

A Report of the Center for Counterproliferation Research

At the Crossroads

Counterproliferation and National Security Strategy

April 2004



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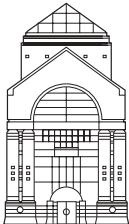
CENTER FOR COUNTERPROLIFERATION RESEARCH
NATIONAL DEFENSE UNIVERSITY

The Center for Counterproliferation Research has a broad mandate for education and research, and pursues ambitious initiatives in both areas. Through intensive education and outreach programs, including its relationship with the National War College, the NATO Staff Officer Orientation Course, and the Capstone General and Flag Officer Course, the center is dedicated to embedding in military and civilian leaders an awareness of the proliferation threat as it relates to defense policy, programs, and military operations. The research mission includes assessing U.S. counterproliferation policies and programs; developing doctrine and improving training; understanding nuclear, biological, and chemical (NBC) operational and strategic effects; deterring regional NBC adversaries; and enhancing alliance/coalition preparedness and cooperation. Through these efforts, the center furthers the understanding of the evolving security implications of NBC proliferation and fashions effective responses.

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The Center for Counterproliferation Research of National Defense University convened a 2-day conference in May 2003 to examine the impact of new U.S. strategic priorities in the post-September 11 era as described in the National Security Strategy. The conference, entitled “At the Crossroads: Counterproliferation and the New National Security Strategy” drew an audience of more than 150 leading experts from Government, the military, academia, and the private sector. The agenda was structured around the driving imperatives of the President’s vision with dedicated panels to address counterproliferation priorities and included three major presentations.

This report is grounded in, but further elaborates on, the presentations and discussion conducted in that forum. While all sessions were off the record and all comments delivered on a nonattribution basis, the authors would like to thank the many conference speakers and panelists for their direct and indirect contributions to, and/or review of, this product. In particular, project directors John Reichart, Rebecca Hersman, and Richard Love would like to thank Paul D. Wolfowitz, the Deputy Secretary of Defense, for delivering the conference Keynote Address; ADM James O. Ellis, Commander, U.S. Strategic Command, for his command perspectives on counterproliferation presentation; and Dr. Stephen M. Younger, Director, Defense Threat Reduction Agency, for his presentation on supporting the warfighter. Additionally, the conference owes its success to the following key participants: Penrose “Parney” Albright, Bruce Bennett, Willard C. Broadwater, Elaine Bunn, John P. Caves, Arthur F. “Chip” Diehl III, Amanda Dory, Lewis Dunn, Robert Einhorn, Jason D. Ellis, Paul R. S. Gebhard, Larry Gershwin, Richard D. Jaskot, Robert Joseph, Jack Killen, John Landry, James N. Miller, Vayl S. Oxford, Mark D. Patton, Jeffrey J. Schloesser, Loyd S. “Chip” Utterback, and John S. Wolf.

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Scoping the Problem: Trends in WMD Proliferation

The gravest danger our Nation faces lies at the crossroads of radicalism and technology. Our enemies have openly declared that they are seeking weapons of mass destruction, and evidence indicates that they are doing so with determination. The United States will not allow these efforts to succeed. We will build defenses against ballistic missiles and other means of delivery.

We will cooperate with other nations to deny, contain, and curtail our enemies' efforts to acquire dangerous technologies. And, as a matter of common sense and self-defense, America will act against such emerging threats before they are fully formed. We cannot defend America and our friends by hoping for the best. So we must be prepared to defeat our enemies' plans, using the best intelligence and proceeding with deliberation. History will judge harshly those who saw this coming danger but failed to act. In the new world we have entered, the only path to peace and security is the path of action.

—George W. Bush¹

The continued proliferation of weapons of mass destruction (WMD) represents the most serious threat to U.S. national security and an enormous challenge for the entire international community. In the hands of rogue states, failing states, or sub-state terrorist groups, these weapons threaten not only U.S. forces, friends, and allies abroad, but also the U.S. homeland. Rogue states armed with WMD threaten the security of regions that are vital to the United States and raise the costs and risks of U.S. military operations intended to protect those interests. Forming international coalitions to defend shared interests is also more difficult in the shadow of the rogue state WMD threat. WMD in the hands of regional rivals exacerbate long-standing conflicts and increase the potential for escalation and conflict. Finally, terrorist interest in WMD and the threat of terrorist use of such weapons appear to be growing.

Arresting and reversing the spread of WMD pose formidable challenges to U.S. policy, as do defending against and mitigating the effects of their use. Powerful strategic, technological, and security factors drive interest in these capabilities. Rogue states with aspirations for regional dominance may see these weapons as crucial to preserving the survival of their regimes, to deterring regional adversaries, to challenging U.S. hegemony, and to constraining the exercise of U.S. military power. Moreover, the knowledge, technology, and materials necessary for WMD are spreading at a rapid rate to both hostile states and nonstate actors. Many of these states are becoming more self-sufficient and taking advantage of the dual-use nature of WMD technologies to pursue advanced WMD programs

under the guise of legitimate commercial or scientific activity.² As a result of these factors, the Intelligence Community warns that the proliferation landscape is becoming more complicated and that “more than ever we risk substantial surprise.”³

The trend of accelerated proliferation of WMD has worsened, raising the stakes if the United States and its international partners fail to appreciate the urgency of the threat and the need to take extraordinary steps to combat it. This chapter assesses the dynamics of the WMD threat. The first section provides an overview of the basic characteristics and effects of nuclear, biological, and chemical (NBC) weapons, as well as the states that possess or seek to acquire such weapons. The second section focuses on those features of the evolving threat that pose acute challenges to U.S. policy and strategy.

Nuclear Weapons

Nuclear weapons are, in a sense, the only “true” mass-destructive weapons. States seeking to develop nuclear weapons have done so for a number of reasons, whether for their destructive potential, perceived deterrence value, utility as instruments of coercion

The desire for nuclear weapons is on the upsurge. Additional countries may decide to seek nuclear weapons as it becomes clear their neighbors and regional rivals are already doing so. The “domino theory” of the 21st century may well be nuclear.

—George J. Tenet
February 11, 2004

or blackmail, as a means of advancing regional or geopolitical objectives, international prestige, or perhaps for domestic political motivations. Potential proliferators benefit from the fact that most of the basic research, as well as the basics of weapons design, are completed and widely disseminated via the Internet and other sources. However, this does not mean that the process is an easy one; some would-be nuclear powers have been constrained by financial considerations or the time-consuming, labor-intensive nature of the development process. The key hurdle in developing nuclear weapons is the

acquisition of fissile material—plutonium or highly enriched uranium (HEU)—for use in a weapon; while states traditionally sought to reprocess plutonium or produce HEU themselves, the potential for black market procurement remains.

Several states currently have well-established and active nuclear weapons development programs but may have not yet acquired or successfully developed nuclear weapons. For example:

- Despite years of United Nations (UN) inspections, Iraq retained a trained cadre of nuclear experts and possibly key weapons-related materials and enabling technologies. In its December 2002 declaration to the United Nations, Iraq claimed that its nuclear program was terminated in April 1991 and no activities took place since that time. The director of the International Atomic Energy Agency (IAEA) reported on the inspections process to the United Nations Security Council (UNSC) in January 2003, noting that, while outstanding issues remain,

“No evidence of ongoing prohibited nuclear or nuclear-related activities . . . has been detected to date.”⁴ By contrast, the United States and United Kingdom argued that Iraq clandestinely maintained a nuclear weapons development program.⁵ Following the coalition victory in April 2003, U.S.-led coalition teams and the IAEA conducted inspections of Iraq’s nuclear facilities. Although rampant looting at Iraqi nuclear sites initially hampered their efforts, inspectors accounted for Iraq’s entire uranium stockpile.⁶ Inspections and interviews with Iraqi scientists conducted by the Iraq Survey Group (ISG) indicated that Saddam Hussein remained committed to producing nuclear weapons and that Iraqi scientists took steps to preserve key nuclear weapons-related technological capabilities.⁷ The latter included active efforts by Iraqi scientists to conceal data from UN inspectors. For example, the former head of Iraq’s uranium enrichment program concealed nuclear-related documents and equipment, which were later turned over to U.S. inspectors, in his residence.⁸ However, David Kay, former head of the ISG, reported that inspectors uncovered no evidence that Iraq took any major steps to restart its nuclear program after the 1998 departure of UN Special Commission inspectors.⁹

- Iran has a long-standing nuclear weapons development program, with much of its efforts being carried out under the guise of the nation’s civilian power program. While there are no international constraints on the “peaceful” use of nuclear power for civilian energy purposes for states in good standing with the IAEA, the U.S. Government assessed that Iran might be duplicitous in its nuclear quest.¹⁰ Considerable press attention focused on the Bushehr facility and Russian support to that facility; however, two additional facilities thought to be associated with the nuclear weapons program subsequently became publicly known.¹¹ Tensions increased when IAEA inspections uncovered evidence of uranium enrichment at an Iranian nuclear complex near Natanz.¹² Iran subsequently admitted to having enriched small amounts of uranium, but denied that it did so as part of a nuclear weapons program. However, in October 2003, intense negotiations between Iran, Great Britain, France, and Germany led to an agreement that seemed to defuse the situation. Iran admitted that it pursued activities that were in violation of the Nuclear Nonproliferation Treaty (NPT) and that it had concealed those activities for 18 years. It also announced a voluntary “temporary suspension” of its enrichment activities and signed the IAEA Additional Protocol. While welcoming Iran’s new openness, the IAEA passed a resolution condemning Iran’s past concealment of its activities and vaguely threatening UNSC action if Iran was not more forthcoming in the future. Despite Iran’s recent admissions and commitments, many analysts suspect that Iran continues to seek and develop nuclear weapons. In that regard, it is notable that in February 2004, IAEA inspectors discovered Iranian plans for a uranium enrichment capability that Iran had not declared.
- In Northeast Asia, North Korea has a significant nuclear program. It likely produced enough plutonium for one or two weapons prior to the 1994 Agreed

Framework, which temporarily froze North Korea's nuclear program at the Yongbyon site and permitted IAEA monitoring of spent fuel rods there in return for concessions from the United States and other countries. However, in October 2002, a North Korean diplomat revealed that North Korea pursued a clandestine uranium enrichment program from the mid-1990s—a clear violation of the Agreed Framework. In December 2002, Pyongyang indicated that it would restart the reactor program that was “frozen” by the Agreed Framework and expelled the IAEA monitors. In January 2003, North Korea withdrew from the Nuclear Non-proliferation Treaty, citing U.S. halting of fuel oil shipments and alleged U.S. preparation for a preemptive attack as its reasons.¹³ The next month, the reactor at Yongbyon began operating again, and North Korea announced that it would reopen its plutonium reprocessing facility. North Korea also removed the spent fuel rods from their storage location for reprocessing, announcing in late June 2003 that this task was completed. In addition to the half-dozen weapons' worth of plutonium in the spent fuel rods, once Yongbyon is fully operational, analysts estimate that North Korea will be able to produce enough plutonium for as many as six additional weapons per year.¹⁴ The People's Republic of China hosted several rounds of talks involving some or all of the six principal parties involved in the crisis in an attempt to find a diplomatic solution. Although diplomatic efforts are still continuing, little progress has been made and North Korea's threats to demonstrate its nuclear capabilities and to expand its arsenal do little to defuse tensions.

Nuclear weapons also remain a concern on the Indian subcontinent. Tensions rose again in the area in 1998, with the series of nuclear tests conducted by both India and Pakistan. The following year, they briefly fought over the disputed province of Kashmir and have come to the brink of war twice since that limited conflict. However, in April 2003 Indian Prime Minister Atal Bihari Vajpayee made a peace overture to Pakistan, followed by a reestablishment of diplomatic and transportation links. Pakistan responded positively to these steps, and talks between senior officials were planned for February 2004. This recent lessening of tensions between the two countries could be a positive sign, pointing to a possible future reduction in the likelihood of nuclear conflict in the region. Recent revelations of an international nuclear black market centered on Pakistan's nuclear weapons scientists, however, raise new concerns about the proliferation of nuclear threats from South Asia.

In addition to these states of concern, other states, while not actively pursuing nuclear weapons development, nonetheless possess the basic infrastructure, expertise, and in some cases materials needed to do so. Some of these countries have articulated a desire to possess nuclear weapons but face significant resource limitations and are unlikely to develop nuclear weapons, even though they may have a rudimentary nuclear infrastructure, without significant foreign assistance.¹⁵ Other countries possess the necessary infrastructure, resources, and expertise for a nuclear weapons program, but traditionally chose not to undertake weapons development or have rolled back their nuclear weapons programs. States that halted and abandoned their nuclear weapons efforts include South Africa, South Korea, Canada, Brazil, Argentina, Australia, Taiwan, several states of the former

Soviet Union (Ukraine, Belarus, and Kazakhstan), and most recently Libya. Many of these states and other countries, such as Japan and Germany, by virtue of their latent or “virtual” capabilities, could produce nuclear weapons in a relatively short period of time following a political decision to do so.¹⁶

Radiological Dispersal Devices

Another method for using radiation as a weapon is by means of a radiological dispersal device (RDD), which is “designed to disperse radioactive material to cause destruction, contamination, and injury from the radiation produced by the material.”¹⁷ An RDD is not the same as a nuclear weapon; it does not have the destructive potential of such weapons. For this reason, some refer to RDDs as “weapons of mass disruption” rather than as weapons of mass destruction. There are several types of RDDs, each using a different means of dispersing radioactive elements.¹⁸ Explosive RDDs, popularly known as “dirty bombs,” use conventional explosives to scatter radioactive material over a wide area, potentially causing contamination and casualties through radiation sickness. Passive RDDs involve simply placing an unshielded radiation source in a location where large numbers of people will be exposed. Atmospheric RDDs convert radioactive materials into a form that is conducive to transportation on air currents.

While not generally seen as militarily effective battlefield weapons, such devices may be a relatively simple and straightforward way for nonstate actors to conduct an attack. Unlike nuclear weapons, which require uranium or plutonium, RDDs can use a wide variety of radioactive materials such as Cesium-137, Strontium-90, or Cobalt-60. These and other radioactive materials can be found relatively easily since the materials are widely used in hospitals, educational and research facilities, industrial and construction sites, and laboratories.¹⁹ RDDs do not necessarily cause a great deal of blast damage, but they do raise issues regarding potential long-term contamination of targeted sites. Depending on the type of radioactive material used in the device, cleanup and decontamination of target areas could be costly and time-consuming. Such weapons are unlikely to kill large numbers of people, but the presence of radioactive materials may cause panic and apprehension among the population of a targeted area. These devices received considerable media attention post-9/11 with the arrest of a suspected al Qaeda operative who has been charged with plotting an RDD attack.²⁰

Chemical Weapons

Chemical weapons (CW) make use of the toxic properties of various chemical compounds to kill, injure, or incapacitate. These weapons saw extensive use during World War I and were responsible for thousands of injuries and deaths. More recently, chemical weapons were used in the 1980s-era Iran-Iraq war and by the Iraqi government against its Kurdish citizens. States have long sought chemical agents for a number of reasons. First, they have been viewed as force multipliers on the battlefield or, more recently, as instruments of terror in urban areas. Second, the wide range of dispersal methods available, from very crude

methods (such as that employed by Aum Shinrikyo in the 1995 Tokyo subway attack) to crop dusters and other aerosol sprayers to sophisticated military munitions, leads to a range of different attack options. Third, some chemical weapons—especially “first-generation” weapons such as chlorine or phosgene—represent a relatively low cost option compared to nuclear weapons. Virtually any country with a reasonably sized industrial base (particularly in the chemical, petroleum, or pesticide industries) has the necessary infrastructure to produce at least first-generation chemical agents. Furthermore, the expertise and equipment for many chemical weapons are easily available, especially for first-generation chemical weapons that, while no longer widely considered militarily effective, could be valuable to terrorists. Finally, the dual-use nature of much of the materials and equipment needed for the production of chemical weapons, including chemical precursors, allows for easy concealment of a development program.

Despite the Chemical Weapons Convention (CWC), some states retain active chemical weapons programs.²¹ Russia maintains the largest CW stockpile in the world (approximately 40,000 metric tons) but is in the process of destroying its publicly reported stocks of agents. The United States has lingering concerns that Russia has not declared its entire stockpile, as required under the CWC, and is concerned that its program has not been terminated.²² Iran and Syria are believed to hold stockpiles of munitions and are pursuing development of advanced agents with foreign assistance.²³

Libya’s efforts in the chemical weapons arena attracted significant attention in the 1980s, especially with the construction of allegedly CW-related facilities at Rabta and Tarhuna. With the lifting of sanctions in 1999, Libya reportedly began renewing contacts with foreign suppliers to revive its CW efforts.²⁴ However, in December 2003, Libya publicly renounced its chemical weapons program along with its other WMD programs and has been working with U.S. and international representatives to dismantle its production capabilities.²⁵ India, as an original signatory to the CWC, declared its CW capabilities, opened related facilities to international inspection, and destroyed its stockpile of agents. China, North Korea, and Sudan are suspected of having CW programs, with the former two

We’re very excited about opening this new chapter in our relations [with Libya]. Once our governments have completed the process of formal relations, there is no limit to what we can accomplish together.

—Rep. Curt Weldon (R-PA)

believed to possess moderate to sizeable stockpiles.²⁶ Pakistan is assessed to have clear potential to develop chemical weapons, although it remains uncertain whether it is pursuing offensive development efforts.²⁷ Other nations have been suspected of pursuing activities in the chemical weapons area, although the available evidence is sketchy and sometimes of indeterminate credibility.²⁸

Iraq had an active and advanced chemical weapons program prior to its 1991 defeat at the hands of the U.S.-led coalition. Even after the war, however, Iraq retained a latent capability and possibly hidden munitions stocks. The United Nations Special Commission (UNSCOM) was unable to verify the destruction of several thousand

chemical-filled munitions.²⁹ The U.S.-led coalition began inspections of Iraq's chemical-related facilities after its victory in 2003. The United States uncovered evidence that Iraq examined the possibility of resuming production of chemical agents in the 2001–2002 period, and evidence recovered indicated that some proscribed CW-related research was possibly conducted by Iraqi scientists.³⁰ However, as of early 2004, no stockpiles of chemical munitions were uncovered, and in January 2004, David Kay testified to the Senate Armed Services Committee that “we simply have no evidence” that Iraq maintained stockpiles of chemical weapons.³¹

Novel Chemical Agents

The continued advance of science means that the chemical weapons threat will evolve as novel agents are developed. Of concern to intelligence analysts and others are reports of new types of chemical agents developed in Russia and perhaps elsewhere.³² Beginning in the early 1990s, Russian whistleblowers began to report on a series of new unitary and binary chemical agents that are generally referred to as “novichoks.” These new agents are allegedly more effective and easily concealed than traditional chemical agents.³³ Russia, a party to the Chemical Weapons Convention, is bound not to develop or stockpile chemical weapons.

Toxic Industrial Chemicals and the Terror Threat

In addition to those chemical agents developed purposely for military uses, some of the chemical weapons agents employed during the First World War (for example, phosgene and chlorine gas) and many other toxic chemicals are used widely in a variety of industrial applications. The Environmental Protection Agency (EPA) explicitly identifies about 600 of these so-called toxic industrial chemicals (TICs) for inclusion in its Toxic Release Inventory, a list of toxic chemicals of sufficient concern as a risk to human health to require reporting if accidentally released. Millions of tons of many of these chemicals (such as chlorine, phosgene, and hydrogen cyanide) are produced annually in the United States. This category of chemicals includes organophosphate pesticides, such as parathion, which are chemically similar to nerve agents and can produce similar effects although they are usually less toxic.³⁴

Law enforcement, scientific, and intelligence experts agree that these toxic industrial chemicals are potentially attractive to terrorists.³⁵ Although many TICs are not necessarily as lethal as military chemical agents, they do have the potential to cause mass casualties, as illustrated by the Bhopal incident (see next page). There are no publicly available hazard assessments that predict the number of people likely to be affected by a chemical attack, but the available evidence suggests that the risk is high. For example, environmental groups have analyzed public information made available by the EPA regarding the hazard assessments performed by regulated chemical facilities. Based on this data, there are 125 chemical facilities that put at least 1 million people at risk, 700 that put at least 100,000 people at risk, and 3,000 that put at least 10,000 people at risk. The actual number of people who would be affected in a chemical release is some fraction of those figures because only some of the people in the danger zone are likely to be

exposed. (If the chemical plume from an agent release is blown by winds to the west of a storage facility, people east of the facility are unlikely to be affected.) While it is true that the effects of CW are dependent on environmental conditions if released outside, and hence are unpredictable, the size of the potentially exposed population is so great that the impact of a TIC release could be catastrophic.

The 1984 Union Carbide India, Limited, pesticide plant explosion in Bhopal, India, provides a useful example of the amount of damage a lone actor could wreak with TICs. That explosion resulted in a release of methylisocyanate, leaving approximately 5,000 dead and almost 14,000 injured or incapacitated.³⁶ According to some allegations, a disgruntled employee mixed water into a storage tank, initiating a chemical reaction that caused the massive explosion. The Bhopal explosion illustrates the dangers posed by TICs. While lone actors with appropriate access to a chemical facility could rely on sabotage to carry out a mass casualty attack, as demonstrated at Bhopal, terrorist groups could also use more traditional explosive attacks to accomplish the same. Detonating a bomb to break open a railroad tank car, for example, could result in a TIC release of tons or tens of tons of agent.

The combination of industrial chemicals either in place or in transit with traditional terrorist tactics of truck bombs would create a confluence of tactics capable of inflicting casualties on scale with the 1984 Bhopal incident. Also, in addition to chemicals in place, terrorists could acquire industrial chemicals through theft or diversion to utilize them at the time and place of their choosing. Because of the widespread commercial applications of many TICs, vast quantities are shipped across the country via rail and road networks. There is even less data to assess the risk of attacks on TICs in transit. What is evident, however, is that the risk is substantial. Railroad tank cars, for example, can carry 100 tons of a liquid chemical. Given that railroad tracks often go through the center of major metropolitan areas, a substantial population is clearly at risk in the event of an explosive release of the contents. Moreover, a freight train might be hauling multiple tank cars loaded with TICs and even multiple types of TICs.

Table 1. Selected Toxic Industrial Materials

High Hazard	Medium Hazard	Low Hazard
Ammonia	Acetone cyanohydrin	Arsenic trichloride
Chlorine	Carbon monoxide	Bromine
Fluorine	Ethylene dibromide	Cyanogen chloride
Formaldehyde	Methyl hydrazine	Dimethyl sulfate
Hydrogen bromide	Methyl isocyanate	Ethyl phosphonic dichloride
Hydrogen cyanide	Phospine	Isopropyl isocyanate
Fuming nitric acid	Sulfur trioxide	Nitric oxide
Phosgene	n-Octyl mercaptan	Parathion
Sulfur dioxide	Trichloroacetyl chloride	Toulene 2,4-diisocyanate

Biological Weapons

Biological weapons (BW) use microorganisms or toxins derived from organisms to cause disease in humans, plants, or animals. They come in many different forms, ranging from viruses to bacteria to rickettsiae to toxins. With effects ranging from lower to higher lethality, they may also pose the risk of contagion or can be genetically modified to enhance effects. They may be employed as weapons of terror, or even against agricultural targets, to potentially devastating economic or psychological effect. Many pathogens are endemic in certain regions of the world and, as such, relatively easy to acquire.

Key hurdles in BW use include successful weaponization and effective dissemination of the agent. As living organisms, many biological agents are affected by variances in environmental conditions, including the heat caused by an explosion, ultraviolet radiation, and changes in atmospheric conditions such as temperature. Thus the performance of a potential dissemination mechanism must be within certain tolerance levels in order to be effective. The challenge lies in finding a means of dispersal that does not kill the organism while spreading it in a form and in sufficient quantity that will increase the likelihood of infection.

Adversaries may find biological weapons attractive for several reasons. First, they may allow an attack with a low likelihood of discovery. Given the nature of many biological agents, it may be difficult to determine whether an attack has occurred, let alone who might be culpable. A case in point is the anthrax attacks that occurred in the United States in the fall of 2001: more than 2 years after a series of anthrax-tainted letters were mailed to several targets, law enforcement officials have yet to identify conclusively a suspect or suspects in the attacks. Furthermore, if the agent used is one that is endemic to the targeted area, an attack may be mistaken for a natural outbreak.

Second, the equipment, technology, and materials needed to produce biological weapons are in many cases quite similar to those used in the production of pharmaceuticals and other commercial products. As a result, the building blocks of a biological weapons program are widely available and relatively easy to obtain. Because of the general availability of many necessary materials, the development of particular biological weapons may represent a relatively low-cost option (compared to nuclear weapons) for states or substate groups. Given the dual-use nature of much of the equipment used in the production of biological weapons, easy concealment of a development program is possible. As the Soviet Union's *Biopreparat* organization demonstrated, it is even possible to hide such a program in "plain sight," collocating BW development facilities with legitimate sites such as pharmaceutical plants.

Third, the expertise needed to produce BW is widespread, and the knowledge base is growing due to scientific advances in biotechnology and genetic engineering. This has led to the concern that state programs and possibly terrorist groups could use these techniques to improve characteristics of existing biological agents or to combine genetic features of several agents to create "designer" pathogens. However, many advanced biotechnologies and techniques are beyond the current capabilities of terrorist groups, and in some cases would provide few advantages over existing "traditional" microbiology techniques. Some

recently developed and emerging microbiology techniques require state support and funding of research and development (R&D). This may not always be the case. The availability of literature on biological warfare and the growth of “communities of interest” focused on sharing BW-related information suggest that the realistic opportunities for exploitation of new biotechnologies are beginning to grow.

Finally, biological weapons have a wide range of effects and can be used against a wide range of targets. This versatility can make it difficult for the targeted nation to craft an appropriate response. For example, an anticrop weapon, while potentially causing a great deal of economic damage, may not necessarily result in the loss of any human life. Similarly, an adversary may opt to use an antipersonnel biological agent that has mass-casualty but not mass-fatality characteristics. The lack of human fatalities (or massive numbers of fatalities) in such cases could complicate retaliatory efforts by the targeted country—especially if attribution is uncertain. An attacker could also employ multiple agents simultaneously to cause a range of effects, hampering identification and treatment efforts. Modern biotechnological techniques and genetic engineering offer the possibility of creating designer agents that may combine features of different diseases, complicating detection and treatment.

BW has seized the attention of the public health, national security, and law enforcement communities in recent years, a fact compounded by the anthrax attacks in the United States.

The Intelligence Community assesses that “perhaps” a dozen states today are actively pursuing offensive BW programs.³⁷ Although the Russian offensive program was ended by presidential decree in 1992, there are still concerns that prohibited activities continue. Fueled in part by Russia’s military BW complex participating in cooperative threat reduction programs, it remains closed to the outside world. Furthermore, many Russian civilian facilities possess pathogen and toxin collections that are not subject to adequate security or accounting measures. As with nuclear and chemical weapons, there is also the possibility that Russian BW scientists and technicians could seek to improve their personal economic status by seeking employment in countries of proliferation concern.

Several other countries are suspected of pursuing offensive biological weapons research, development, and possibly weaponization, including North Korea, China, and Iran.³⁸ Nations that have the potential to develop offensive BW and that may possibly be conducting limited efforts include Pakistan, Cuba, Israel, India, and Syria.³⁹ Still other states retain the capacity to mobilize resources rapidly in support of BW programs. Most of these countries are parties to or signatories of the Biological Weapons Convention, and, consequently, any offensive programs undertaken would violate their obligations under that treaty.

Iraq possessed an extensive and active biological weapons program prior to its defeat in the 1991 Persian Gulf War. After that conflict, Iraq denied the existence of its BW program until 1995, and even after that there was evidence that Iraq possessed weapons and programs in violation of its UNSC disarmament obligations. The Saddam Hussein regime repeatedly failed to account for critical elements of its BW program. Among the gaps were “considerable uncertainty” regarding weaponization; “consistently understated” agent production; “incomplete”

declaration of equipment and raw material imports; and finally, an absence of Iraqi evidence “concerning the termination of its offensive program.”⁴⁰ Subsequent inspections by the United Nations Monitoring, Verification, and Inspection Commission (UNMOVIC) also raised important questions relating to Iraqi BW activities, including incomplete Iraqi declarations on anthrax production and imported bacterial growth media. Other issues also remained outstanding, including documentation, alleged mobile biological weapons production units, and interviews with scientists and personnel involved in biological weapons programs.⁴¹ In the view of Hans Blix, the Executive Chairman of UNMOVIC, as of February 2003, there did not appear to be “genuine acceptance . . . of the disarmament” required by Iraqi officials.⁴² The collapse of Saddam’s regime in April 2003 allowed inspection teams from the U.S.-led coalition to enter Iraq to determine what remained of Iraq’s offensive biological warfare efforts. By early 2004, examination of recovered documents and interrogations of figures involved in Iraq’s programs indicated that the country shifted the focus of its BW programs to “maintaining smaller, covert capabilities that could be activated quickly to surge the production of BW agents.”⁴³ U.S. inspectors also uncovered evidence of a covert network of laboratories connected to the Iraqi Intelligence Service that conducted BW-related research and development, as well as material and equipment Iraqi scientists concealed from UN inspectors in 2002. However, as with chemical weapons, no stockpiles of agents were discovered, leading David Kay to conclude that Iraq most likely destroyed them in the 1990s.⁴⁴

One of the most difficult challenges we face is to prevent, deter, and defend against the acquisition and use of WMD by terrorist groups.

—National Strategy to Combat Weapons of Mass Destruction

Key Trends

NBC Terrorist Threat

In recent years, and especially since 9/11, several incidents have spawned growing fears that terrorist organizations or other nonstate groups could obtain and use WMD. One of the first of these incidents was the 1995 Tokyo subway sarin gas attack carried out by the Aum Shinrikyo cult and the subsequent police investigations that uncovered the extent of the group’s WMD aspirations. More recent were the October 2001 anthrax attacks in the United States, which resulted in 5 deaths and 17 other infections,⁴⁵ the discovery of ricin, a deadly BW agent, in a January 2003 antiterrorist operation in London, and the finding of a ricin-tainted letter in the office of Senator Bill Frist in February 2004. Finally, Osama bin Laden has declared that the acquisition of WMD is a religious duty, and intelligence collected in Afghanistan revealed that al Qaeda was working to acquire nuclear, biological, and chemical weapons, as well as a radiological dispersal device.⁴⁶

Terrorist and substate group interest in such weapons is tied to a perceived shift in the motives and goals of some terrorist organizations. According to one school of thought, religious motivations are complementing or even superseding the political

motivations that once drove terrorists. Combined with this motivating force is another perceived shift away from the previously held tenet that terrorists want more people watching an event than they want killed by that event. Indeed, mass-casualty events are likely becoming more common, especially considering the psychological shock value of large numbers of fatalities. However, there is a great deal of debate over the extent to which terrorist organizations may possess the necessary technical and financial resources to acquire effective WMD capabilities.⁴⁷ Even Aum Shinrikyo, skeptics frequently note, with almost a billion dollars in assets and members who were university-level scientists, was unable to develop biological weapons or a truly effective chemical weapons dissemination capability. At the same time, that group's partial success, coupled with known interest in acquisition and continuing advances in technology (usable for weapons development), suggests that substate actors may become increasingly capable with respect to WMD.

Indeed, there is a growing prospect that terrorist organizations will acquire WMD, either on their own or with the help of another country. The intent to acquire these capabilities is clear, the requisite materials and information have never been more readily available, advances in technology will make this job easier over time, and use is likely if these weapons are acquired. Moreover, many proliferators are known or suspected state-sponsors of terrorism, raising the possibility that such states could provide weapons or material/technical assistance to terrorist groups. However, the specific form of WMD-related assistance that a state sponsor would provide to a terrorist organization, and the circumstances under which that assistance would be provided, remain unclear. In addition to support and assistance from a state sponsor, another avenue for substate acquisition of WMD lies at the intersection of failing (or failed) states and WMD capabilities. In theory, a terrorist or subnational group could take advantage of the collapse of a WMD-capable state to seize control over a portion of that state's WMD arsenal. That such a situation might occur was a concern with Pakistan in late 2001, when there were serious concerns over the stability of the government and the security of Pakistan's nuclear stockpile.⁴⁸ These concerns arose again following two attempts to assassinate Pakistan's president, Pervez Musharraf, in December 2003.

Supply Issues

In certain regions, the demand for materials, technology, and expertise related to WMD and missiles remains high and continues to grow. For proliferators seeking to pursue the development of WMD or to enhance indigenous programs, there are several key sources of foreign assistance to which they can turn.⁴⁹ Iran remains one of the key demanders of materials and technologies, aggressively pursuing contacts around the world. Pakistan also relies heavily on foreign sources of expertise and materials, as do India, Syria, and other states. Although North Korea is one of the premier exporters of ballistic missiles, it nonetheless imports a good deal of raw materials and components for its nuclear efforts as well as its ballistic missile program from outside sources.

Russia remains one of the chief suppliers, especially in the nuclear arena, where it is the major foreign source of technology and expertise for the Iranian and Indian

civilian nuclear programs. Economic concerns are a major driver of some Russian proliferation activities, as cash-strapped institutions seek to raise funds. Russia has enacted a set of export control laws to stem the flow of materials and expertise from various Russian institutions and enterprises, and on a few occasions halted shipments of suspect material to destinations such as Iran. However, Russian enforcement of export controls has been less than exemplary. The continued flow of material and expertise raises questions of the Russian government's commitment to its public statements regarding proliferation. It is likely that the Russian government is either unwilling or unable to prevent such transfers from occurring; it is also equally possible that the Russian government maintains a deliberate policy of selective proliferation.⁵⁰

China is also a key source for many proliferators, in spite of public commitments to the contrary. Several quasi-governmental corporations and enterprises in China have provided valuable assistance to the nuclear and missile programs of Pakistan, as well as nuclear, missile, and chemical programs in other countries such as Iran, Libya, and North Korea. At the request of the United States, China halted nuclear cooperation with Iran and pledged not to provide assistance to nuclear programs that did not have IAEA safeguards.⁵¹ Yet while China has joined several nonproliferation regimes and made numerous public statements in support of nonproliferation norms, Chinese adherence to its oft-voiced proliferation commitments remains tenuous.⁵²

“Secondary” supply has emerged as a growing concern in recent years. As their domestic capabilities improve, nations that traditionally have been recipients of WMD- and missile-related technology and materials are themselves becoming suppliers of those technologies and materials. North Korea is a prime example of this phenomenon, although Iran is also taking steps in this direction. Building on the basic technology of the Soviet Scud missile, the North Koreans designed and constructed an increasingly capable series of ballistic missiles. As a result, North Korea is one of the world's major suppliers of ballistic missile materials and technology to states with Scud-based missile forces. North Korea's ballistic missile sales became high prominence issues in December 2002, when Spanish naval forces intercepted a shipment of missiles to Yemen, and again in January 2004, when North Korea offered to share missile technology with Nigeria.⁵³

North Korean technology and materials (if not complete missile systems) can be seen in other ballistic missile programs. A particularly outstanding example of this growing trend can be seen in the Pakistani Ghauri medium-range ballistic missile (MRBM) and the Iranian Shahab-3 MRBM, both of which are largely derived from the North Korean No Dong MRBM. Pakistan is alleged to have supplied North Korea with nuclear weapons assistance in return for North Korean help in improving Pakistani missile capabilities.⁵⁴ In the nuclear arena, North Korea's resumption of plutonium production and the country's withdrawal from the Nuclear Nonproliferation Treaty have spurred fears that North Korea could sell plutonium or other nuclear-related materials and technology to other “rogue” states.⁵⁵ The extensive networking and communication that takes place among the second tier of proliferators aid this secondary supply chain.

Collectively, these connections underscore the continuing and critical role that foreign assistance plays in the proliferation of WMD and missiles. The continued flow of materials, technology, and expertise highlights the shortcomings of regimes that attempt to halt proliferation by preventing the spread of such materials. The pursuit of alternate acquisition pathways, the development of indigenous sources, concerns of leakage from the former Soviet Union, and the growth of secondary proliferation networks have combined to create a far more dangerous proliferation environment. In this changed—and *changing*—proliferation landscape, yesterday’s solutions to the evolving problem are no longer adequate or sufficient.

Intelligence Challenges

Although U.S. intelligence agencies have made some progress in tracking the proliferation problem, efforts in this area remain a challenge, and the risk of a substantial surprise continues to grow. As weapons-related technologies spread and information flows over time, proliferators have become more adept at concealing their activities. Reducing the risks and consequences of surprise requires intelligence agencies to adapt to this rapidly changing environment, retooling collection capabilities and analytic processes.

Discerning proliferator capabilities is a difficult challenge. While it is possible to construct a partial picture of an adversary’s capabilities based on information such as acquisition patterns, knowledge gaps nonetheless remain. This was seen in post-*Desert*

Storm Iraq, where UNSCOM inspections revealed that the Iraqi WMD and missile infrastructure was much larger than the target list that U.S. Central Command planners compiled prior to the beginning of the coalition air campaign. Even after almost 8 years of intrusive inspections by UNSCOM, the full details of Iraq’s efforts remained unknown. Russia’s possibly ongoing efforts in the development of offen-

Well, North Korea doesn’t like to hear me say it, but they continue to be the single largest proliferator of missiles—ballistic missile technology on the face of the earth.

—Donald H. Rumsfeld
December 11, 2002

sive chemical and biological weapons are another case in point. Early in the 1990s, several key defectors revealed the full scope of Russian activities in these areas and indicated that work might be continuing in spite of government statements to the contrary.⁵⁶

Intelligence collection in the proliferation arena is hampered by the fact that proliferators are implementing increasingly complex and capable denial and deception efforts. Proliferators are paying close attention to how U.S. intelligence agencies gather information and data and are developing means and techniques for countering U.S. efforts. With substantial U.S. reliance on technical means of intelligence collection, the growing effectiveness of such tactics complicates U.S. intelligence gathering efforts. Examples of this growing trend include India’s concerted effort to conceal preparations for its 1998 nuclear test series and the web of deceit that surrounded Iraqi WMD and missile programs. Moreover, many proliferators are hiding WMD and missile-related assets in hardened or deeply buried facilities, both to conceal them from U.S. intelligence assets

and to protect them against attack. The increasing indigenization of production in proliferating states, coupled with traditional suppliers and the growing network of secondary suppliers, closes the production window further. Finally, the potential availability of WMD-related material and expertise from the former Soviet states could provide proliferators with a shortcut in their weapons development processes.

Another key intelligence challenge relates to use concepts of an adversary: how, when, and for what specific purpose will WMD-armed states or substate actors opt to use WMD. This is a difficult intelligence task, as the states of greatest concern are among the most challenging targets. As technical means are of little use in unraveling intentions, this area requires access to human intelligence. Rather than being viewed solely as weapons of last resort, WMD more recently have been seen as weapons that may be useful for punishment or revenge. Given overwhelming U.S. conventional military superiority, adversaries are seeking asymmetric means to counter that superiority, and WMD are seen as potentially effective countermeasures. Although WMD may be used to stave off defeat or ensure regime survival, early use of such weapons by some states is possible, perhaps even likely. In addition to early use, a WMD-armed adversary may target areas beyond the frontline: command and control facilities, logistics areas, ports, airfields, and the U.S. homeland. With limited insight on adversary doctrine regarding WMD, this will continue to remain a difficult challenge.⁵⁷ Certainly, the Bush administration concluded that key regional states and terror organizations “are determined to acquire weapons of mass destruction . . . to be used as threats or offensively to achieve the aggressive designs of these regimes.”⁵⁸

Conclusion

The threat posed by the spread of nuclear, chemical, and biological weapons continues to grow. In addition to the long-standing state programs, there is compelling evidence of terrorist efforts to acquire such technologies. The picture with state programs is mixed. Operation *Iraqi Freedom* led to the termination of Saddam Hussein’s programs, and Muammar Qadhafi is working with the United States and others to dismantle Libya’s programs. At the same time, however, other countries, such as Iran and North Korea, continue to invest in their programs. On the intelligence side of the house, the challenges of collecting accurate and timely intelligence on these threats has grown much more complicated and difficult. To deal with these challenges and the threat to the U.S. homeland and interests abroad, policymakers and planners will have to craft a strategic framework to guide the development of policy options.

Chapter Two

Meeting the Challenge: Strategy and Policy

Our national strategy to combat WMD is based on three pillars. We will pursue robust counterproliferation policies and capabilities to deter and defend against the use of these weapons. We will strengthen nonproliferation measures to prevent states and terrorists from acquiring WMD.

We will increase our preparations to respond effectively to any use of WMD against us or our friends and allies. To succeed, we must use new technologies, strengthen our intelligence capabilities, work even more closely with allies, and establish new partnerships with other key states, including former adversaries.

—George W. Bush⁵⁹

Strategy Framework

Current U.S. strategy is framed by the White House document issued in December 2002, the “National Strategy to Combat Weapons of Mass Destruction.”⁶⁰ This strategy articulates a layered approach for preventing the spread and acquisition of WMD, deterring and defending against WMD use, defeating WMD militarily, and mitigating the effects of successful WMD attacks. The three core pillars of strategy are counterproliferation, strengthened nonproliferation, and consequence management. Individually, these core strategy elements are not new. But the relative emphasis accorded them represents a shift from past U.S. approaches, which historically have given greatest prominence to traditional nonproliferation activities. While these retain an important place in the new counter-WMD strategy—and affirmed as recently as the President’s February 11, 2004, speech at the National Defense University—counterproliferation efforts have now assumed a more prominent role.

The important role of counterproliferation efforts recognizes that traditional prevention efforts are not likely to solve the toughest proliferation challenges we face. Therefore, as the strategy states, “U.S. military and appropriate civilian agencies must possess the full range of operational capabilities to counter the threat and use of WMD by states and terrorists against the United States, our military forces, and friends and allies.”⁶¹

If the use of WMD is a likely feature of future conflict, as many believe, then the United States has no choice but to be prepared to prevail against any WMD-armed adversary. This means developing and fielding capabilities that can counter the spectrum of tactical,

operational, and strategic threats posed by WMD, and integrating these capabilities into Armed Forces doctrine, training, and equipment. Since the first Gulf War, this has been an important thrust of Department of Defense (DOD) planning. Looking forward, the National Strategy highlights interdiction, deterrence, and defense and mitigation as the key components of a proactive counterproliferation effort. These are discussed further below.

There is no less of a national commitment to traditional nonproliferation objectives, but rather a recognition that these efforts must be strengthened if they are to contribute to U.S. and international security. This encompasses active nonproliferation diplomacy, multilateral treaties and regimes, international cooperative efforts, controls on nuclear materials, export controls, and sanctions. U.S. initiatives are taking a number of forms, including expanded nonproliferation and threat reduction assistance to the states of the former Soviet Union, new authority to provide threat reduction assistance to other countries, the commitment of the Group of 8 (G-8) to provide \$20 billion for global nonproliferation efforts, and more resources for the IAEA and promotion of its “additional protocol” for more rigorous inspections.⁶² In his February 11 speech at the National Defense University, President Bush announced, *inter alia*, initiatives to prevent the proliferation of nuclear weapons capabilities, among which are new controls on the transfer of enrichment and reprocessing technologies and new resources to strengthen IAEA oversight of suspect nuclear programs.

The important role of consequence management in the National Strategy recognizes that we must prepare for the worst. Whether the perpetrator of a WMD attack is a state actor or a terrorist organization, the United States must be prepared to deal with the consequences—at home, wherever forces may be deployed overseas, and in support of friends and allies. Consequence management involves complex political, military, technical, legal, and humanitarian issues, and requires the marshalling of major national resources and the creation of new, responsive government organizations. As part of the larger homeland security effort, consequence management is discussed in greater detail in the companion White House document, the “National Strategy for Homeland Security.”⁶³ This document describes a comprehensive national system for emergency preparedness and response built around improved integration, coordination, communication, training, and equipment.⁶⁴

The national strategy for countering WMD recognizes a number of underlying realities and a number of judgments drawn from experience:

- *Dynamic threat.* As chapter one discussed, the WMD threat is becoming more complex and sophisticated, despite efforts to prevent the spread of these weapons and their enabling technologies. We are already confronting complex proliferation challenges in countries such as North Korea and Iran. Weapons may evolve technically in ways that present qualitatively new types of threats. And there remain large uncertainties regarding where, when, and how adversaries—state actors or terror groups—might brandish or employ WMD.
- *The “nexus” of WMD and terrorism.* The National Strategy views rogue states, weapons of mass destruction, and nihilistic terrorism as interconnected problems. The nexus of these phenomena represents perhaps the central strategic challenge

facing the United States in the years ahead. Ultimately, the global war on terror cannot be separated from the global effort to prevent and contain the spread of WMD. States of greatest proliferation concern are also states whose ties to terrorism are of acute concern to U.S. policymakers, and access to state programs remains the easiest and quickest path to WMD capability for terror organizations.

- *Beyond nonproliferation and deterrence.* The emergence of these dangers highlights the limitations of the traditional strategic framework constructed around nonproliferation and deterrence. In the administration's view, the international nonproliferation regimes have "underperformed" in the last decade, allowing rogue state programs to advance and the norms against WMD to erode. In particular, there is a growing perception that the regimes allow determined proliferators to achieve far too much progress under the cover of treaty compliance. This has contributed, in the words of Director of Central Intelligence George Tenet, to "the continued weakening of the international nonproliferation consensus. Control regimes like the Nonproliferation Treaty are being battered by developments such as North Korea's withdrawal from the NPT and its open repudiation of other agreements."⁶⁵ In recognition of these problems, the national counter-WMD strategy emphasizes the need to strengthen traditional nonproliferation mechanisms.

Similarly, there is a concern that international law and the laws of armed conflict need to be adapted to address more effectively the threats posed by WMD and the "new terrorism." By reserving the right to act preemptively in the face of clearly gathering but less than fully manifest threats, U.S. strategy challenges the international community to re-examine legal concepts such as *imminent threat* and *anticipatory self-defense*.

Finally, the new strategic framework explicitly recognizes the risks associated with relying on deterrence as the dominant means to manage WMD threats. These risks have been well articulated elsewhere by both senior leaders and independent observers and concern such questions as the potential asymmetry of stakes in regional conflict, relatively weak mutual knowledge and familiarity, and the challenges of attribution.⁶⁶ To be sure, deterrence remains an important element of counterproliferation strategy in recognition of those cases where conditions may be supportive. But fundamentally, the current strategy moves beyond the "preventive defense" model that has characterized past strategic postures toward the WMD threat.⁶⁷

- *The need for tailored policies.* New strategy formulations provide direction and emphasis for policymaking; they do not provide ready-made solutions for specific policy challenges. The purpose of providing the President with an expanded set of responses to complex strategic threats is to ensure flexibility in the development of tailored policies for specific problems. The toolkit of policy options must reflect the dynamic nature of the proliferation process, as well as the unique aspects of each particular case. In some cases, there may be a compelling case for U.S. unilateral political and/or military action, while other cases may best be approached through multilateral political and institutional means.

Policy Challenges

Intelligence and Policy

Sound policymaking must be informed by sound intelligence. The controversy over prewar estimates of Iraqi WMD programs and capabilities underscores the uncertainties inherent in WMD threat assessments and the care that must be taken when using those estimates to shape and advance national policy. The fact remains that even though the Intelligence Community devotes an order of magnitude more attention to WMD issues compared to 15 years ago, what is not known still far outweighs what is known. This may not change dramatically in the next 15 years. This fact, and the difference between what is

We must enhance traditional measures . . . that seek to dissuade or impede proliferant states and terrorist networks, as well as to slow or make more costly their access to sensitive technologies, material, and expertise. . . . We will identify and pursue new methods of prevention, such as national criminalization of proliferation activities and expanded safety and security measures.

—National Strategy to Combat Weapons of Mass Destruction

known and unknown in any particular case, takes on tremendous political and military significance when national policy is more proactive and gives serious consideration to preemptive military action to counter WMD threats. Clearly, a more proactive posture places a greater burden on intelligence to “get it right the first time.”

If the new strategic framework defines a lower threshold for action in responding to WMD threats, policymakers need to give more systematic thought to what this means for actionable intelligence and for making the case for action based on intelligence. If a “gathering threat” is a legitimate basis for U.S. military action, what kind of intelligence defines this threat? What level of confidence is required in

this intelligence? And how are threats that are less than obvious best explained to the Nation, our allies, and the international community? When the threshold for action is lower, and the stakes involved in action are high, making the connection between “intelligence” and “threat” in a convincing way to these audiences will be a challenge.

Proliferation Prevention

Nonproliferation will remain a vital instrument of national policy for at least three reasons. First, prevention efforts can help contain the military threat, even when their success is less than complete. For example, some observers believe the UN weapons inspections in Iraq in 2002 prevented Iraq from mobilizing its chemical and biological warfare capabilities, the result being that coalition forces did not encounter this particular threat. The international scrutiny inherent in some nonproliferation activities may thus complicate the development and/or deployment plans of WMD states. Second, nonproliferation is one means to help shape the security environment, focusing international cooperative efforts on the most serious threats the global community faces, reducing the incentives of friendly nations to acquire independent WMD capabilities, and sustaining global

norms that are not always easy to ignore. Finally, the state proliferation problem cannot be separated from the terrorist WMD threat. To the degree state programs can be contained through the international nonproliferation regime, this reduces the prospects that terror groups will acquire nuclear, biological, or chemical weapons.

While nonproliferation efforts remain vital, it is important to recognize the challenges facing these efforts. Nonproliferation faces an uphill struggle for several reasons. First, and most obvious, is that key trend lines point the wrong way. More states are seeking WMD, there are more suppliers, terrorist groups are increasingly interested, and secret procurement networks are developing faster than states are willing or able to detect, interdict, or dismantle. States that may publicly proclaim the importance of nonproliferation often lack the degree of commitment needed to take concrete action to limit the spread of weapons and technology. Governments and publics in Europe and East Asia have tended to place economic and political interests ahead of nonproliferation and to shrug off emerging WMD threats.

In the nuclear arena, the rhetoric of disarmament often drowns out the direct challenge to the nonproliferation regime posed by rogue states that use the NPT as cover to develop nuclear weapons. In fact, the internal balance embodied in the NPT between disarmament, nonproliferation, and the peaceful use of nuclear energy has been upset by the actions of these states. While disarmament of major weapon states' arsenals has seen great progress, nonproliferation is lagging. This could put at risk both the pace of nuclear disarmament and the prospects for peaceful nuclear cooperation. The initiatives announced in the President's February 11 speech are aimed at plugging the holes in and strengthening the nuclear nonproliferation regime.

Increasingly, the willingness of states to enforce national export control laws and interdict illicit WMD transfers and shipments will be seen as a test of their commitment to an active nonproliferation posture and to preserving the integrity of the international nonproliferation regime. Likewise, like-minded states must become more willing to enforce compliance with treaties and technology control agreements in a way that clearly conveys that chronic noncompliance will be punished. Toward this end, the United States supports higher funding levels and greater legal authority for international organizations that monitor treaty compliance. Ultimately, nations must be willing, individually and collectively, to leverage their influence and power to convince proliferators that they face isolation and more serious consequences if they do not change course. The fate of the Saddam Hussein regime should serve as a warning to those who would defy the international community in their pursuit of WMD.

The Iraq war also presents an important—and perishable—opportunity to create a great power consensus to take action to prevent proliferation and to hold regimes accountable for the use of WMD and WMD support to terrorists. Such a consensus could be expressed through a UNSC resolution or some similar statement, and could be further “operationalized” by concerted, coordinated attention to problem countries, willingness to buttress established inspection capabilities, tightened definitions of what constitutes illegal WMD activities, criminalization of personal involvement in such activities, and enhanced

consultation on “what if” scenarios. Achieving this kind of great power consensus will not be easy, especially in light of postwar difficulties in Iraq—and even more so if it leads to demands that the United States change its policy regarding the first use of nuclear weapons.

One problem country of concern is Iran, which presented a significant threat to the NPT regime through its aggressive effort, under the guise of treaty compliance, to develop a nuclear weapons capability. Although Iran’s nuclear program appears to be further along than many observers had expected, recent actions by both the IAEA and some U.S. allies led to a concerted multinational response that made Iran’s leaders rethink its posture. Iran’s recent acceptance of the IAEA additional protocol and provision of information regarding its earlier enrichment and reprocessing activities, including that concerning international sources of supply, demonstrate the value of concerted international pressure. Beyond the nuclear issue, Iran also represents one of the clearest examples of the dangers represented by the proliferation-terrorism nexus. Because Tehran sponsors and hosts terrorist organizations as a matter of national policy, Western nonproliferation efforts directed at Iran have strategic import that go beyond just the balance of power in the greater Middle East. The Iranian challenge sits directly at the intersection of the global nonproliferation efforts and the global war on terror.

More generally, it is important to address the “people problem.” For allies and friends, the capability to defend populations and strategic assets from regional WMD threats is likely to be a critical factor in how these nations behave in a crisis—both in their response to WMD coercive threats and their willingness to cooperate militarily with the United States. It is also likely to influence their calculations regarding whether to seek independent WMD capabilities of their own. Helping allies and friends to protect their own people takes multiple forms, including declaratory policy, collaborative active and passive defense, and assistance to consequence management planning.

The other dimension of the people problem focuses on the key personnel of proliferating states. History shows that WMD programs often are critically dependent on the work of a very small cadre—in some cases just one or two key individuals. The policy question is: What can be done to influence these individuals with the goal of slowing down or impairing state programs? Understanding that there may be political and/or legal constraints on the ability of the United States or some other countries to undertake such a campaign, can key personnel be motivated to decline or limit participation in WMD activities? To sabotage such activities? To defect under Western protection? While challenging, as an element of strategy this approach has the potential for significant payoff, especially in cases where military options are problematic.

Priority must also be given to heading off developments likely to have an accelerating effect on weapons proliferation. Proliferation “accelerators” include country breakouts, treaty breakdowns, and, perhaps most significant, successful use of one or more weapons of mass destruction—by a regional aggressor, a “third party” (for example, India, Pakistan, Israel), or a terrorist group. Such developments likely would lead some governments—friendly and unfriendly—to reconsider the costs and benefits of acquiring WMD and could trigger proliferation beyond the usual suspects in regions of strategic

importance. “Successful use” by an adversary could include deterring the United States from countering regional aggression; undermining coalition building or maintenance; raising U.S./coalition costs significantly; inflicting widespread casualties; avoiding punishment or retaliation; or prevailing in a regional conflict. By lessening the prospects for successful WMD use and the proliferation “shock” this would create, counterproliferation efforts contribute importantly to nonproliferation goals.

By the same token, U.S. consideration of nuclear weapons employment (for strategic target destruction, war termination, or retaliation) should take account of the potential accelerating effect of such action. In this context, there are nonproliferation benefits to providing national leaders with robust nonnuclear alternatives to achieve decisive operational and strategic effects across the spectrum of conflict. Expanded nonnuclear options are thus an important contributor to nonproliferation. Credible U.S. nuclear weapons employment options, however, remain important to deterrence.

Finally, it must be recognized that it is not always possible to reconcile fully nonproliferation imperatives and the war on terror. In fact, the global war on terror has already presented the United States with nonproliferation policy tradeoffs. Consider Pakistan. Since September 11, 2001, Pakistan’s role in the war on terror has replaced its role as a proliferator as the central focus of U.S. policy. The question is no longer (as it was a few years ago): “Should Pakistan be legitimized as a nuclear weapon state?” but rather, “How can we ensure that Pakistan remains stable and committed to the war on terror and that its nuclear weapons remain secure?” The nuclear arms race on the subcontinent remains an important concern, but in practical terms, this has become a lower priority in relation to the war on terror. This has meant, for instance, a return to normal relations with Islamabad despite the nuclear tests of 1998 and the military coup of 1999, the lifting of nonproliferation sanctions, and the muted reaction to evidence of Pakistani assistance to North Korea’s (and possibly Iran’s) uranium enrichment program.

In the case of Yemen, the United States permitted the transfer of North Korean ballistic missiles in December 2002 due to Yemen’s status as an avowed partner in the war on terrorism. The vital importance of the counterterrorism campaign is likely to present policymakers with similar tradeoffs in the future.

Interdiction

Policy tradeoffs aside, the Yemen episode points to the growing importance of interdiction operations. “Proactive interdiction” has emerged as significant element of national counterproliferation strategy, so much so that it is now codified in a separate Presidential guidance document. Greater attention and a more systematic approach to interdiction is a response to the growing volume and complexity of the trade in WMD materials and technologies. Without a sustained effort to detect, track, and disrupt this trade from supplier states to acquiring states and even possibly terrorist organizations, the United States and its security partners will miss critical counterproliferation opportunities. The new approach to interdiction has taken shape through a number of initiatives.

- *A new interagency structure* is now in place to review intelligence assessments, identify and prioritize interdiction opportunities, develop courses of action, identify required resources and operational requirements, and assess political and legal issues. This process is capable of rapidly developing recommendations for senior leaders when faced with time-urgent circumstances. Courses of action include diplomatic demarches, seizure of shipments, disruption of financial networks, and military action as warranted.
- *Intelligence* is clearly a critical enabler of a more proactive interdiction strategy. A priority task for the Intelligence Community is to determine how best to focus its collection and analysis capabilities on the specific needs of interdiction operations. Key to this is improved understanding of the status of WMD programs, the critical nodes and processes of these programs, and procurement relationships and supply networks.
- *International cooperation* is equally important, for while it may be possible to achieve some interdiction successes unilaterally, only a sustained multilateral effort provides the basis for a systematic attack on the trade in WMD materials and technologies. The President's announcement in May 2003 of the Proliferation Security Initiative (PSI) is a major step in this direction. This initiative is a vehicle

When weapons of mass destruction or their components are in transit, we must have the means and authority to seize them. So today I announce a new effort to fight proliferation called the Proliferation Security Initiative.

—George W. Bush
May 1, 2003

for cooperation among like-minded nations to take advantage more aggressively of existing domestic and international law to intercept WMD-related shipments. Eleven nations have joined the initiative to date.⁶⁸ These nations have agreed on a set of broad (nonbinding) principles, committed to improved information sharing. Also a series of interdiction training exercises over the coming months in the Pacific Ocean, Indian Ocean, and Mediterranean Sea are planned. The first of these exercises, Pacific

Protector, occurred in September 2003 in the Coral Sea and involved the forces of Australia, France, Japan, and the United States. In his February 11 speech, President Bush called for an expansion of the PSI to target all aspects of proliferation networks, not just shipment and transfer, and to encompass law enforcement as well as military and intelligence services.

While global in nature and not openly directed at any particular country, the PSI is clearly an effort to increase pressure on North Korea. How this affects the outcome of the six-party talks on North Korea's nuclear program remains to be seen. Over the longer-term, the impact of PSI in combating WMD may depend to a large extent on two factors: how broadly its membership can be expanded (especially to include Russia and China), and whether international law can be strengthened to expand the legal basis to interdict (especially on the high seas). Already, however, PSI has secured a major success. A coordinated U.S., German, and Italian interdiction of centrifuges headed for Libya is credited with moving then-ongoing U.S.–U.K.–Libya negotiations over the elimination of Libya's WMD programs to a decisive, positive conclusion. The Proliferation Security Initiative is a

good example of how a “coalition of the willing” can be formed to marshal the collective will and capability of like-minded nations.

Coercive Diplomacy, Counterproliferation Operations, and Preventive War

If national strategy now implies a greater willingness to consider coercive diplomacy and military action, what are the critical factors in assessing prospects for success? Coercive diplomacy is very situation-dependent but generally has greater prospects for success when certain conditions are present. For instance, if on the part of the target of coercive diplomacy there is an asymmetry of stakes, a zero-sum view of the potential conflict, an acceptance of war as a legitimate instrument of policy, a belief that the costs of war are manageable, and weak perceived rewards for crisis resolution, then coercive diplomacy is unlikely to succeed. In U.S. encounters with rogue WMD states, such as Iraq and North Korea (to date, at least), coercive diplomacy has not yielded satisfactory outcomes. In other cases, conditions were more conducive to success—for example, U.S. policy in 1995 toward Libya and the Tarhuna chemical warfare facility.

But even when its prospects for success are limited (or nonexistent), coercive diplomacy is often a political prerequisite for taking military action. Thus, it is often necessary to demonstrate the failure of coercive diplomacy to build the political consensus required to take more decisive action. Where it is not possible to reconcile this political reality with the imperatives of U.S. policy, there likely will be less prospect for building international consensus and greater prospect for U.S. unilateral military action.

What is the range of possible counterproliferation operations? A comprehensive spectrum might include “non-military operations,” such as international inspections, and “operations other than war,” such as elimination and exploitation missions, intelligence gathering, and so forth. Offensive military action can range from selected strike operations to major combat operations in support of a preventive war strategy. Limited counterproliferation strikes are likely to be successful when there is a well-defined target set; obstacles to rapid reconstruction of the target set, if destroyed or damaged; and few political constraints. Nuclear, missile, and some chemical weapons programs generally require an extensive infrastructure, elements of which will have recognizable signatures. If successfully attacked, their reconstruction can be time consuming and costly. Israel’s airstrike on Iraq’s Osirak reactor complex in 1981 forced Baghdad to initiate a uranium pathway for nuclear weapon development and unquestionably delayed Iraq’s nuclear program. Importantly, this nuclear facility was not yet on line, meaning there was no chance of the airstrike releasing hazardous materials.

By contrast, U.S. airstrikes in Operation *Desert Fox* (December 1998), intended to damage Iraq’s capability to develop WMD, inflicted only limited damage on Iraq’s chemical and biological warfare capabilities—in large part because senior leaders feared creating a hazardous release that could harm civilians.⁶⁹ Similar constraints appear to have been present in Operation *Infinite Reach*, in which U.S. cruise missiles struck a suspected chemical weapons facility near Khartoum, Sudan. The trend toward hardened and underground facilities as a means to protect WMD programs will only further complicate the

planning and execution of counterproliferation strike operations. While DOD is making major investments in capabilities to overcome such countermeasures and constraints, it also makes sense to consider the “softer” elements of rogue WMD programs. In particular, as noted above, tracking and interdicting both the trade in WMD materials and key personnel can help confront proliferators with more dynamic resistance and reduce reliance on military strikes to achieve counterproliferation goals.

Operation *Iraqi Freedom* was in some sense the war in which counterproliferation objectives were at the forefront in that its principal public rationale was elimination of a growing WMD threat. In reality, the rationale for war was more complex, as senior leaders have openly acknowledged. And the controversy over prewar intelligence further complicates efforts to extract general policy lessons from the campaign. But the question should be asked: When is preventive or preemptive war justifiable to eliminate a WMD threat? When the state threatens to expand its WMD significantly? When the state threatens to export WMD or transfer WMD to terrorists? When the state threatens to use WMD? When the state has enough WMD to pose a challenge but not to inflict massive casualties? There is probably no single correct answer to this question, in part because WMD threats do not necessarily stand alone as a potential *casus belli*. Context is all; reality tends to be more complex, and rogue states are labeled as such not simply because they seek or possess WMD, but because they behave more broadly in ways that defy accepted norms. This means that consideration of preventive or preemptive war in many if not most cases will be informed by a number of factors beyond WMD threats. In this sense, Operation *Iraqi Freedom* may be closer to the actual model for future conflict than its predominant public rationale suggests.

When wars to eliminate a WMD threat are also wars to remove or change a regime (as in Operation *Iraqi Freedom*), counterproliferation objectives coexist with other strategic and operational goals. Postwar WMD elimination (including exploitation activities) is likely to be challenging enough when it is the primary postwar mission. But when it is part of a much broader agenda of political, security, social, and economic tasks, it can only become more complicated. The dynamics of preventive wars where regime change is the necessary condition to eliminate a WMD threat require careful thought, which should be stimulated by the lessons learned about both the runup to war with Iraq and the war’s aftermath.

A final consideration is the degree to which offensive action influences broader proliferation trends. Did the U.S.-led invasion make it more or less likely that states of concern would continue to pursue WMD programs? There is not yet a clear-cut answer to this question, but the balance of evidence is encouraging. On the one hand, North Korea asserted that the Iraq invasion has validated and reinforced its motivation to acquire nuclear weapons since it holds that only nuclear weapons can protect it from U.S. aggression. On the other hand, since the Iraq invasion, Libya has renounced its WMD programs and allowed international verification of program dismantlement. Iran has admitted to past transgression of its NPT obligations and agreed to a more intrusive IAEA inspection regime. Neither of these two countries, however, has attributed these actions to the Iraq invasion (nor would it be likely to do so). North Korea also has continued to express a willingness to

halt its nuclear weapons program in exchange for U.S. concessions relating to economic and energy assistance and security assurances, although its sincerity remains in doubt. Since the Iraq invasion, there also is evidence of a more serious and concerted response by other countries to the proliferation threat, represented by the launch of the multinational Proliferation Security Initiative, the successful U.K.–France–Germany negotiations with Iran on the latter’s nuclear activities, and the initiation of the six-nation talks on North Korea’s nuclear weapons programs. The UN Secretary General also has acknowledged publicly that only when the security dangers driving American policy are addressed by collective security structures can the international community expect the United States to look more favorably on multilateral solutions. A strong case can be made, therefore, that a proactive American posture (in word and deed) toward WMD has at least catalyzed both governments and international institutions to take this challenge more seriously.

Homeland Security

During the Cold War, the United States defended the homeland by projecting decisive military power at the sources of threats. Even before September 11, 2001, the Nation recognized this was no longer a sufficient response to the threats presented by the post-Cold War world. Governments at all levels have acted to align better their capabilities, organizations, and resources to address the needs of preventing, defending against, and mitigating the effects of WMD attacks in the United States. The “National Strategy for Homeland Security” articulates a vision and a program to reduce vulnerabilities, improve intelligence, and enhance response capabilities. As this effort, spearheaded by the Department of Homeland Security (DHS), continues to mature, a number of important issues present themselves. Among the most significant challenges for the homeland security community are three key issues: the role of DHS in developing capabilities, research and development into medical countermeasures to the bioterrorism threat, and the role of individuals in the homeland security effort.

The DHS role in developing capabilities. The Department of Homeland Security, whose budget is one-tenth that of the combined DOD–Intelligence Community budget, faces enormous challenges in improving the capabilities of Federal, state, and local authorities. As in DOD, effective homeland security solutions require effectively combining material and nonmaterial solutions. On the material side, there is a major emphasis on rapid deployability and affordability—that is, quickly bringing to the field cost-effective technologies and systems that are of immediate benefit to Federal, state, and local defenders and responders. These capabilities ideally will be “dual use” in that they have utility for missions other than homeland security (for example, public health, natural disaster response). Where they are not dual-use, they must be “turnkey” (easy to operate and maintain).

Acquisition strategies, accordingly, are emphasizing nondevelopmental (that is, off-the-shelf) capabilities combined in innovative ways through systems integration and spiral development of new capabilities (that is, early deployment of partial solutions backed by preplanned product improvements). Examples of the former include the environmental samplers being used in 30 cities as part of the BioWatch program (at an annual

cost of \$40 million), and the nuclear detection systems being deployed at selected military facilities. Over the longer term, the challenge facing DHS is to leverage the Nation's science, technology, and systems engineering infrastructure to develop homeland security capabilities that are true "force multipliers" and represent asymmetric responses to asymmetric threats.

On the nonmaterial side, the importance of organization and training cannot be overstated. As in DOD, defense in-depth does not result from technology alone, but from the effective application of technology through innovation in organizations, operational concepts, as well as tactics, techniques, and procedures. Realizing the homeland security analogue to this approach is all the more daunting because the "force" is highly dispersed geographically and organizationally and under the jurisdiction of multiple Federal, state, and local authorities. Technology can help mitigate this challenge, through fielding highly interoperable systems for instance, but the real danger is that the full benefits of robust technology solutions provided by the Federal Government will not be realized because of shortcomings in organization, training, and operations at the state and local levels, some of which will be driven by funding shortfalls.

Medical countermeasures against bioterror attack. Such countermeasures are now a major focus of the National Institutes of Health. Budgets have expanded dramatically in recent years to support basic research, expansion of research capacity (through construction of new biocontainment facilities), and product development. The importance of this enterprise was underscored by the President's announcement in the 2003 State of the

Union address of Project BioShield, an initiative to develop and make available modern, effective medical countermeasures. Project BioShield will ensure that resources are available to support the development of next-generation countermeasures and allow for expedited research, development, and procurement.⁷⁰

Compared to R&D for military countermeasures, development of vaccines, treatments, and diagnostics for the civilian population is more complex. The civilian population is more diverse with respect to age and health conditions and faces a broader set of possible vectors for exposure. As a result, prioritizing R&D is more difficult. At the same time, there is tremendous potential benefit in this work for strengthening capabilities

to cope with infectious diseases that occur naturally—a more serious problem in terms of the number of people who are affected globally. The fight against bioterror requires mobilizing the same expertise, resources, and technologies.

Basic research in support of countermeasures development encompasses microbial physiology and ecology, host defense, the development of animal models to create a basis for countermeasures development, and a concerted effort at genomic sequencing of many different microbes, the latter being pursued through collaboration with other Government

In these post-9/11 times of increased potential for chemical, biological, radiological, and nuclear and other terrorist attacks, it is important now more than ever for the United States to take all necessary steps to protect its citizens from these agents. The current security environment dictates the need for rapid acquisition of countermeasures.

—Tommy Thompson
March 27, 2003

agencies. Vaccine development focuses on improving existing vaccines and developing new ones—both with the goal of ensuring the widest possible suitability for all segments of the population. One promising candidate is a next-generation smallpox vaccine.

In addition to developing new treatments, an important aspect of therapeutics development is the study of existing off-the-shelf antibiotic and antiviral medications to determine if they have application to diseases for which no data have been established. For instance, we know there are alternatives to ciprofloxacin and doxycycline for treatment of inhalation anthrax, but there is little data to document these alternatives. With respect to the treatment of smallpox, recent work in the area of monoclonal antibodies looks promising. In the area of diagnostics, the civilian sector can build extensively on the work done in DOD. Leveraging advances in molecular imaging and nanotechnology is key to improved diagnostic capabilities. Today, we are on the threshold of “gene chip” diagnostics, whereby a physician in an emergency room can insert a blood sample into a machine that can provide a rapid diagnostic assessment.

The role of individuals and “civil security.” Civil security refers to the role that individuals play in homeland security. The National Strategy explicitly recognizes the role of ordinary citizens in protecting the homeland, but to date there has been little effort to articulate that role and define the practical ways it can be made real. This requires treating the public as a genuine stakeholder and empowering individuals to undertake preparedness activities that will help minimize the damage of a WMD attack and facilitate recovery.

In practical terms, this means focused attention to risk education and preparedness measures in “peacetime” (that is, before an event), and warning and protective action during and after an event. Social science research suggests that risk education works best when potential threats can be personalized. Most Americans hear about catastrophic terrorism from national leaders (or media outlets) who appear to be articulating a threat to the Nation, as opposed to a threat whose effects likely would be felt most directly by particular communities. Nor is there much discussion of lesser (that is, noncatastrophic) threats that could involve WMD and which in fact may be more likely. Communication efforts by the Government, such as the Homeland Security Threat Advisory System, are not intrusive enough for effective risk education or as a spur to individuals to undertake a personal risk assessment that is the basis for taking advanced preparedness actions.

Greater preparedness will yield practical and psychological benefits by increasing the resilience of individuals in a crisis and reducing the burden on responders. The current preparedness paradigm is an “all hazards” approach that makes few distinctions between natural disasters and WMD events. Those who view deliberate WMD attacks as unique and requiring some specialized response capabilities are challenging this model. Many of these specialized capabilities are the province of Federal authorities (for example, the National

We need this participation from our citizenry. It's not only good for each community, it's good for the citizens to know that they're helping to serve a great nation by serving their community.

—George W. Bush
April 8, 2003

Pharmaceutical Stockpile, viable vaccine production capability, national warning system, standards for protective equipment), while some are properly under state and local authority (local response plans), and still others are a matter of individual responsibility (respiratory protection, shelter-in-place, medicines). Preparedness efforts should leverage research that indicates a correlation between preparedness and factors such as education, personal experience with disasters, income, children in the household, and links to the community—and should also expand the focus from the home to the workplace and schools.

With respect to warning, the challenge is to reach a large and diverse population with time-urgent information about what specific actions to take. Even under the best of circumstances, there may be significant time lags between an event, official awareness of the event, developing a warning recommendation, issuing the warning, and public receipt of the warning. For some WMD events, such as a biological weapons attack, there likely will be no discernible, discrete event to trigger the warning process.

Warnings are issued by Government but carried over a private broadcast communications infrastructure. The Emergency Alert System provides for immediate Presidential access to the airwaves to address the Nation but has never been used. Broadcast media can air more tailored warnings directed at state and local populations on a voluntary basis, but they cannot legally be compelled to do so. Concerns related to liability may be an impediment. At the Federal level, there is no clear lead agent for issuing warnings. The entire enterprise requires modernization.

Protective actions that individuals can take can build on extensive experience with evacuation from natural disasters, but there is less experience with sheltering and quarantine, which in some cases may be the more appropriate responses. The decision whether to evacuate or shelter-in-place may not always be clear-cut, and uncertainty is likely to be exacerbated if there are problems with warning, or if there appear to be differing expert opinions on the best course of action. Public attention to and confidence in government directives are critical. Compliance with directions for self-administering antibiotics among those exposed or possibly exposed to anthrax in the fall of 2001 is not encouraging in this regard. Only 40 to 65 percent of those taking the drugs did so for the full-recommended course of treatment. Similarly, in 2003 there were problems in some countries with quarantine and isolation compliance during the severe acute respiratory syndrome outbreak.

Steps that can be taken to improve civil security capabilities and better enable individuals to take meaningful actions include the following:

- establish a DHS office for liaison to the public at large, similar to liaison functions for private industry and state and local governments
- develop a risk education strategy that leverages previous activities such as the Federal Emergency Management Agency Project Impact, which worked to create disaster-resistant communities
- give greater attention to workplace preparedness
- strengthen the DHS “Ready” campaign and measure the results through surveys
- designate DHS the Federal lead agent for warning

- improve decision support software for officials who must make protective action recommendations
- update state and local shelter, evacuation, and quarantine plans
- develop standards for individual protective equipment to be used by the public
- establish decontamination and compensation standards in advance.

Conclusion

To deal with the growing threat posed by the spread of weapons of mass destruction, U.S. policymakers developed a national strategy based on three pillars: counterproliferation, strengthened nonproliferation, and consequence management. Within this framework, the administration developed policies to meet the threat as well as to deal with shortcomings highlighted by the threat. The latter include the need for sound intelligence to help policy formulation, the need for revamped proliferation controls, the need for alternate policy tools, such as interdiction and coercive diplomacy, and the growing importance of homeland security measures. Great strides have been made in many of these areas, as seen in programs such as PSI and BioWatch. However, challenges still remain.

Meeting the Challenge: Defense Planning

We will ensure that all needed capabilities to combat WMD are fully integrated into the emerging defense transformation plan.

—National Strategy to Combat Weapons of Mass Destruction⁷¹

This is a time of extraordinary ferment in defense planning. Even before September 11, 2001, and the anthrax attacks, efforts were under way to transform defense strategy and planning, and the way in which the Armed Forces organize, train, equip, and fight. The last 3 years have witnessed the emergence of new strategy-policy frameworks (for example, the Quadrennial Defense Review and Nuclear Posture Review), more robust defense guidance processes, a new structure for generating joint warfighting requirements (Joint Capability Integration and Development System), new and transformed organizations (for example, Northern Command and Strategic Command), and new defense missions (for example, Global Strike and homeland defense). And we have seen the first major war prosecuted with the express goal of eliminating a WMD threat.

While counterproliferation is just one dimension of this larger enterprise, it is vitally important in light of the emphasis placed on combating WMD in national strategy and guidance pronouncements. A more proactive posture toward WMD threats and the possibility of WMD battlefields place unique burdens on the Armed Forces. Improving counterproliferation planning and fielding capabilities to counter regional WMD threats has been a major DOD thrust since the end of Operation *Desert Storm*, and much progress has been made. In many ways the force that prevailed in Operation *Iraqi Freedom* was significantly more capable of coping with possible WMD use than the force that prevailed in 1991. Passive defense, active defense, and counterforce capabilities are all more robust today. But important gaps remain, and the most recent Iraq war also revealed the need for new kinds of operations (for example, WMD elimination). Likewise, new defense tasks have emerged from the Nation's intensive focus on the WMD terror threat to the homeland (for example, installation protection).

Filling Gaps in Capability

Biodefense

Biological warfare remains the least understood aspect of the WMD threat. Closing this deficit in ways that allow development of more robust material and nonmaterial countermeasures remains, accordingly, a high priority for DOD and other agencies that support the

biodefense effort. This is an area of defense planning that in many ways is ideally suited to the concept of “capabilities-based planning,” with its emphasis on preparing against an uncertain array of possible threats. As discussed in chapter two, the BW threat is highly dynamic, so much so that it no longer makes sense to plan countermeasures only against those threats that can be validated by intelligence. To do so would risk missing too many plausible, if non-evidentiary, possibilities. Senior leaders now recognize that investment strategy must be dynamic as well, and include serious research and development on countermeasures for threat agents

One problem with threat-based approaches is that our intelligence about chemical and biological threats is inherently limited and uncertain—given the ease with which these capabilities can be concealed, especially when compared with nuclear or major conventional weaponry.

—Paul D. Wolfowitz
May 13, 2003

about which today we may know little.⁷² Only in this way can we hope to mitigate the significant prospects for surprise inherent in the onward march of biotechnology and genetic engineering. Changes in how DOD generates requirements and manages program acquisition for NBC defense will need to be supportive of this type of investment strategy.⁷³

Additionally, there has been progress in introducing a tailored concept of operations (CONOPS) that will enhance biodefense of bases and major installations. With this

CONOPS, field commanders have a risk-based template to guide preparations for BW attacks, increasing the prospects that both mission execution and force protection objectives can be met. This provides the basis for further development of doctrine, tactics, techniques and procedures, training, exercises, and organization to broaden and deepen the warfighter’s biodefense capabilities.

Strike Capabilities

Major advances in conventional weaponry are helping to enhance the capabilities of warfighters against a tough class of targets. Many of these advances are based on existing technology, which allows force developers to use off-the-shelf capabilities to create tailored solutions that can be made available rapidly in response to unfolding contingencies and strike requirements. This model has been followed in recent military campaigns to provide U.S. forces with improved penetrating and agent-defeat munitions.

Continued progress in developing capabilities to attack the most challenging targets is essential to both deterrence and warfighting.

- *Intelligence.* Adversaries are working hard at various forms of cover, concealment, and deception both to escape detection and provide some degree of operational survivability or sanctuary. This underscores the requirement for “exquisite intelligence” before and during conflict to hold at risk and/or defeat strategic assets. Real-time combat assessment is required to determine if there is a need for restrike and to determine the nature and extent, if any, of hazardous collateral effects.
- *Rapid precision strike.* Because the time window for engaging many WMD counterforce targets may be narrow, there will be a premium in these missions on what

has come to be called “network-centric operations”—the effective integration of intelligence, surveillance, and reconnaissance (ISR), rapid adaptive planning, collaborative decisionmaking, strike coordination, and real-time battle damage assessment. The need in some cases for highly prompt strike highlights a potential shortfall in current capability. Prompt conventional global strike is a potentially high-value deterrent and combat capability against a range of target types. That is, the ability to deliver decisive effects rapidly may be key to denying adversaries the time to exercise asymmetric strategies, holding strategic assets at risk before effective sanctuary is achieved, and restoring deterrence through rapid, shock-maximizing strikes. In particular, there is advantage for U.S. forces if time-sensitive targets can be held at risk at all times—including when theater-based assets are not available.

The notion of response time is undergoing transformation. Future response time in some cases will be measured in minutes rather than hours, to include decision process, locating and tracking targets, and strike. The requirement for prompt, nonnuclear global precision strike should be formally assessed, to include identification of supporting technologies, systems, and operational concepts (for example, hypersonic propulsion).

- *Nuclear weapons.* These remain the ultimate deterrent and sanction, even in the post-Cold War world. They also may continue to provide the best defeat solution for some challenging targets for years to come. U.S. nuclear forces should provide for a mix of capabilities that provide both global range and regional responsiveness. More tailored or discriminate capabilities would help enhance the deterrence credibility of U.S. nuclear forces, especially through lower yields, improved accuracy, and enhanced penetration for selected target types.

Installation Protection

Among the changes wrought by September 11 was a decision by senior DOD leaders to expand the scope of chemical and biological defense programs. No longer focused exclusively on the traditional passive defense mission of the warfighter, the DOD Chemical/Biological Defense Program now encompasses new critical missions related to homeland security, consequence management, support to civil authorities, and installation protection. The need for improved installation protective measures has evolved today into a major initiative to improve the self-defense capabilities of 200 DOD facilities in the United States and overseas.

The Installation Protection Program, managed by the Joint Program Executive Office for Chemical and Biological Defense, will provide prioritized DOD installations with integrated chemical, biological, radiological, and nuclear (CBRN) protection and response capabilities to minimize casualties, contain contamination, and maintain and (as needed) restore critical operations. The emphasis will be on readily available technologies to be improved incrementally over time with affordable sustainment costs. Installation solution sets include first responder equipment, sensors, medical surveillance and protection, information management, training, procedures, CONOPS development, interaction with local

communities, and enhanced physical security. The Joint Staff is developing standards to rationalize force protection, antiterrorism, and chemical-biological defense needs as the basis for budget priorities for fiscal year 2005 (FY05) and beyond. There is \$1 billion over the FY04–09 period to support 185 continental U.S. (CONUS) and 15 outside-CONUS service installations. Highest priority facilities will be those critical to command, control, communications, and intelligence (C³I) missions or the early generation of combat power. Second priority sites will be those that have the largest populations in or near them.

The Joint Service Installation Pilot Project (JSIPP), a pilot effort under way since September 2002, managed by the Defense Threat Reduction Agency (DTRA), is assessing protection requirements at nine CONUS sites with the goal of developing a template for installation equipment and training.⁷⁴ Emphasis is on NBC detection, medical surveillance, post-attack medical protection, individual protection, decontamination, and supporting command and control.⁷⁵ Baseline assessments and initial equipment lists have been completed. Ongoing activities include the refinement of CONOPS, plans, and procedures, site preparation, and training. The fielding of detection equipment and conducting functional exercises are planned for FY04. Lessons learned from JSIPP with respect to baseline analysis and initial network designed can be leveraged for the larger Installation Protection Program. One lesson learned is that one size does not fit all—that is, it is necessary to look closely at the requirements of individual facilities and determine the optimal mix of material and nonmaterial measures for each.

Attribution

The toughest attribution challenges occur during nuclear and biological events. For both, the process of acquiring physical evidence to support a forensics and attribution process could be problematic because the “crime scene” may not survive the event (nuclear) or even exist (BW). Therefore, forensic capabilities require improvement. In the

Attribution, with the accompanying possibility of prosecution or retribution, may be one of our greatest deterrent tools, hence a vital and compelling component of our defense against terrorism.

—Jay Davis, former DTRA Director
April 2003

nuclear arena, specific capabilities and timelines are classified, but it is generally acknowledged that timelines need to be shortened and that there has been a loss of skilled personnel and analysis capabilities in both the intelligence and technical communities. The still-unsolved “Amerithrax” case demonstrates just how difficult it is to determine responsibility for a bioterror event. It also shows that identifying the agent and its properties does not necessarily

lead directly to identifying the perpetrator(s). There is significant attention now to bioforensics, but much basic science remains to be mastered, and there is a huge data collection/management task to gather and organize known information on existing disease cultures and strains. For both nuclear and biological events, actual attribution is likely to be an inference based on comparison of forensic findings with what is known about the capabilities of foreign actors. Today, it is not clear who would make such a determination

and the process by which it would be made. Nor is it clear what standard would or should be used to inform judgments.

WMD forensics and attribution is not a mission for which DOD has the U.S. Government lead, though DOD has significant capabilities to contribute. As an example, the DTRA Domestic Nuclear Event Attribution program aims to reduce the timeline associated with collecting samples and assessing the technical characteristics of a domestic nuclear detonation. With respect to BW, the U.S. Army Medical Research Institute for Infectious Diseases will have the interim lead for forensic analysis of materials following a BW event until the new Department of Homeland Security facility is completed circa 2006. Given recognized shortfalls in WMD attribution, DOD should consider the potential of information operations and strategic military deception to favorably influence how potential adversaries perceive our ability to attribute WMD attacks. Successfully convincing adversaries that the probability of an attack going unattributed is low (and getting lower) could enhance deterrence of some WMD threats.

Force Structure Considerations

One issue requiring attention is how to better align force structure with the diverse requirements of counter-WMD missions. Specialized forces and assets supporting these missions (for example, NBC defense, elimination) need to be available to support combat operations, homeland defense, overseas consequence management, and possibly other missions. Today, there are insufficient forces and assets to meet the range of possible requirements. Senior leaders would face difficult choices in the event of multiple simultaneous requirements for these “low-density/high-demand” units. More such units are needed, and they need to be postured to support short-warning and short-duration contingencies. Too much of existing chemical-biological defense capability resides in the Reserve component, which takes longer to mobilize. Greater responsiveness is needed.

WMD Elimination

A proactive counter-WMD strategy that envisions the possibility of preventive war must consider the entire spectrum of counterproliferation operations—from reliably finding and characterizing an adversary’s WMD program to disarming adversaries of their WMD capability cooperatively or coercively. The requirement to exploit, dismantle, and eliminate the WMD capabilities of our adversaries is largely a new mission for DOD. A complete understanding of this mission is not yet in hand, and our experience base is quite limited, particularly for large-scale elimination efforts that may need to be executed under less than ideal conditions. Planning for Operation *Iraqi Freedom* compelled the development of initial concepts, plans, and organizations, leading to recognition among senior leaders that WMD elimination cannot be conducted improvisationally but must be institutionalized as an element of deliberate planning.

Elimination refers to the systematic and comprehensive removal of a hostile nation’s or organization’s WMD programs—their capability to research, develop, produce, store, deploy, and employ nuclear, chemical, and biological weapons and their means of

delivery. The focus is on real or potential adversaries and activities that could support current or future military operations, as opposed to disarming proliferators generally. In this context, elimination cannot be viewed simply as a “postwar” activity. How war is planned and executed directly shapes the nature of the elimination task; it must be considered at the outset and factored into all aspects of the planning process.

Conceptually, WMD elimination may be divided into three main tasks. Exploitation refers to locating, characterizing, and securing and functionally defeating an adversary’s WMD sites, documentation, personnel, and materials. Forensic evidence is developed as necessary. Destruction refers to rendering safe, dismantling, destroying, removing, or otherwise safely and verifiably disposing of weapons, materials, equipment, and infrastructure. Monitoring and redirection are intended to prevent the WMD threat from reconstituting, including the “conversion” of WMD activities and personnel. These tasks may be sequential for specific WMD sites but are likely to be simultaneous for larger WMD programs. Planning should reflect this, especially because each of the tasks requires some unique capabilities in terms of skill sets and expertise, equipment, and so forth.

Planning must also be sufficiently flexible to prepare for a number of possible operational and political environments. The elimination environment may be permissive or nonpermissive—or somewhere in between. It may be characterized by U.S. unilateral authority or some type of multilateral authority—or some combination of the two. Cooperation from knowledgeable sources may vary. The specific nature of the elimination environment will influence how elimination is conducted and the degree of international support it enjoys. As the experience in Iraq shows, elimination may well occur under less than optimal circumstances, especially if security conditions are problematic or prewar intelligence has been limited. One should not, therefore, assume that regime change (where that is the strategic objective) equates to elimination. The transition to a new regime may be a lengthy and complex process, and even with a new (presumably friendly) regime in place, elimination is likely to be a costly and resource-intensive undertaking.

In some cases, WMD elimination may require a multilateral approach. While U.S. military authorities likely would lead elimination efforts that occur during the conflict phase of U.S. or U.S.-led combat operations, in the immediate post-hostilities period, an international authority in some cases may be desirable for political or financial reasons (that is, to lend greater legitimacy to the effort and reduce U.S. costs). An international authority could also reduce the burdens on U.S. forces or free these forces for other missions—though it is just as likely that U.S. forces will have to provide logistical and other support to any international elimination effort. A more important consideration is the potential loss of control and freedom of action that could accompany the introduction of an international authority. This possible tension, and the “rules of the road” governing the interface between the U.S. military command and an international authority, are among the most important issues in planning for WMD elimination.

A number of other significant questions present themselves in considering how to embed WMD elimination into concepts, plans, doctrine, and organization:

- Who “owns” the elimination mission, and how is the mission best organized in DOD and from an interagency perspective?
- What specialized capabilities are required to support elimination (for example, nuclear, biological, and chemical sampling techniques to provide real-time confirmatory analysis)?
- How should the elimination mission account for the likely requirement to acquire concrete proof of an adversary’s WMD activities? What political and legal standards (for example, chain of custody) govern this aspect of the elimination process?
- How should elimination tasks be prioritized? How can we ensure a “dynamic re-tasking” capability that maximizes flexibility to direct elimination resources to high-priority sites, documents, or personnel?
- By what criteria do we determine that certain WMD assets need to be destroyed? What safety and environmental standards govern this process? What is the requirement for expedient disposal capabilities?
- Does elimination include “hot pursuit” of WMD transfers or operations against WMD “safe havens” in other countries?

Combatant Command Perspectives

U.S. Central Command integrated counterproliferation into its planning for Operation *Iraqi Freedom*. Despite many uncertainties regarding Iraqi WMD capabilities and intentions, a central aspect of planning was consideration of possible Iraqi WMD attacks and the range of countermeasures required to ensure that WMD use would not halt combat operations or put war aims at risk. The layered approach to countering Iraqi WMD included deterrence, active and passive defense, counterforce, and consequence management preparations. Deterrence efforts encompassed declaratory policy and public diplomacy as well as tailored information operations directed at the chain of command with responsibility for executing WMD attacks, military personnel and civilians who would be put at risk by WMD attacks, and the command and control system.

Fielded countermeasures also contributed to deterrence, but principally provided the means to neutralize the threat proactively from the outset of hostilities through operations against WMD delivery means, command and control, and storage, production, and R&D infrastructure. Significant resources were devoted to attack operations against Iraqi WMD delivery means, especially (but not exclusively) ballistic missiles. Early and intense targeting of delivery means and supporting facilities employed a wide range of U.S. and coalition ISR, strike, and special operations forces assets. These operations required and displayed a high degree of jointness. Iraqi forces launched a number of tactical ballistic missiles, all of which either fell harmlessly at sea or in the desert or were successfully engaged by coalition Patriot missile defenses. However, there were three friendly fire incidents involving the Patriot, which have been the subject of investigation.

Both passive defense and consequence management preparations reflected the contributions of coalition partners. In particular, consequence management enjoyed

strong international support dating back to the standup of Combined Joint Task Force—Consequence Management in late 2001 to support Operation *Enduring Freedom* in Afghanistan. Important participants include Germany, the Czech Republic, Romania, Slovakia, and Australia. This task force, based in Kuwait, continues to assist regional partners in developing their own consequence management capabilities.

During the conflict, of course, Iraqi forces did not employ WMD. As with the first Gulf War, we may never know precisely the reasons why. It is quite possible that there was limited or no WMD for Iraqi forces to deploy, given that coalition forces have discovered no WMD stocks since hostilities ended. *If* WMD were available, coalition deterrence and defensive measures may have played a role in preventing their use. The speed of the coalition offensive also may have degraded Iraqi command and control decisively or denied them the time to mobilize operational WMD capabilities. Thus, while Operation *Iraqi Freedom*

Chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) defense is a significant concern in the Pacific theater, and a potential showstopper for U.S. military operations, causing significant operational risk to Major War OPLAN [operations plan] execution. CBRNE is a critical operating condition and potentially the greatest theater threat I face, affecting everyone, everywhere, including our allies and the homeland.

—Thomas Fargo
June 26, 2003

may provide a useful model for how to prepare for major combat operations against a WMD-armed adversary, it provides limited lessons for how such operations may be affected by the actual use of WMD against U.S. and coalition forces.

U.S. Pacific Command (USPACOM) has taken important lessons from Operation *Iraqi Freedom* regarding reporting mechanisms, sensitive site exploitation, and the operations of a dedicated WMD staff support cell. These lessons are being integrated into command planning, in part by a newly established WMD division in the Plans and Policy organization. USPACOM faces an immediate

WMD operational threat on the Korean Peninsula, as well as other flashpoints and a significant increase in terrorism in recent years. It also has homeland defense responsibilities. The command's counterproliferation priorities emphasize closing gaps in actionable intelligence and countermeasures capability related to detection, individual and collective protection, and decontamination.

In the near term, the command is revising its plans to take more explicit account of chemical and biological warfare as a likely condition of combat and working to mitigate the risks to those plans posed by BW in particular. The emerging roadmap to improve biodefense includes a deployable BioSafety Level 3 laboratory to provide in-theater confirmatory analysis, BW agent background profiling to determine the naturally occurring level of disease agents in the area of responsibility, the Biological Combat Assessment System advanced concept technology demonstration (ACTD) to enhance assessment of counterforce strikes, an adaptive red-teaming initiative to develop a longer-term solution set through rigorous exercises and war gaming with coalition partners, and leveraging new technology as it emerges for a true “detect to warn” contamination avoidance capability.

Another major command concern is the decontamination of large frame aircraft, in light of the indispensable role that strategic lift plays in executing theater war plans. Today, strategic lift decontamination capabilities are limited, and the lack of agreed and approved decontamination standards and procedures would be a potential “showstopper” in the event of major conflict involving WMD. The Large Frame Aircraft Decontamination Demonstration seeks to identify methods of chemical decontamination and associated standards that will allow exposed aircraft to return to the United States and to full unrestricted use. Also of concern are limitations in large area decontamination. ACTDs such as Restoration of Operations and Contamination Avoidance at Sea Ports of Debarkation are intended in part to address this challenge.

U.S. European Command (USEUCOM) has responsibility for a vast geographic expanse covering 93 countries that are highly diverse politically, economically, and socially. The threat posed by WMD is only one of many security challenges facing the command and the choices that it must make in allocating its resources. At the same time, the strengthening of old alliance relationships and the establishment of new partnerships provide opportunities to address this problem that did not exist in the past. The primary proliferation concern will continue to be the threat from the Middle East, especially as medium- and intermediate-range ballistic missile technology spreads. Syria, which lies within the USEUCOM area of responsibility, continues to have strong motivations to pursue WMD as an asymmetric response to Israeli military power. Syria’s longstanding ties with terror groups is of significant concern in this light, and how Damascus pivots in the global war on terror will be critical to U.S. policy calculations.

Also of concern is the potential for WMD “leakage” from Russia and other former Soviet states, some of which are large and have limited capacity for border control. We know that states and terror organizations interested in WMD have actively sought weapons, materials, technology, and expertise from this part of the world, and from Eastern Europe as well. Addressing this problem is inextricably tied to denying terrorists access to WMD, and an important element of the USEUCOM counterproliferation program is support to theater security cooperation efforts and interagency activities such as Cooperative Threat Reduction and training for export control, customs, and border control. Important new partnerships have also emerged in the areas of passive defense and consequence management with countries such as the Czech Republic and Bulgaria, both of which supported Operation *Iraqi Freedom*.

U.S. Strategic Command (USSTRATCOM) must be prepared both to support regional combatant commands in planning and executing counterproliferation missions and to respond directly to Presidential or Secretary of Defense tasking to strike at strategic targets anywhere on short notice. USSTRATCOM’s broad responsibilities are encompassed in changes to the Unified Command Plan that assign it four previously unassigned missions: DOD information operations, global strike, integrated missile defense, and global command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR). This diverse portfolio requires marshalling much of the Nation’s

strategic deterrence and warfare capabilities in the service of truly global objectives that extend beyond the responsibilities of any one regional command.

Deterrence remains important, and USSTRATCOM maintains its role as steward of nuclear deterrence forces. Programs to sustain these forces and adapt them to new security circumstances continue to be a priority. But deterrence is now a more complex and dynamic phenomenon that increasingly transcends traditional nuclear-based constructs and requires the integration of a much broader range of national influence and power. Central to this transition are advanced conventional weapons, strategic defenses, information operations, and the C⁴ISR and planning capabilities that enable them. Integrated information operations in particular offer tremendous potential to reshape the application of national power for deterrence and warfighting but are still in many ways immature as a strategic tool. Greater rigor and discipline, better organization, a more highly skilled cadre, and fewer stovepipes are required to develop information operations as a capability that can achieve decisive effects that compare to traditional modes of combat. Operation *Iraqi Freedom* represented a step forward in some respects.

The global strike mission reflects the need for timely responses to rapidly emerging threats or rapidly unfolding contingencies, especially those involving weapons of mass destruction. This may be in support of a regional combatant commander or in response to Presidential direction. Either way, global strike envisions operations that can be executed within hours of tasking and are of short duration. This places a premium on a highly responsive planning capability and a ready suite of operational capabilities—conventional, nuclear, information-based, special operations forces—that can be brought to bear separately or in combination on short notice. New capabilities and technologies that offer promptness on a global scale, high precision, discriminate effects, and operational flexibility must be the focus of the R&D community. Some of these will be niche capabilities with highly specialized missions.

USSTRATCOM's integrated missile defense mission is central to transitioning missile defense activities from research, development, testing, and evaluation to operational capability. The command will develop the global missile defense concept of operations, the battle management system, and the command, control, and communications architecture. There are major challenges in this task, such as integrating various layers of defenses and synchronizing them with offensive operations, and developing decision processes for operations whose responsiveness may be measured in minutes and thus may require delegation of execution authority well below the most senior levels.

In the area of C⁴, the mission is to develop global capabilities that link national leadership and warfighters and provide a collaborative planning environment equipped with automated tools and rapid information processing, consistent with the mandate for transformational communications systems articulated by senior DOD leaders. USSTRATCOM is partnering with Defense Information Systems Agency and the Office of the Secretary of Defense to develop and operate the necessary infrastructure, architectures, and future capabilities. The challenge of “persistent ISR” is to meet both region-specific needs and the demands of truly global intelligence-gathering with a

finite set of resources. Metrics for ISR must transition from those driven by platform requests to those defined by the satisfaction of information needs by an integrated suite of traditional and nontraditional capabilities. The payoff can be significant: if sufficiently robust and persistent, ISR on its own can influence the calculations and actions of adversaries in ways that enhance deterrence, warfighting, and the attainment of counterproliferation objectives.

U.S. Special Operations Command (USSOCOM) has assumed significant responsibilities in the war on terror. Charged with developing a strategy to combat a global network of terror groups that lies beyond the responsibilities of any one regional combatant commander, USSOCOM stood up new planning and support structures that integrate the expertise of other commands, the services, DOD agencies, and other departments (for example, Department of State). With respect to WMD, special operations forces provide decisionmakers with a unique set of capabilities, to include acquiring precise intelligence to support targeting and combat assessment; seizing, disabling, or rendering weapons safe; holding at risk deep underground targets; and conducting surgical maritime interdiction missions.

Chapter Four

Challenges and Opportunities for the Future

The requirements to prevent, deter, defend against, and respond to today's WMD threats are complex and challenging. But they are not daunting. We can and will succeed in the tasks laid out in this strategy; we have no other choice.

—National Strategy to Combat Weapons of Mass Destruction⁷⁶

Today, to a degree not seen before in the post-Cold War era, the world's attention is focused on the challenges to international security posed by weapons of mass destruction. In Southwest Asia, North Africa, and East Asia, on the high seas, and in the councils of government, nations and institutions are engaged with increasing intensity on understanding, monitoring, preventing, and rolling back the proliferation of WMD. Increasingly, WMD in the hands of rogue states and terrorists is seen not only as a serious threat to the stability of key regions but also as a systemic challenge to the international order. In this sense, the United States and the international community find themselves at a moment of opportunity. Seizing this opportunity requires clarity on a number of important points.

No Single Solution

Increasingly, adaptation, innovation, and flexibility must be the watchwords of the counter-WMD fight. The template for action will vary, sometimes widely, depending on the specific challenge being addressed. Progress in Iraq and Libya, respectively, demonstrate the point. In Iraq, it required an act of regime change through conflict to ensure with the highest certainty that Iraq's WMD aspirations, potential, and capabilities no longer posed a threat to regional and Western interests. In Libya, "carrot and stick" diplomacy in the context of a shifting domestic landscape has yielded the promise of a major rollback of WMD capabilities and programs. In both cases, the United States found itself acting largely in conjunction with a single close ally.

In other cases, the approach to difficult WMD problems has taken on a more multi-lateral flavor. The combined efforts of European diplomacy and IAEA inspections has led to important progress in revealing the nature and scope of Iran's nuclear weapons program, ensuring a greater degree of scrutiny and transparency with respect to Iran's activities. This

may not end Iranian aspirations and programs, but a spotlight has now been cast on their efforts that at worst will be a complicating factor and at best could lead Tehran to reconsider its course.

In North Korea, the United States has insisted on—and forged—a regional diplomatic framework, casting North Korean nuclear (and ballistic missile) proliferation as fundamentally a regional security problem. Here, diplomacy has gained little traction to date, underscoring how policy options can significantly narrow once states cross key thresholds in their WMD programs and capabilities. Enhancing policy leverage, therefore, has been an important element of U.S. strategy. This appears to be a major (if unspoken) objective of the Proliferation Security Initiative, which targets a critical “center of gravity” of the North Korean regime: its shipments of proscribed and illegal goods. Is the PSI an

instrument of nonproliferation or counterproliferation? In reality, it is both—a hybrid policy tool that leverages military capabilities to advance the goal of prevention—demonstrating the declining utility of maintaining overly rigid categories of action in the fight against WMD.

The success to date of the PSI suggests that effective new tools can be created. By the same token, old tools require a fresh look. In light of recent experience with North Korea

All elements of the overall U.S. strategy to combat WMD must be brought to bear in targeted strategies against supplier and recipient states of WMD proliferation concern, as well as against terrorist groups which seek to acquire WMD.

—National Strategy to Combat Weapons of Mass Destruction

and Iran, there is increasing discussion of not simply tightening enforcement of the Nuclear Nonproliferation Treaty, but of revisiting the basic elements of the “grand bargain” embodied in the treaty. This is driven by widespread recognition that the NPT bargain—by which states foreswear nuclear weapons in exchange for access to peaceful nuclear energy—has been systematically abused by a handful of determined proliferators who under the guise of treaty compliance have been able to acquire or make significant progress toward acquiring a weapons capability. Emerging ideas for fixing the treaty regime include ensuring access to peaceful nuclear energy while prohibiting signatories from manufacturing, storing, or reprocessing nuclear fuel. Countries that sell peaceful nuclear technology would agree to guarantee the reliable supply of nuclear fuel.

Understanding a Highly Dynamic Phenomenon

Even as we make progress along certain important fronts, we are discovering that there have been significant gaps in our knowledge and understanding of WMD proliferation. Consider the four cases discussed above. In Iraq, the WMD operational threat appeared to be overestimated, calling into question the means by which the intelligence was both collected and analyzed. In Libya, we appear to have been surprised by Tripoli’s progress in the nuclear arena and the scope and sophistication of the nuclear black market central to this progress. Likewise, Iran was much further along in its

nuclear program than we believed before a number of significant covert activities were revealed publicly, leading to IAEA inspections. And if publicly revealed information is any guide, there are major gaps in our knowledge of North Korea's nuclear capabilities and our understanding of its intentions. One could even argue that these uncertainties have helped fuel divisions among U.S. policymakers.

In a sense, the more we learn, the more we are reminded of what we do not know. There are at least two important implications. First, surprise is likely. Indeed, we have experienced a good deal of proliferation surprise in the last dozen years and will face more in the future as proliferation efforts become more complex and sophisticated, abetted by a broader range of suppliers and increased mutual self-help among states possessing and/or seeking WMD. Proliferation surprise may be most likely—or perhaps most dangerous—in areas like biological weapons, where increasingly accessible advances in science can be directed toward military objectives quietly and with modest additional resources. Eliminating the possibility of surprise is not possible because intelligence will never be perfect. But finding the means to reduce the likelihood of major surprise should be a priority. In this light, recognition by senior leaders of the limitations inherent in the “validated threat” model for organizing biodefense efforts is a necessary and welcome development.

Intelligence gaps are problematic for policymaking under any circumstances, but they take on even greater significance when a more activist posture is adopted. This is the second implication—that such a posture places a tremendous burden on intelligence to get it right. Failure to do so when the threshold for military action in response to WMD threats has effectively been lowered can lead to serious consequences. Leaders and decisionmakers must give more systematic thought to what constitutes a “gathering threat,” what type of intelligence defines and documents such a threat, and the degree of confidence in intelligence required to make the case for military action or war.

By definition, intelligence deals with the unclear, the unknown, the deliberately hidden. What the enemies of the United States hope to deny, we work to reveal. In the intelligence business, you are almost never completely wrong or completely right.

—George J. Tenet
February 5, 2004

Nexus of WMD and Terrorism

Among some observers, there remain doubts about the motivations of organized terror groups to acquire and use nuclear, chemical, or biological weapons. They suggest that the attack of September 11, 2001—the event that has so galvanized the Nation into taking both terrorism and proliferation more seriously—has likely done little to strengthen the motivations of terror groups to use WMD. After all, this was a “low-tech” attack that achieved dramatic, strategic effects. And the subsequent anthrax attacks did not even approach what has come to be labeled “catastrophic terrorism” (but were still disruptive and costly to mitigate). Propositions of this kind can and should be debated,⁷⁷ but among decisionmakers there

appears to be a working assumption that, with respect to terrorists and WMD, “possession equals use.” We know terrorists are interested in acquiring these weapons, have made serious efforts to do so, and have talked about using them.

Given this, it is not surprising that policy focuses less on addressing the motivations of terrorists than on preventing terrorists from acquiring WMD and establishing robust defense and response capabilities.

Working the “supply” problem faces three challenges. First is the “state sponsor” problem. Access to state programs probably remains the easiest and quickest path to WMD capability for terror organizations. And states of greatest proliferation concern are in many cases states whose ties to terrorism are of great concern (for example, Iran). Thus the terror threat we fear most is inextricably tied to more traditional proliferation chal-

lenges associated with states. And while the barriers to state access may erode over time, there is still much to be gained through effective prevention and denial efforts.

The second challenge is the “loose WMD” problem. Here, our principal concern is the proliferation dangers posed by at-risk weapons, technologies, materials, knowhow, and expertise in the former Soviet Union. We know that organizations like Aum Shinrikyo and al Qaeda (as well as states like Iraq and Iran) have sought technologies and materials in this part of the world. Some observers have suggested that the time has come to take a fresh look at U.S.

The overwhelming disparity between U.S. forces and those of any potential rival drives terrorist adversaries to the extremes of warfare—toward “the suicide bomber or the nuclear device” as the best ways to confront the United States We continue to receive information indicating that al Qaeda still seeks chemical, biological, radiological, and nuclear weapons.

—George J. Tenet
February 11, 2003

threat reduction programs, with the goal of reinvigorating and strengthening them.

The third challenge is the “failed state” problem. Here, our principal concern is Pakistan, which has a growing nuclear arsenal and a friendly government under pressure from within and without. While our worst fears with respect to Pakistan have not come to pass, we cannot ignore the possibility of nightmare scenarios in which extremist elements, perhaps with the support or assistance of sympathizers in the armed forces and intelligence services, come to power in Islamabad or gain control of some or all of Pakistan’s nuclear weapons. Uncertainty regarding the physical security of Pakistan’s weapons also raises the possibility of the theft of one or more weapons.

An Institutionalized Response

We see a less improvisational response to proliferation clearly in the Department of Defense, where doctrine, plans, and programs to counter weapons of mass destruction have taken on greater institutional focus, particularly in recognition of persistent gaps in capability and the need for new thinking in key areas. This is occurring along a number of fronts, including the following.

- *Chemical and biological defense.* After several years of analysis, scientific investigation, and exercises, a new concept of operations and associated tactics, techniques, and procedures for defense of fixed sites against chemical threats is being implemented, based on an improved understanding of agent behavior and innovative application of contamination avoidance measures. A tailored concept of operations for biological defense is also being introduced, for the first time giving field commanders a knowledge- and risk-based template to guide preparations for possible BW attacks.

- *Unified command plan.* Changes in the Unified Command Plan explicitly recognize the need to align military missions with the threats posed by weapons of mass destruction. The establishment of U.S. Northern Command creates an institutional focal point for homeland defense activities. Likewise, by establishing a new Global Strike mission (assigned to USSTRATCOM), senior leaders recognized the need to enhance planning capabilities for time-sensitive responses to rapidly emerging threats, especially those involving WMD.

- *Hard and deeply buried target (HDBT) defeat.* This remains one of the toughest counterproliferation challenges, one that senior leaders determined requires special management attention. There is now a “capstone” requirements document for HDBT defeat, criteria for defeat of HDBTs, senior level guidance establishing milestones for progress over the future years defense program, an integrated acquisition program, and a science and technology master plan.

- *Installation protection.* DOD has adopted a comprehensive and systematic approach to protecting its large number of facilities in the United States and abroad. While individual sites may have some idiosyncratic requirements, the goal of the Installation Protection Program is to develop and implement a common set of standards for improving CBRN protection and response capabilities at approximately 200 DOD sites.

- *WMD elimination.* Preparations for Operation *Iraqi Freedom* required planners and policymakers to develop initial concepts, plans, and organizations for large-scale WMD elimination operations. There is now postwar recognition among senior leaders that elimination cannot be conducted improvisationally during or in the aftermath of a conflict, but must be institutionalized as an element of deliberate planning. This process has now begun in the joint and service warfighting community, with the goal of ensuring that there are sufficient forces trained, equipped, and organized for this new mission.

In areas outside DOD as well, the increased institutionalization of counter-WMD activities is ongoing. Consider interdiction, which has emerged as an important element of national counter-WMD strategy. Whereas past policy approaches to interdiction tended to be ad hoc and opportunistic, there is in place today a systematic mechanism for identifying, considering, and acting on interdiction targets. This includes a new interagency structure, focused intelligence efforts, and organized international cooperation, a significant element of which

To meet the terrorist threat, we must increase collaboration and coordination—in law enforcement and prevention, emergency response and recovery, policy development and implementation—so that public and private resources are better aligned to secure the homeland.

—National Strategy for
Homeland Security

is the Proliferation Security Initiative. By providing a cooperative framework for like-minded nations to monitor and intercept WMD-related shipments, the PSI is creating a collective capability that far exceeds the sum of the individual national efforts that heretofore characterized interdiction activities.

Finally, we see in the Department of Homeland Security a large-scale organizational response to the new dangers posed by both the terror threat and weapons of mass destruction. Even though DHS represents the consolidation of many existing organizations, its mission is fundamentally new. Historically, the United States has defended the homeland by projecting decisive military force abroad to deal with threats “at the source.” This is no longer an adequate construct. And “institutionalizing” homeland security requires far more than creating a new cabinet department. Governments at all levels—Federal, state, local—need to better align their capabilities and resources for CBRNE prevention, defense, and consequence management. But the process of improving “defense in depth” across the expanse of the Nation has at least begun under the leadership of a single Federal entity.

Remarks by President George W. Bush on WMD Proliferation

National Defense University
Washington, D.C.
February 11, 2004

THE PRESIDENT: Thanks for the warm welcome. I'm honored to visit the National Defense University. For nearly a century, the scholars and students here have helped to prepare America for the changing threats to our national security. Today, the men and women of our National Defense University are helping to frame the strategies through which we are fighting and winning the war on terror. Your Center for Counterproliferation Research and your other institutes and colleges are providing vital insight into the dangers of a new era. I want to thank each one of you for devoting your talents and your energy to the service of our great Nation.

I want to thank General Michael Dunn for inviting me here. I used to jog by this facility on a regular basis. Then my age kicked in. (Laughter.) I appreciate Ambassador Wolfgang Ischinger, from Germany. Mr. Ambassador, thank you for being here today. I see my friend, George Shultz, a distinguished public servant and true patriot, with us. George, thank you for coming; and Charlotte, it's good to see you. I'm so honored that Dick Lugar is here with us today. Senator, I appreciate you taking time and thanks for bringing Senator Saxby Chambliss with you, as well. I appreciate the veterans who are here and those on active duty. Thanks for letting me come by.

On September the 11th, 2001, America and the world witnessed a new kind of war. We saw the great harm that a stateless network could inflict upon our country, killers armed with box cutters, mace, and 19 airline tickets. Those attacks also raised the prospect of even worse dangers—of other weapons in the hands of other men. The greatest threat before humanity today is the possibility of secret and sudden attack with chemical or biological or radiological or nuclear weapons.

In the past, enemies of America required massed armies, and great navies, powerful air forces to put our Nation, our people, our friends and allies at risk. In the Cold War, Americans lived under the threat of weapons of mass destruction, but believed that deterrents made those weapons a last resort. What has changed in the 21st century is that, in the hands of terrorists, weapons of mass destruction would be a first resort—the preferred means to further their ideology of suicide and random murder. These terrible weapons are becoming easier to acquire, build, hide, and transport. Armed with a single vial of a

biological agent or a single nuclear weapon, small groups of fanatics, or failing states, could gain the power to threaten great nations, threaten the world peace.

America, and the entire civilized world, will face this threat for decades to come. We must confront the danger with open eyes, and unbending purpose. I have made clear to all the policy of this Nation: America will not permit terrorists and dangerous regimes to threaten us with the world's most deadly weapons. (Applause.)

Meeting this duty has required changes in thinking and strategy. Doctrines designed to contain empires, deter aggressive states, and defeat massed armies cannot fully protect us from this new threat. America faces the possibility of catastrophic attack from ballistic missiles armed with weapons of mass destruction. So that is why we are developing and deploying missile defenses to guard our people. The best intelligence is necessary to win the war on terror and to stop proliferation. So that is why I have established a commission that will examine our intelligence capabilities and recommend ways to improve and adapt them to detect new and emerging threats.

We're determined to confront those threats at the source. We will stop these weapons from being acquired or built. We'll block them from being transferred. We'll prevent them from ever being used. One source of these weapons is dangerous and secretive regimes that build weapons of mass destruction to intimidate their neighbors and force their influence upon the world. These nations pose different challenges; they require different strategies.

The former dictator of Iraq possessed and used weapons of mass destruction against his own people. For 12 years, he defied the will of the international community. He refused to disarm or account for his illegal weapons and programs. He doubted our resolve to enforce our word—and now he sits in a prison cell, while his country moves toward a democratic future. (Applause.)

To Iraq's east, the government of Iran is unwilling to abandon a uranium enrichment program capable of producing material for nuclear weapons. The United States is working with our allies and the International Atomic Energy Agency to ensure that Iran meets its commitments and does not develop nuclear weapons. (Applause.)

In the Pacific, North Korea has defied the world, has tested long-range ballistic missiles, admitted its possession of nuclear weapons, and now threatens to build more. Together with our partners in Asia, America is insisting that North Korea completely, verifiably, and irreversibly dismantle its nuclear programs.

America has consistently brought these threats to the attention of international organizations. We're using every means of diplomacy to answer them. As for my part, I will continue to speak clearly on these threats. I will continue to call upon the world to confront these dangers, and to end them. (Applause.)

In recent years, another path of proliferation has become clear, as well. America and other nations are learning more about black-market operatives who deal in equipment and expertise related to weapons of mass destruction. These dealers are motivated by greed, or fanaticism, or both. They find eager customers in outlaw regimes, which pay millions for the parts and plans they need to speed up their weapons programs. And with

deadly technology and expertise going on the market, there's the terrible possibility that terrorists groups could obtain the ultimate weapons they desire most.

The extent and sophistication of such networks can be seen in the case of a man named Abdul Qadeer Khan. This is the story as we know it so far.

A.Q. Khan is known throughout the world as the father of Pakistan's nuclear weapons program. What was not publicly known, until recently, is that he also led an extensive international network for the proliferation of nuclear technology and know-how.

For decades, Mr. Khan remained on the Pakistani government payroll, earning a modest salary. Yet, he and his associates financed lavish lifestyles through the sale of nuclear technologies and equipment to outlaw regimes stretching from North Africa to the Korean Peninsula.

A.Q. Khan, himself, operated mostly out of Pakistan. He served as director of the network, its leading scientific mind, as well as its primary salesman. Over the past decade, he made frequent trips to consult with his clients and to sell his expertise. He and his associates sold the blueprints for centrifuges to enrich uranium, as well as a nuclear design stolen from the Pakistani government. The network sold uranium hexafluoride, the gas that the centrifuge process can transform into enriched uranium for nuclear bombs. Khan and his associates provided Iran and Libya and North Korea with designs for Pakistan's older centrifuges, as well as designs for more advanced and efficient models. The network also provided these countries with components, and in some cases, with complete centrifuges.

To increase their profits, Khan and his associates used a factory in Malaysia to manufacture key parts for centrifuges. Other necessary parts were purchased through network operatives based in Europe, the Middle East, and Africa. These procurement agents saw the trade in nuclear technologies as a shortcut to personal wealth, and they set up front companies to deceive legitimate firms into selling them tightly controlled materials.

Khan's deputy—a man named B.S.A. Tahir—ran SMB computers, a business in Dubai. Tahir used that computer company as a front for the proliferation activities of the A.Q. Khan network. Tahir acted as both the network's chief financial officer and money launderer. He was also its shipping agent, using his computer firm as cover for the movement of centrifuge parts to various clients. Tahir directed the Malaysia facility to produce these parts based on Pakistani designs, and then ordered the facility to ship the components to Dubai. Tahir also arranged for parts acquired by other European procurement agents to transit through Dubai for shipment to other customers.

This picture of the Khan network was pieced together over several years by American and British intelligence officers. Our intelligence services gradually uncovered this network's reach, and identified its key experts and agents and money men. Operatives followed its transactions, mapped the extent of its operations. They monitored the travel of A.Q. Khan and senior associates. They shadowed members of the network around the world, they recorded their conversations, they penetrated their operations, we've uncovered their secrets. This work involved high risk, and all Americans can be grateful for the hard work and the dedication of our fine intelligence professionals. (Applause.)

Governments around the world worked closely with us to unravel the Khan network, and to put an end to his criminal enterprise. A.Q. Khan has confessed his crimes, and his top associates are out of business. The government of Pakistan is interrogating the network's members, learning critical details that will help them prevent it from ever operating again. President Musharraf has promised to share all the information he learns about the Khan network, and has assured us that his country will never again be a source of proliferation.

Mr. Tahir is in Malaysia, where authorities are investigating his activities. Malaysian authorities have assured us that the factory the network used is no longer producing centrifuge parts. Other members of the network remain at large. One by one, they will be found, and their careers in the weapons trade will be ended.

As a result of our penetration of the network, American and the British intelligence identified a shipment of advanced centrifuge parts manufactured at the Malaysia facility. We followed the shipment of these parts to Dubai, and watched as they were transferred to the BBC *China*, a German-owned ship. After the ship passed through the Suez Canal, bound for Libya, it was stopped by German and Italian authorities. They found several containers, each 40 feet in length, listed on the ship's manifest as full of "used machine parts." In fact, these containers were filled with parts of sophisticated centrifuges.

The interception of the BBC *China* came as Libyan and British and American officials were discussing the possibility of Libya ending its WMD programs. The United States and Britain confronted Libyan officials with this evidence of an active and illegal nuclear program. About 2 months ago, Libya's leader voluntarily agreed to end his nuclear and chemical weapons programs, not to pursue biological weapons, and to permit thorough inspections by the International Atomic Energy Agency and the Organization for the Prohibition of Chemical Weapons. We're now working in partnership with these organizations and with the United Kingdom to help the government of Libya dismantle those programs and eliminate all dangerous materials.

Colonel Ghadafi made the right decision, and the world will be safer once his commitment is fulfilled. We expect other regimes to follow his example. Abandoning the pursuit of illegal weapons can lead to better relations with the United States, and other free nations. Continuing to seek those weapons will not bring security or international prestige, but only political isolation, economic hardship, and other unwelcome consequences. (Applause.)

We know that Libya was not the only customer of the Khan network. Other countries expressed great interest in their services. These regimes and other proliferators like Khan should know: We and our friends are determined to protect our people and the world from proliferation. (Applause.)

Breaking this network is one major success in a broad-based effort to stop the spread of terrible weapons. We're adjusting our strategies to the threats of a new era. America and the nations of Australia, France and Germany, Italy and Japan, the Netherlands, Poland, Portugal, Spain, and the United Kingdom have launched the Proliferation Security Initiative to interdict lethal materials in transit. Our nations are sharing

intelligence information, tracking suspect international cargo, conducting joint military exercises. We're prepared to search planes and ships, to seize weapons and missiles and equipment that raise proliferation concerns, just as we did in stopping the dangerous cargo on the BBC *China* before it reached Libya. Three more governments—Canada and Singapore and Norway—will be participating in this initiative. We'll continue to expand the core group of PSI countries. And as PSI grows, proliferators will find it harder than ever to trade in illicit weapons.

There is a consensus among nations that proliferation cannot be tolerated. Yet this consensus means little unless it is translated into action. Every civilized nation has a stake in preventing the spread of weapons of mass destruction. These materials and technologies, and the people who traffic in them, cross many borders. To stop this trade, the nations of the world must be strong and determined. We must work together, we must act effectively. Today, I announce seven proposals to strengthen the world's efforts to stop the spread of deadly weapons.

First, I propose that the work of the Proliferation Security Initiative be expanded to address more than shipments and transfers. Building on the tools we've developed to fight terrorists, we can take direct action against proliferation networks. We need greater cooperation not just among intelligence and military services, but in law enforcement, as well. PSI participants and other willing nations should use the Interpol and all other means to bring to justice those who traffic in deadly weapons, to shut down their labs, to seize their materials, to freeze their assets. We must act on every lead. We will find the middlemen, the suppliers, and the buyers. Our message to proliferators must be consistent and it must be clear: We will find you, and we're not going to rest until you are stopped. (Applause.)

Second, I call on all nations to strengthen the laws and international controls that govern proliferation. At the UN last fall, I proposed a new Security Council resolution requiring all states to criminalize proliferation, enact strict export controls, and secure all sensitive materials within their borders. The Security Council should pass this proposal quickly. And when they do, America stands ready to help other governments to draft and enforce the new laws that will help us deal with proliferation.

Third, I propose to expand our efforts to keep weapons from the Cold War and other dangerous materials out of the wrong hands. In 1991, Congress passed the Nunn-Lugar legislation. Senator Lugar had a clear vision, along with Senator Nunn, about what to do with the old Soviet Union. Under this program, we're helping former Soviet states find productive employment for former weapons scientists. We're dismantling, destroying, and securing weapons and materials left over from the Soviet WMD arsenal. We have more work to do there.

And as a result of the G-8 Summit in 2002, we agreed to provide \$20 billion over 10 years—half of it from the United States—to support such programs. We should expand this cooperation elsewhere in the world. We will retain [sic] WMD scientists and technicians in countries like Iraq and Libya. We will help nations end the use of weapons-grade uranium in research reactors. I urge more nations to contribute to these efforts. The

nations of the world must do all we can to secure and eliminate nuclear and chemical and biological and radiological materials.

As we track and destroy these networks, we must also prevent governments from developing nuclear weapons under false pretenses. The Nuclear Non-Proliferation Treaty was designed more than 30 years ago to prevent the spread of nuclear weapons beyond those states which already possessed them. Under this treaty, nuclear states agreed to help nonnuclear states develop peaceful atomic energy if they renounced the pursuit of nuclear weapons. But the treaty has a loophole which has been exploited by nations such as North Korea and Iran. These regimes are allowed to produce nuclear material that can be used to build bombs under the cover of civilian nuclear programs.

So today, as a fourth step, I propose a way to close the loophole. The world must create a safe, orderly system to field civilian nuclear plants without adding to the danger of weapons proliferation. The world's leading nuclear exporters should ensure that states have reliable access at reasonable cost to fuel for civilian reactors, so long as those states renounce enrichment and reprocessing. Enrichment and reprocessing are not necessary for nations seeking to harness nuclear energy for peaceful purposes.

The 40 nations of the Nuclear Suppliers Group should refuse to sell enrichment and reprocessing equipment and technologies to any state that does not already possess full-scale, functioning enrichment and reprocessing plants. (Applause.) This step will prevent new states from developing the means to produce fissile material for nuclear bombs. Proliferators must not be allowed to cynically manipulate the NPT to acquire the material and infrastructure necessary for manufacturing illegal weapons.

For international norms to be effective, they must be enforced. It is the charge of the International Atomic Energy Agency to uncover banned nuclear activity around the world and report those violations to the UN Security Council. We must ensure that the IAEA has all the tools it needs to fulfill its essential mandate. America and other nations support what is called the Additional Protocol, which requires states to declare a broad range of nuclear activities and facilities, and allow the IAEA to inspect those facilities.

As a fifth step, I propose that by next year, only states that have signed the Additional Protocol be allowed to import equipment for their civilian nuclear programs. Nations that are serious about fighting proliferation will approve and implement the Additional Protocol. I've submitted the Additional Protocol to the Senate. I urge the Senate to consent immediately to its ratification.

We must also ensure that IAEA is organized to take action when action is required. So, a sixth step, I propose the creation of a special committee of the IAEA Board which will focus intensively on safeguards and verification. This committee, made up of governments in good standing with the IAEA, will strengthen the capability of the IAEA to ensure that nations comply with their international obligations.

And, finally, countries under investigation for violating nuclear nonproliferation obligations are currently allowed to serve on the IAEA Board of Governors. For instance, Iran—a country suspected of maintaining an extensive nuclear weapons program—recently completed a 2-year term on the Board. Allowing potential violators to

serve on the Board creates an unacceptable barrier to effective action. No state under investigation for proliferation violations should be allowed to serve on the IAEA Board of Governors—or on the new special committee. And any state currently on the Board that comes under investigation should be suspended from the Board. The integrity and mission of the IAEA depends on this simple principle: Those actively breaking the rules should not be entrusted with enforcing the rules. (Applause.)

As we move forward to address these challenges we will consult with our friends and allies on all these new measures. We will listen to their ideas. Together we will defend the safety of all nations and preserve the peace of the world.

Over the last 2 years, a great coalition has come together to defeat terrorism and to oppose the spread of weapons of mass destruction—the inseparable commitments of the war on terror. We’ve shown that proliferators can be discovered and can be stopped. We’ve shown that for regimes that choose defiance, there are serious consequences. The way ahead is not easy, but it is clear. We will proceed as if the lives of our citizens depend on our vigilance, because they do. Terrorists and terror states are in a race for weapons of mass murder, a race they must lose. (Applause.) Terrorists are resourceful; we’re more resourceful. They’re determined; we must be more determined. We will never lose focus or resolve. We’ll be unrelenting in the defense of free nations, and rise to the hard demands of dangerous times.

May God bless you all. (Applause.)

Remarks by Deputy Secretary of Defense Paul D. Wolfowitz

National Defense University
Washington, D.C.
May 13, 2003

VICE ADMIRAL PAUL GAFFNEY, PRESIDENT, NDU: Ladies and gentlemen, if there is one person that the National Defense University could call and feels comfortable in calling on for almost any important dialogue it would our luncheon speaker today. He has been kicking off or closing out our Secretary of Defense Strategic Policy Forum War Games, launching our Defense Environmental Forum, speaking to our students, and personally guiding us in our regional center outreach programs. He joins us again today as the senior most administration leader to guide this symposium.

I'd like to remind audiences that he started out studying mathematics and chemistry before terminating his education in political science. That chemistry and mathematics is a comforting fact in that such a strong political and strategic leader is also rooted well in analytical skill. He has had influential jobs in many agencies from the Bureau of the Budget, as some of you may remember that term, to [inaudible] to twice at the State Department, three times at the Defense Department, serving under every President from President Nixon to George W. Bush with one exception; you might guess what that is. He has been the Assistant Secretary in the State Department, the Under Secretary in the Defense Department, our Ambassador in Jakarta. He has been a professor at Yale, the long-time dean of the Paul Nitze School of Advanced International Studies at Johns Hopkins, and he has even been the George Kennan Professor of National Security Studies at the National War College here at NDU.

Ladies and gentlemen, it is an honor to welcome what the lead columnist in the *Washington Post* this morning called "the Pentagon's leading planner and its intellectual architect," the 28th Deputy Secretary of Defense, the Honorable Paul Wolfowitz. (Applause.)

DEPUTY SECRETARY OF DEFENSE WOLFOWITZ: Thank you, Paul, when I was coming, that was awfully military to all be standing. They all assured me that they were standing for the Admiral, not for me. (Laughter.)

And the last time Paul introduced me, he actually went through my résumé at somewhat greater length, and I felt I had to apologize for not being able to hold a job. This time I detected my late father, who was a fairly distinguished mathematician, would have detected more clearly that great respect for hard sciences opposed to the softer stuff that I got my Ph.D. in. But I really want to thank you for that introduction.

I was told that I had 50 minutes, and then I said that's just about the right length of talk that I learned to do when I was an academic. They said, "No, no, no. We'd like you to at least leave half the time for questions." And I said, that's an opportunity to get into trouble. But then I remembered an old story about a man who was a petroleum engineering expert, and he would go around the country giving talks to various professional groups at \$50,000 a pop, and he had this driver who took him all these places. And the driver finally one day said, "You know, what you do is white collar crime." He said, "I hear you. You give the same speech every time you get paid \$50,000. I could do it." So the petroleum engineer said, "Very well. Next stop you can do it. Give me your chauffeur's uniform, and you can put on my suit." So the next stop, they do that, and the driver gets up in front of this big crowd, and he goes through the standard stump speech as he's heard the petroleum engineer do it time and time again. And he gets all the applause lines right and all the jokes right, and at the end he's greeted with more enthusiastic applause, I guess because he had a fresher approach to it. The first question out of the box is: "If you have super-heated oil at 2,000 feet below the surface and you got cracking, how do you deal with it?" The guy thought for a minute. "You know, that's one of the stupidest questions I've ever heard. I bet my chauffeur could answer that." (Laughter.)

Not to reduce him to the status of a chauffeur, but I've brought Jim Thomas with me to answer all the hard questions. And I've appropriately cut my talk so there should be some time for questions, and I look forward to them actually in all seriousness.

Also in all seriousness, I'm very grateful not only for the hospitality that Admiral Gaffney has shown all these years but for his leadership of this important institution. He's going to be leading another important institution in the civilian world, as I think you all know, as the new president of Monmouth College, and we wish him well, and we congratulate Monmouth on a great catch.

And while I'm in a thanking mode, I'd also like to thank NDU's Center for Counterproliferation Research, which has truly been in the forefront of policy and strategy on this crucial issue. In particular, Dr. John Reichart and his very able staff for the work that they did in organizing this, your third annual conference on this subject.

In fact, last fall at my request, the center also undertook an important study concerning the post-Saddam elimination of weapons of mass destruction in Iraq. They worked closely with CENTCOM planners and with senior Washington officials. And that work has helped to set the stage for our current work in Iraq and for our anticipated additional work there. And I want to again thank John Reichart and Rebecca Hersman from his staff who played such a crucial role in getting it done. Thank you.

That study was just one example of what we've been doing recently in the area of counterproliferation strategy. In fact, many of the individuals who have been instrumental

in that effort are here in this room today. You too deserve our thanks. The general public may never know about much of this work, but you've helped to blaze new trails in uncharted, difficult, hazardous, and increasingly important terrain.

As President Bush said at the United Nations last fall, "Our greatest fear is that terrorists will find a shortcut to their mad ambitions when an outlaw regime supplies them with the technologies to kill on a massive scale." Clearly an effective counterproliferation strategy is a necessary part of any effort to deal with that threat that the President identified.

As we know all too well, the attacks of September 11th awakened us to what is actually, and probably has been for some time, an era of mass terror. Certainly they changed the way we have to think about national security.

They demonstrated in the clearest terms that we cannot simply wait for a crisis to develop or for enemies to accumulate the means to harm us before we act.

And yet as great as the impact of September 11th was, it would pale in comparison to a major bio or even chemical attack. And we know that it is no longer a question of whether such an attack might conceivably be attempted, but more likely a matter of when. Enemies—both outlaw states and terrorist groups—are aggressively pursuing chemical, biological, even radiological and nuclear weapons. And they may have few of the traditional inhibitions that previously deterred people from using those horrible weapons.

As Secretary Rumsfeld has said, the "United States must be prepared for uncertainty and surprise. Because the first indication of a threat may come only when an attack occurs."

In an era in which chemical and biological weapons have already proliferated, our priority has got to be on preventing attacks and protecting our people and our military forces. Our strategy accurately reflects these new realities and focuses in particular on the dangerous connection between outlaw states, terrorists, and weapons of mass destruction—whereas I think they might more appropriately be called "weapons of mass terror."

The new strategy in many ways has codified approaches and activities that have been developed over a number of years in the Department of Defense. In essence, we are working to make counterproliferation a lot more like counterterrorism and to change both. Our approach calls for earlier and more aggressive efforts to prevent and neutralize threats before they materialize, recognizing that it will no longer do to simply wait until after the fact to retaliate.

Iraq is an example. But our efforts can't stop there. They have to include more aggressive efforts to interdict WMD materials earlier, through targeted operations and expanded cooperation with like-minded nations.

They include efforts to improve our chemical and biological and missile defenses. U.S. forces that deployed for Iraq operations enjoyed the high level of protection offered by anthrax and smallpox vaccinations. They also brought important capabilities that were not available to our forces during the earlier Persian Gulf conflict, including new and improved biodetectors, a new chemical detector that will trigger fewer false alarms than the ones that we used 12 years ago in *Desert Storm*, lighter and more durable protective suits and mask, and the latest generation of short-range missile defense systems in the

form of the PAC-3, which represented—and I know this from personal experience—an enormous improvement over the PAC-2s that we deployed in *Desert Storm*.

For the first time, the department is developing concepts of operation specific to biological defense. Biological defense used to be treated as a kind of off-shoot of chemical defense doctrine. That presents a problem because biological weapons are very different from chemical weapons and require a tailored approach. For example, no chemical agent is contagious, but many—in fact, most—biological agents are. So biological defense concepts must address how to prevent the spread of disease.

We've also taken steps to protect critical defense installations and facilities from chemical, biological, radiological, and nuclear threats. Following the anthrax attacks of 2001, we instituted measures to provide biodetection capabilities for the Pentagon. Those include novel approaches such as the use of commercial air samplers known as dry filter units. These Pentagon efforts are helping us to develop department-wide installation protection standards and requirements, which we hope to apply at 200 other installations over the next few years.

In an action that complements the establishment of the new Department of Homeland Security, the Department of Defense has also established an office of Homeland Defense headed by an assistant secretary. And I think that many of you may know our new Assistant Secretary for Homeland Defense, Paul McHale, who comes to us with an impressive background in the military including as a Marine Reservist in *Desert Storm*, several terms as a Congressman on the Hill, and experience in law enforcement.

And we have stepped up our cooperation with other agencies. We are working with the Department of Health and Human Services to enhance the medical readiness of U.S. forces. This includes successful collaboration in reinstituting a smallpox vaccination program for key military and civilian personnel. We are also working with the Food and Drug Administration, which played a very constructive role in speeding up the re-licensing of the Nation's only anthrax vaccine production facility. That action enabled us to vaccinate hundreds of thousands of U.S. troops and to provide anthrax vaccines in large quantities to a number of effective allies and coalition partners.

Thanks to these and other innovations, the war in Iraq was impressively quick and successful. We don't know yet, perhaps we will never know why weapons of mass destruction were not used. It was of all the many things that were conjured up that could go wrong in this war—quite a few of which struck me as grossly exaggerated—it was the one that I didn't think could be exaggerated. And we managed to get through it without attacks either in Iraq or on Iraq's neighbors, including Israel, or in this country—all of which were real possibilities. I do think if we ever do get to the bottom of the answer that some part of the credit has got to go to a brilliant military plan developed by General Tommy Franks and his staff, which presented the enemy with surprise and speed all the more astonishing, at least the surprise part of it, since it would be hard in my memory to think of an attack that had more strategic warning built into it and yet managed to achieve a substantial degree of tactical surprise.

In any case, as the President said 12 days ago, “This much is certain: no terrorist network will gain weapons of mass destruction from the Iraqi regime because that regime is no more.”

What’s more, that country no longer offers a sanctuary for terrorists. Since the end of large-scale hostilities, we have captured a number of terrorist operatives who were hiding out in Iraq. And those who might have sought refuge there must now be seeking a safe harbor somewhere else.

Worldwide, we’ve made some extraordinary progress in the last few months in capturing key terrorists, perhaps as much progress in the last few months as any other 3-month period or 4-month period since September 11th. Those include most prominently and importantly Khalid Sheikh Muhammed, but also more recently Taufiq bin Attash and Ummar al-Baluchi, and others.

It’s difficult to put a precise value on these achievements. But we do know that our work is far from done. Yesterday’s attacks in Saudi Arabia are a harsh reminder, if we needed one, that the war with terrorists is not over.

The coalition is presently engaged in Iraq in a comprehensive effort to identify, assess, and eliminate that country’s weapons of mass destruction and delivery systems, so that weapons and related materials, documents, equipment, and—what at the end of the day may be most important—personnel do not end up in terrorist hands. Approximately 600 experts from across our Government are currently engaged in that effort. Toward the end of this month, the number of people involved in the discovery and exploitation of WMD sites and other targets will more than double in size when we deploy the Iraq Survey Group to be headed by Major General Keith Dayton.

Given the size of Iraq—an area roughly equal to France or to the State of California—and the extent to which that regime went to conceal its programs—this effort will take time. Saddam Hussein was a master of deception. Since the end of the Gulf War 12 years ago, he has been redesigning his WMD programs to make them easier to hide. He had 4 ½ years without any international inspections to conceal his weapons and all evidence of his programs. And he had 6 months of “strategic warning”—that is to say, after the passage of UN Security Council Resolution 1441—to accelerate his deception and destruction efforts.

That is why we put such emphasis in Resolution 1441 on giving UNMOVIC and the IAEA the authority to interview Iraqi scientists with their families outside of Iraq where they could talk to us freely and without fear of intimidation. The fact that Iraq never allowed anyone to be interviewed under those conditions, or even to be interviewed without recording devices or other monitors around, certainly suggests that this was a regime with a lot to hide, and we are only beginning to get to those people who might be knowledgeable.

Saddam’s henchmen were also pros when it came to hiding materials or cleaning sites where chemical and biological weapons might be detected. As reported last week, coalition forces have come into possession of a type of Iraqi trailer that is very similar to an element of a mobile biological weapons production capability described to us by an

Iraqi defector and reported by Secretary of State Powell in his presentation to the United Nations last February. That Iraqi trailer appears to have been recently and thoroughly cleaned with a very caustic substance. And it also appears to have been recently repainted.

Over the coming months, coalition forces and experts will assemble and analyze the documents and materials that they discover. And they will conduct—this is important—extensive interviews with Iraqis who may have knowledge of aspects of the program. In the process, we'll acquire additional pieces of the puzzle to go with those that we already have. Those teams will eventually assemble the various puzzle pieces into a picture that will show us the full extent of the Iraqi WMD programs.

Meanwhile, although it is still early, and we are only beginning to study the lessons learned in major combat operations in Iraq, let me share a few preliminary observations.

First, it seems to me clear that we must continue to evolve toward a capabilities-based approach in planning for chemical and biological defense. We are already doing that elsewhere in the department. Doing that can help us prepare better for the unknown or the poorly known threats that we are likely to encounter. I guess I should say, that is, for those of you who aren't used to our recent twist in terminology, an approach that's based on capabilities rather than trying to be very specific in identifying the threat and designing your capability to a very specific threat. In general, we think that does not apply well to the world of the early 21st century. And in particular, I think it does not apply well to the area of biological defense. The earlier approach to prioritizing threat agents and targeting budgetary resources based on validated intelligence might have been adequate to meet the anthrax threat for which we had a relatively large body of—what I guess you could loosely call—“evidence” available. But that approach left us less prepared for other agents for which we have less intelligence.

One problem with threat-based approaches is that our intelligence about chemical and biological threats is inherently limited and uncertain—given the ease with which these capabilities can be concealed, especially when compared with nuclear or major conventional weaponry. Advances in biotechnology and in other areas of science also leave us vulnerable to the possibility that we will always be several steps behind a sophisticated adversary, who may vary his choice of threat agents faster than we can develop threat-specific responses.

Consequently, we think it's important that DOD invest in research and development of a number of different promising technologies simultaneously—to counter both known and unknown chemical and biological threats and to get on the front side of the threat curve.

Greater emphasis also needs to be accorded to developing generic medical countermeasures—those that would be effective against the broad range of pathogens—so that an adversary's use of a novel agent does not suddenly render our targeted countermeasures ineffective.

A second emerging lesson is that we need to rebalance and reallocate our force structure—to ensure that we have enough of the right people and equipment. And I think people are the long pole in this particular tent, although equipment is important. The

right people and equipment that we need to confront the biological and chemical threat at home and abroad and that they can be quickly deployed when needed. Our first priority is to ensure the security of our homeland. At the same time—and it really is part of that same mission—we’ve got to be able to defend our interests overseas. The President should never be put in a situation where he has to choose between doing one or the other. We need to have enough capability to do both at the same time.

And yet today some of our chemical and biological defense capabilities—including those needed for biological detection, consequence management, and WMD elimination—are stretched thin between meeting homeland defense and national security missions. For example, if a biological crisis had emerged here at home, while we were engaged in combat operations in Iraq, there would have undoubtedly have been very strong pressure to redeploy key military biodefense assets back from Iraq to the United States.

As short as this campaign was, I think it made abundantly clear what few fully understood before—that chemical and biological defenses are classic examples of what we came to call low-density/high-demand assets. Or, as Secretary Rumsfeld said, “That’s just another euphemism for something we didn’t buy enough of.” They are highly specialized capabilities that are called upon to meet many mission needs worldwide at the same time. As we look to the future, it is clear that the chem-bio defense mission is not going to go away. We must ensure sufficient forces to undertake the mission at home and abroad.

Another aspect of our current force structure concerns how we allocate our chemical and biological defense units between active duty and Reserve forces. About 70 percent of these units are currently in the Reserves. And while our Reserve forces are of very high quality—and they have been demonstrating that really over the last year-and-a-half—they can take longer to mobilize. Given the unpredictability of the WMD threat, we need to have sufficient defense capabilities to meet short-term emergencies. To ensure that we have the chem-bio defense forces early in crises when they may be needed most, we need to consider whether some forces in capability should be shifted from the Reserve to the active component.

Third, since WMD in the hands of rogue states and terrorists is the greatest security threat we face in this decade, we will continue to have a requirement for a robust WMD elimination capability even after the discovery and the destruction of Iraq’s WMD capabilities.

The elimination capability that we put together in the months before Operation *Iraqi Freedom* will need to be retained, enhanced, and institutionalized. Accomplishing this will be an integral part of the effort to re-balance and re-allocate our force structure that I referenced earlier. In future conflicts, we should not end up playing “pickup games” when we are trying to put together forces for eliminating weapons of mass destruction in the aftermath of a conflict. We must ensure that there are sufficient forces in peacetime, adequately trained, organized, and equipped for that mission.

As with all other aspects of our WMD defense capabilities, the enduring elimination challenge will not be just a matter of ensuring a sufficient number of people outfitted with the appropriate equipment, but also ensuring that those well-equipped personnel

have the proper concepts, doctrine, and training to use those capabilities effectively to accomplish their mission.

And finally, an emerging lesson from Iraq is that we need our coalition partners to do more to prepare themselves for WMD threats. And indeed I would say we can expect, I think, that this is an area where our coalition partners can contribute substantially. When key allies and coalition partners are unprepared for WMD threats, our own ability to project power in defense of critical U.S. interests is endangered. Because they fear becoming a potential target, unprepared allies may be reluctant to support coalition operations. Despite a decade of proselytizing by the United States about these risks, our coalition partners, with a few significant exceptions like the U.K., remained poorly prepared for WMD use. Even some of Iraq's neighbors, who you might have thought would have been better prepared, were coming to us to draw on our relatively limited supplies of key items. Some coalition partners in *Iraqi Freedom* even lacked basic defensive equipment such as protective suits, masks, and atropine. They looked to us to make up their shortfalls. We were not always in a position to do so, but we did what we could. For example, we set aside anthrax and smallpox vaccine for tens of thousands of defense personnel for nearly 20 countries.

For the future, we need to consult with allies and coalition partners to achieve a common vision about threats and the level of chem-bio defense preparedness that will be required for future combat operations. Rhetoric must be matched with resources, and defense commitments must be honored. Our aim should be to lessen the dependency of potential partners on the United States for chem-bio protection. More than that, we should encourage our coalition to think of this as an area where they can contribute to the collective defense and indeed where they can help to meet what may unfortunately be an increased worldwide demand for these kinds of capabilities. But it is interesting, since this is an area that is people-intensive rather than equipment-intensive. I think it is an area where quite a few of our allies—including some of the newer NATO members and NATO [inaudible] members—have capabilities that could be quite substantial and quite important and can be thought of, not just as a complement to American forces, but the kinds of things that might be drawn on if there were a bioterrorism catastrophe in whatever country.

Indeed, there's at least one thing I think that's almost misleading about that term *homeland defense*, and that's the word *homeland*. In one respect, it's very important. It emphasizes that we, our own territory, our own cities, and populations are at risk in ways that we really never had to think about, at least since the war of 1812, I guess, unless you count the Civil War. But at any rate, it's a new world for us in that respect. And the word *homeland* is useful in that respect. But if you stop and think about it, it would be a huge problem for us if, let's say, there were a catastrophic terrorist event in Japan. We just had one in Saudi Arabia. Imagine what it would be like if it were on the catastrophic scale. It was bad enough as it was. Being able to respond to this kind of problem worldwide is unfortunately something, I think, that the world as a whole has got to face up to. And these kinds of capabilities should come from more than just the United States.

To conclude, learning these lessons from Operation *Iraqi Freedom* can help us to ensure that in future conflict we are even better prepared to counter the threat of weapons of mass destruction.

There's no question that history will judge harshly those who saw the coming danger but failed to act. One recalls the time when President Roosevelt asked Winston Churchill how the Second World War should be remembered. Churchill answered that it should be called "the Unnecessary War." "Because," he went on, "there was never a war that was more easy to stop." For years the world allowed the Nazis to build a war machine in direct violation of international agreements. For years nothing was done until it was too late to prevent a catastrophe.

That is why we must take these issues so seriously in a post-September 11th world. It is for this reason that we have to be willing to press controversial policies, even those that may challenge traditional norms and customs—because so much is at stake.

We are at a turning point in history where weapons of mass destruction in the hands of outlaw states and terrorists now represent a new and very different kind of threat. That underscores the significance of this conference and why your work is so vital.

I encourage you to persevere in your efforts. And again, I would like to thank National Defense University and all of you who have given your valuable time to participate in this conference. (Applause.)

Endnotes

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⁴⁷ Center for Counterproliferation Research, *CBRN Terrorism: An Annotated Bibliography* (Washington, DC: National Defense University, November 2002), 4–5.

⁴⁸ Douglas Frantz, "U.S. and Pakistan Discuss Nuclear Security," *The New York Times*, October 1, 2001, A3; John J. Fialka and Scott Neuman, "Will Pakistan's Warheads Stay Secure? If a War Topples Leader, Control is Uncertain; Some Call Threat Slim," *The Wall Street Journal*, October 4, 2001, A17; Paul Richter, "Pakistan's Nuclear Wild Card," *Los Angeles Times*, September 18, 2001, A2; Nigel Hawkes, "Pakistan Could Lose Control of its Arsenal," *The Times* (London), September 20, 2001, n.p.

⁴⁹ "Foreign assistance" refers to the transfer or cooperative development of technologies, material, or expertise with possible weapons-related applications. See Jason D. Ellis, "Beyond Nonproliferation: Secondary Supply, Proliferation Management, and U.S. Foreign Policy," *Comparative Strategy* 20, no. 1 (January–March 2001), 1–2.

⁵⁰ The concern over "brain drain" and the diffusion of knowledge from WMD and missile programs is not limited to former Soviet programs. For example, South Africa also conducted extensive WMD and missile research, development, and production, all of which was terminated with the collapse of the pro-apartheid regime. Scientists affiliated with those programs, like their Russian counterparts, are finding themselves out of work or in unpalatable jobs and may be open to recruitment by proliferators. For example, it has been reported that Wouter Basson, a former high-ranking scientist in South Africa's CBW program, made several trips to Libya before his arrest. See Tom Mangold and Jeff Goldberg, *Plague Wars: The Terrifying Reality of Biological Warfare* (New York: St. Martin's Press, 1999), 268–274; Stephen Burgess and Helen Purkitt, *The Rollback of South Africa's Chemical and Biological Warfare Program* (Maxwell AFB, AL: USAF Counterproliferation Center, April 2001).

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- ⁵⁴ David E. Sanger, "In North Korea and Pakistan, Deep Roots of Nuclear Barter," *The New York Times*, November 24, 2002, A1; Maggie Farley and Bob Drogin, "The Evil Behind the Axis? A Scientist Who Built Pakistan's Nuclear Bomb May Have Helped North Korea, Iraq, and Iran," *Los Angeles Times*, January 5, 2003, 1; Glenn Kessler, "Powell Says Pakistan Warned on N. Korean Ties; Musharraf Told He Will Face 'Consequences' if Nuclear Transfers Continue," *The Washington Post*, November 26, 2002, A21.
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- ⁵⁷ Center for Counterproliferation Research, *The Counterproliferation Imperative: Meeting Tomorrow's Challenges* (Washington, DC: National Defense University, November 2001), 5–6; John F. Reichart, "Adversary Use of NBC Weapons: A Neglected Challenge," *Strategic Forum* 187 (Washington, DC: Institute for National Strategic Studies, December 2001).
- ⁵⁸ The White House, *The National Security Strategy of the United States of America*, 13–14. See also The White House, *National Strategy to Combat Weapons of Mass Destruction*, December 2002, 1; Office of Homeland Security, *National Strategy for Homeland Security*, July 2002, vii, iv, 9.
- ⁵⁹ George W. Bush, "U.S. Will Meet WMD Threat with Confidence, Determination," Office of the Press Secretary, December 11, 2002.
- ⁶⁰ The December 2002 public document is an unclassified synopsis of National Security Presidential Directive 17.
- ⁶¹ The White House, *National Strategy to Combat Weapons of Mass Destruction*, 2.
- ⁶² Group of 8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.
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- ⁶⁴ *Ibid.*, 41–45.
- ⁶⁵ George J. Tenet, Testimony before the Senate Select Committee on Intelligence on "The Worldwide Threat in 2003: Evolving Dangers in a Complex World," February 11, 2003.
- ⁶⁶ For a concise discussion of these issues, see Center for Counterproliferation Research, *Toward a National Biodefense Strategy* (Washington, DC: Institute for National Strategic Studies, April 2003), 15–17.
- ⁶⁷ *Ibid.*, 17–18. The preventive defense model refers to a strategy reliant on preventing WMD threats from emerging through arms control and threat reduction, deterring threats that emerge, and defeating threats when deterrence fails.
- ⁶⁸ The 11 are Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, United Kingdom, and the United States. Russia and China reportedly have been consulted about joining.
- ⁶⁹ As Secretary of Defense William Cohen said at the time, "We're not going to take a chance and try to target any facility that would release any kind of horrific damage to innocent people." See Steven Lee Myers, "The Targets: Jets Said to Avoid Poison Gas Sites," *The New York Times*, December 18, 1998, A1.
- ⁷⁰ As of publication of this report, the full Congress has not passed enabling legislation for Project BioShield. The House of Representatives passed the Project BioShield Act of 2003 (H.R. 2122) on July 16, 2003. The companion Senate legislation (S. 1504) was introduced on July 30, 2003, but has not been acted upon.
- ⁷¹ The White House, *National Strategy to Combat Weapons of Mass Destruction*, 2.
- ⁷² This includes countermeasures against nontraditional or "mid-spectrum" threat agents that may represent a hybrid of biological and chemical agents. Equally important is the development of countermeasures against fourth-generation chemical agents.
- ⁷³ In 2002, DOD established a Joint Requirements Office for CBRN Defense with authority for requirements generation and Program Objective Memorandum development. In parallel, a Joint Program Executive Office for chemical and biological defense was established to serve as the single material development and acquisition authority. These structures replace a highly dispersed decision process with a more streamlined and centralized approach.
- ⁷⁴ The nine installations are Barksdale AFB, LA; Camp Lejeune, NC; Dahlgren Naval Base, VA; Fort Campbell, KY; Fort Gordon, GA; Fort Lewis, WA; Pope AFB, NC; Robins AFB, GA; and San Diego Naval Base, CA. These sites are considered important for force generation.
- ⁷⁵ The medical surveillance component of JSIPP is the Electronic Surveillance System for the Early Notification of Community-based Epidemics, or ESSENCE, which uses existing syndromic data submitted by military treatment facilities to the Ambulatory Data System.
- ⁷⁶ The White House, *National Strategy to Combat Weapons of Mass Destruction*, 6.
- ⁷⁷ While the 9/11 attacks may have been low-tech, the operation itself was sophisticated, as was the network behind the operation. And while the anthrax attacks were not a mass casualty event, they may have served to breach an important psychological barrier for terrorists. The fact that we still have not apprehended the perpetrator could serve to embolden those contemplating bioterrorism.

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