transport system by placing technical detection systems at a large number of points of departure and entry. Despite encountering some difficulties, the detection effort has improved security; by all accounts, it is today more difficult to transport and deliver nuclear materials into the United States than eight years ago. How far to carry the detection effort, what technical and operational standards to apply, and how best to invest resources so as to balance current and future needs are some of the pressing questions facing this enterprise.

By contrast, *consequence management* and *attribution* efforts are less well developed. With respect to the former, material solutions are a smaller part of the overall effort; the emphasis is on crafting an overall preparedness framework, identifying priorities within it, developing and exercising interagency and intergovernmental incident management plans, creating training programs, and establishing equipment needs and standards. Coordination is the critical enabler, both to ensure the viability of response plans and to help federal authorities understand the assistance needs of state and local emergency planners. Toward this end, in January 2009 the Homeland Security Council issued “Planning Guidance for Response to a Nuclear Detonation” to help state and local authorities prepare in particular for the first 72 hours following a nuclear event, the period before which most federal assistance will arrive. This guidance document builds on lessons learned from all-hazards planning to suggest best practices and procedures.

The ability to accurately attribute the source of an attack is recognized as an increasingly urgent priority, both to enhance the prospects for deterring a nuclear detonation and preventing follow-on attacks, and to lay the groundwork for political and/or military responses to the attack. A decision to attribute an attack will be made by senior leaders taking account of the results of investigation in three areas: technical nuclear forensics, intelligence, and law enforcement. While each of these is a distinct domain, in the aftermath of a nuclear detonation these investigative threads will need to work in mutually supportive fashion to provide senior leaders with the best judgments possible based on available information. The physical infrastructure and workforce that enables the technical nuclear forensics contribution to the attribution process is aging and in need of modernization.

National biodefense capabilities have improved, but overall preparedness remains hampered by shortfalls in planning, organization and technology. Effective response to a major biological weapons (BW) attack would require timely action across multiple fronts: detection and situational awareness through disease and environmental surveillance; prophylaxis and treatment with available medicines; initiation of efforts to attribute the attack and prevent follow-on attacks from occurring; tailored communications to the public to provide reassurance and maintain social order; and the initiation of recovery processes, especially to manage the impact of widespread contamination. Formulating the policies, plans, organizations, and capabilities to meet these requirements has been an important focus of the national counter-WMD effort since early in the decade. In some areas, such as the Strategic National Stockpile of medical countermeasures, great progress has been made. In others, much work remains to be done.

Biodefense plans and exercises envision an integrated, whole-of-government approach, but in fact effective response relies critically on federal agencies, such as the Department of Health and Human Services, whose core missions lay elsewhere. Directing these agencies to marshal the necessary resources and expertise, effectively integrating their efforts, and bringing state, local, private sector, and international partners into the response effort requires strong top-down coordination from an individual or office empowered by the authority of the President.

Additionally, in the view of some observers current biodefense planning does not reflect an adequate understanding of the complexities and difficulties involved in mounting a truly comprehensive response to a BW attack, much less a bioterrorism campaign that unfolds over time. More realistic planning would, for example, recognize that while detection and surveillance capabilities exist, the capability to integrate various information systems and data streams across the military, civilian, and public health sectors is weak. This should be an area for targeted investment. Likewise, national-level planning architectures that embody a federalist vision of intergovernmental relations fail to recognize sufficiently the resource, organizational, and technical limitations of states and localities that nominally would lead the response to bioterror events. As yet another example, it remains unclear whether the United States has a strategy for preventing repeated attacks, despite considerable improvements in the capacity of the law enforcement community to investigate bioterrorism events. Finally, we have yet to develop a practicable theory or model of large scale urban decontamination following a major BW attack. We tend to think of biological agents like anthrax in terms of their effect on humans, individually and in large numbers. But such agents also can act as area or access denial weapons, and without a workable urban decontamination strategy it is conceivable that large areas of one or more major cities could remain uninhabitable for a significant period of time. This is another area requiring greater investment.

Anthrax remains a major concern. In 2001, just 11 cases of inhalation anthrax gripped the nation in fear and generated a national-level response that cost billions of dollars. Today we remain highly vulnerable to a deliberate release of anthrax spores, either as a single, large-scale aerosol dissemination over a major city or through a series of smaller attacks. In the view of most experts, if hundreds of thousands of individuals were to be exposed, the available evidence suggests we could not administer antibiotics to all those potentially exposed before the onset of disease. Moreover, we are not prepared to provide even modest clinical care to this large a number of patients. In short, we have made only limited progress over the last eight years in improving readiness for an anthrax attack. There is today a stronger diagnostic network in place, greater education and awareness among clinicians, and better elaborated treatment methods. But major gaps and uncertainties persist. The BioWatch detection system remains a limited capability. There is still no consensus on the risk of secondary aerosols sufficient to cause human infection. As result, it is difficult to formulate guidance or advice to communities on environmental contamination and clean-up. There also is a pressing need for a contemporary anthrax vaccine that is safe, more easily administered than the current vaccine, and could be provided to the entire population. Yet progress on this front has been woefully slow.

There is unwarranted complacency regarding the chemical weapons threat. A conventional wisdom has arisen that chemical weapons (CW) are no longer of central concern to the WMD challenge, and pose a far less salient danger than nuclear or biological weapons. Key to this view is a perception that a chemical weapons event would essentially approximate a hazardous material incident, and would have limited consequences. The reality, though, is that casualties resulting from chemical weapons

attacks could be much higher than many casual observers suspect. Consider the 8,000 fatalities caused by the accident in Bhopal, India in 1984, or the 5,000 killed by Iraqi forces at Halabja in 1988. In fact, trends in CW proliferation are mixed; there are some encouraging developments, but the chemical disarmament regime also faces some major challenges.

A second factor contributing to a sense of complacency is the widely held view that the Chemical Weapons Convention (CWC), which entered into force in 1997, has fully contained the threat of further proliferation. To be sure, that 188 nations have signed and ratified the treaty is a considerable achievement, one that has helped to delegitimize chemical warfare and the possession of chemical agents. But there are eight nations that are not parties to the treaty: Angola, Egypt, Israel, Myanmar, North Korea, Somalia, Syria, and Taiwan.¹ Some of these have been cited in open sources as possessing CW and also working to improve their existing capabilities. Additionally, some states parties are suspected of violating their treaty obligations. Department of State unclassified arms control compliance reports cite China, Iran, and Russia in this regard. Despite these concerns, no CWC member state has yet to request a challenge inspection of a suspect facility. While the CWC has helped to limit the *horizontal* proliferation of CW capabilities, it is the *vertical* proliferation of these capabilities – acquisition by existing possessors of larger and more advanced arsenals – that has emerged as a principal concern. In major emerging economies like China and India, there are many “other chemical production facilities” that do not produce CW-relevant chemicals but that could be diverted to do so.

This underscores a broader trend that unavoidably influences the potential for further CW proliferation. The globalization of the chemical industry has led to increased trade in dual-use precursor and production equipment, which poses a major challenge to the effectiveness of CW export controls. The fact is that dedicated production facilities for CW precursors and agents are no longer required for acquiring a CW “breakout” capability. A state could covertly conduct research, development and testing concealed within legitimate commercial activities, then bring together quickly the equipment and materials required to start production of chemical warfare agents. Detection of non-compliant activity eventually may occur, but may not occur in a timely way. Several emerging chemical technologies have dual-use potential and could be employed in ways to discover new toxic agents and delivery means, facilitate concealment, and minimize or eliminate traditional signatures associated with CW activities. These include :

- combinatorial chemistry and high-throughput screening for drug discovery;
- therapeutic drugs based on natural body chemicals (bioregulators);
- nanoparticles engineered for targeted drug delivery;
- multipurpose chemical plants with versatile batch reactors and flexible piping; and
- chemical microdevices for improved control, higher yields, reduced waste, lower costs, and rapid scale-up (microreactors).

¹ Taiwan cannot join the CWC because it is not a member of the United Nations.

Finally, it must be recognized that some state and non-state actors continue to see strategic and military utility in the possession or use of chemical weapons. These weapons may be seen as an effective counter to tactics such as human wave infantry attacks, as a force multiplier against a stronger adversary, or as a deterrent against conventional or nuclear threats. Moreover, the changing nature of warfare may create greater incentives for using chemical agents. In sectarian or communal wars fueled by ethnic hatred, the normative and legal constraints against such use could be weakened. The Balkan wars, for instance, saw multiple attacks on a petrochemical plant. And insurgencies of the kind that the United States currently is fighting could feature the use of chemical agents. In 2007, al-Qaeda in Iraq conducted about ten attacks with chlorine-enhanced, vehicle-borne improvised explosive devices (IEDs). While these attacks were limited in effectiveness, more potent chemical threats could emerge from future insurgencies. Materials, equipment and knowledge for CW production are more available to terror groups than those for nuclear or biological weapons, even if effective delivery of chemical warfare agents remains a major challenge. And terror groups as varied as Aum Shinrikyo in the 1990s and al-Qaeda more recently have demonstrated considerable motivation and commitment to acquire a CW capability.