



Chemical drill aboard
*USS Bon Homme
Richard.*

Fleet Imaging Command Pacific (Tyler A. Swartz)

Adversarial Use of Weapons of Mass Destruction

By THOMAS C. LINN

The media reported in August 1996 that Iran had developed a biological weapons arsenal. Moreover, it was stated Israel had warned that these weapons of mass destruction (WMD) would be used against Western cities if the United States attempted to target Iran militarily for involvement in international terrorism. This story reflected emerging apprehension over such threats. Recent events make it difficult to ignore the possibility that an adversary might resort to such weapons.

Lieutenant Colonel Thomas C. Linn, USMC (Ret.), is a defense analyst and freelance writer.

The Threat

As the Secretary of Defense observed, the “threat is out there, it’s growing.”¹ The greatest problem in preparing for it has been denial. Throughout the Cold War period the idea of nuclear, biological, or chemical attack was so onerous that many believed it could not happen. This attitude carried over to the post-Cold War era. After Desert Storm, the U.S. General Accounting Office reported that the military was not adequately prepared. Four years later it conceded that although there had been “actions to improve chemical and biological defense since the Gulf War, the DOD emphasis has not been sufficient to resolve many serious lingering problems.”

Report Documentation Page

Report Date 2000	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle Adversarial Use of Weapons of Mass Destruction	Contract Number	
	Grant Number	
	Program Element Number	
Author(s)	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) National Defense University Institute of National Strategic Studies Washington D C 20319-5066	Performing Organization Report Number	
Sponsoring/Monitoring Agency Name(s) and Address(es)	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes The original document contains color images.		
Abstract		
Subject Terms		
Report Classification unclassified	Classification of this page unclassified	
Classification of Abstract unclassified	Limitation of Abstract UU	
Number of Pages 7		

Yet the proliferation threat is real and the Persian Gulf War provided the evidence. While it was known that Iraq had deployed chemical weapons forward during that conflict, it was not until 1995 that the extent of the threat was understood. Inspections by the U.N. Special Commission revealed that Baghdad had not only produced the sophisticated VX nerve agent but had weaponized 10,000 liters of concentrated botulinum toxin, 6,500 liters of concentrated anthrax, and 1,580 liters of concentrated aflatoxin.² The United States and its coalition partners had gone to war against an enemy who had enough weapons to unleash major chemical and biological attacks.

The WMD threat is not new. Such weapons were used in out of the way conflicts such as the Soviet invasion of Afghanistan, the Iran-Iraq war, and Libya's attack on Chad. Iraq also may have used chemical weapons as recently as 1993 against Shiites in the marshes near Basrah. The regime in Sudan unleashed them against its own people in the Nuba Mountains. But the Aum Shinrikyo cult

almost anyone can buy the services of scientists who built the massive Soviet NBC arsenal

focused attention squarely on WMD when it released sarin gas in the Tokyo subway system in March 1995, leaving 5,000 hospitalized and 12 dead. It was

later discovered that the cult had attempted other attacks, to include the ineffective dispersal of anthrax from the top floor of its Tokyo headquarters.

In addition to the five recognized nuclear powers—the United States, the United Kingdom, France, Russia, and China—seven others may have covert nuclear programs.³ Trends in chemical and biological weapons are more disturbing. As reported by the Defense Intelligence Agency, the number of countries with offensive chemical weapons programs is believed to have doubled in the last 10 years and tripled in the last 20. Those states thought to have offensive biological weapons programs have tripled since the Biological Warfare Convention was signed in 1972.

The seriousness of this threat caused President Clinton to extend the 1994 executive order that declared “the proliferation of nuclear, biological, and chemical weapons and the means of delivering such weapons, constitutes an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States.”

Cheap, Available, Potent

Although we have been reluctant to think about WMD use, others do and it is important to ask why. First and foremost, the requisite expertise is available. Almost anyone with enough cash can

buy the services of scientists who built the massive Soviet nuclear, biological, chemical (NBC) arsenal. While such activity has long been suspected, few realize the degree to which it has occurred. According to the Defense Intelligence Agency, the flow of expertise from Russia's biological weapons programs to Iran, Iraq, Syria, and Libya has been watched with particular interest. As late as 1995, U.N. inspectors discovered sales of Russian biological equipment and materials to Iraq.⁴ Since 1996, Russian know-how has been instrumental in the construction of the Iranian nuclear power plant at Bushehr, which is believed to be a cover for a nuclear weapons program.⁵

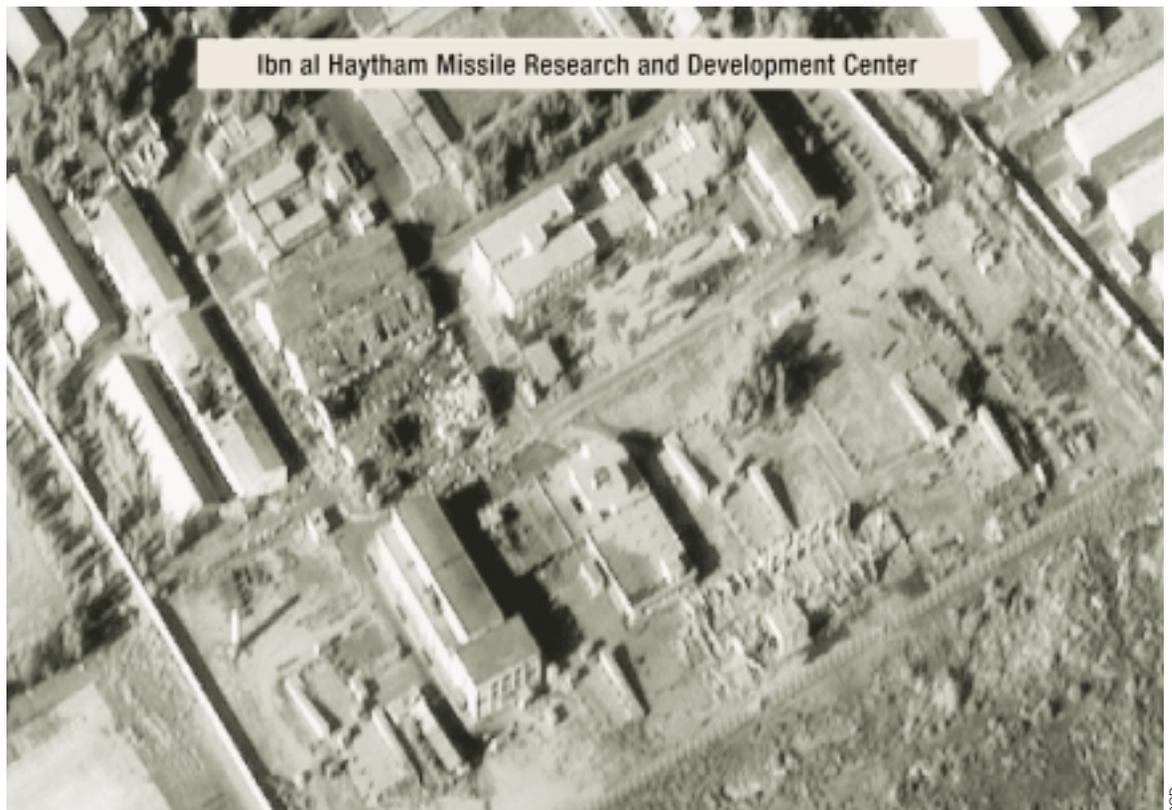
Not only is expertise available, so are commercial technologies. If an underdeveloped state like Sudan can produce mustard gas,⁶ so can almost any other state or group. Additionally, many of these technologies have dual applications—commercial as well as military—making it difficult to apply export controls. For example, India has agreed to build a pesticide plant in Iran which some believe could double as a chemical weapons production facility.⁷

Technology is also cheap. Iran's Hashemi Rafsanjani stated on the Tehran Radio Domestic Service that “Chemical and biological weapons are the poor man's atomic bombs”—and with good reason. Building an effective conventional force costs billions and requires time. By contrast, the manufacture of nuclear weapons costs hundreds of millions, although it is a complex process with the most difficult aspect being the production of separated plutonium. A sophisticated production facility for nerve agent might cost only \$30–50 million, according to the Research Institute for the Study of Conflict and Terrorism. That could be cut in half if safety standards were no concern. An industrial fermentation plant that could be converted to produce biological agents could be built for only \$10 million.

Moreover, these weapons are far more lethal. For example, 300 kilograms of sarin nerve agent dispersed in an urban area the size of the Washington metropolitan area can kill 60–100 people. Dispersing 100 kilograms of anthrax in the same area would cause 420,000–1,400,000 deaths.⁸

These incentives are not lost on nations with militaries which face costly modernization of conventional forces, such as Iran. By the end of its conflict with Iraq, 40 percent of Iran's armor and artillery was lost and only a few aircraft remained. Rebuilding its forces has been problematic. Oil revenues have been lower than expected and sanctions have made it difficult to acquire parts for much of its U.S.-made equipment. To compensate for its conventional force shortfalls, Iran has amassed an arsenal with over 2,000 tons of chemical agents, the largest in the Third World.

Bomb damage
assessment,
Desert Fox.



For some nations WMD is the revolution in military affairs. They have watched American performance in the Gulf War with great attentiveness. As the United States increasingly relies on precision guided munitions, potential adversaries have sought WMD. According to a study issued by the RAND Corporation, *Implications of Proliferation of New Weapons on Regional Security*, chemical and biological weapons may be the only way North Korea can succeed militarily in a contest on the Korean peninsula.⁹

Thinking the Unthinkable

The question is how an adversary will use WMD. The problem is that we know very little about this threat. Yet a small but growing body of evidence indicates that several adversaries will use these weapons to support certain objectives.

A nation's pursuit of NBC capabilities says a lot about its intentions. Its weaponization of agents says a lot about how it might use them. Weaponization demands a profound knowledge of the military potential of agents as well as their ability to contaminate. It also requires the expertise to convert most agents into a form suitable for delivery. Some potential enemies have weaponized

agents for 122-mm rockets, artillery shells, and air-delivered bombs, which implies tactical use. However, weaponization of missiles is the greatest concern and has occurred already. After the Gulf War, U.N. inspectors in Iraq discovered missile warheads filled with chemical and biological agents and the fact that the Al-Husayn missile had been flight tested with a chemical warhead.¹⁰ Most nations pursuing NBC capabilities today are also considering long-range delivery means.

On the strategic level adversaries are likely to use WMD to disrupt coalitions. This strategy was a major concern during the Gulf War. Iraq launched 91 missile strikes against Israeli civilian population centers in an effort to provoke Israel to respond militarily and thus fracture the coalition led by the United States, which depended on regional support. Although the strategy failed, it was a major diplomatic concern and diverted 25–30 percent of allied air forces to hunt for Scuds.

A similar strategy can be expected in Korea. Chemical and biological attacks might be used to support North Korea's longstanding aim of separating the United States from South Korea and derailing its security system in Northeast Asia. As North Korean defector Colonel Choi Ju-hwal stated before Congress in October 1997, "If war breaks out in the Korean peninsula, North Korea's main target will be the U.S. forces in the South

USS California
launching missile,
RIMPAC '98.



U.S. Navy (Spike Call)

and in Japan, which is the reason why the North has been working furiously on its missile program." Such attacks might cause the Japanese government to deny bases to U.S. forces, which would hinder efforts to support and reinforce the war in Korea.

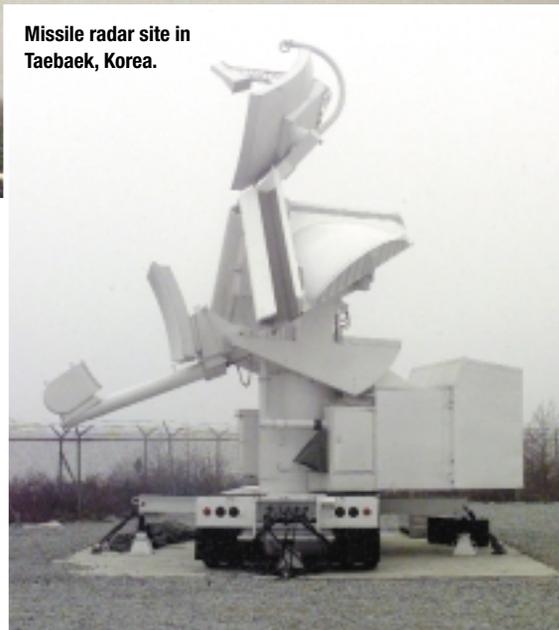
The same possibility exists in the case of Iran. It has warned other Gulf states not to act as American clients. Iran may be using WMD to dissuade its neighbors from participating in a U.S.-led coalition. From Qeshm Island in Iran, NBC capable

some adversaries may use WMD for terrorist strikes against population centers

Scud C missiles simultaneously threaten the capitals of Qatar, the United Arab Emirates, and Oman. The long desired acquisition of North Korea's Nodong missile would allow Iran to extend its coverage of the Arabian peninsula to include Riyadh, Dhahran, Bahrain, Masirah, and several Saudi oil fields.

Under this strategy, some adversaries may use WMD for terrorist strikes against population centers. This use is likely to be based on lessons of the Iran-Iraq War. Cities on both sides were targeted throughout the conflict. Between February and April 1988, Iraq fired over 160 missiles at Tehran. Some 2,000 Iranians were killed and half the population fled. The attacks contributed to the Iranian collapse in the summer of 1988. This

Missile radar site in
Taebaek, Korea.



55th Signal Company (Christina Ann Horne)

war not only shaped the military thinking of Iran and Iraq, but also of North Korea, which studied it extensively.

While North Korean missiles may not cause significant military damage in Japan, they may be used as terror weapons. Pyongyang's special forces might also attempt terrorist attacks against northeast Asian cities. According to some thinking such attacks could persuade the United States that confronting North Korea is too perilous, leading to American disengagement.

The relevance of coalition busting strategies goes beyond denial of regional basing support. In

Scud missile site,
Roving Sands '97.



U.S. Navy (Stephen Bartz)

the wake of World War II the Allies developed an international system to protect the sovereignty of every nation and precluded interventions such as those conducted by Japan and Germany. This intention is manifest in Article 2(4) of the U.N. Charter which makes coalitions and U.N. support an imperative if the United States is to maintain the moral and legal high ground in interventions.

On the operational level, adversaries can be expected to use WMD to thwart U.S. power projection in their respective regions. As one Indian general reportedly stated after the Gulf War, no nation should go to war with the United States without a nuclear weapon. This represents an ironic turn of events. In projecting power into a region, the most likely and vulnerable targets will be ports and air facilities. WMD would seriously impede U.S. deployments. Some analysts have examined what might have happened if Iraq used VX nerve agent or even nuclear weapons against such Saudi ports as Ad Dammam and Al Jubayl as well as air facilities like Dhahran, Taif, and Riyadh. Deployments would have occurred in contaminated environments or diverted to Red

Sea ports. In either case the buildup would have been protracted, and Desert Storm would have been far different in its conduct. This point would not likely be lost on a resurgent Iraq.

Although Iranian chemical and biological programs are not as sophisticated as Iraq's, they may be intended to deter power projection. Scud missiles that could hit the Gulf states from Iran could also strike U.S. prepositioned bases in Qatar and Oman. Although conventional warheads would by no means destroy these bases, chemical or biological attacks would hinder U.S. troop deployments significantly. In addition, Iran has claimed that it can close the Strait of Hormuz to potential threat. Chinese-produced C-802 anti-ship missiles based on Qeshm Island to command the strait, as well as sea and air based platforms, may be used to support that claim.¹¹

This effort to deter power projection may include the tactical employment of WMD. Over the last few years, Iranian amphibious operations

1st Combat Camera Squadron (Kim Price)

Checking masks prior to deployment.

have featured chemical operations training. Such exercises are usually, but not exclusively, defensive. In addition, the Iranian use of chemical and biological weapons on the tactical level is deficient in organization and capability.

For the foreseeable future the most formidable use of WMD is likely to be made by North Korea. At very least, the Korean People's Army can be expected to employ chemical weapons against port and air facilities to prevent the arrival of U.S.

detection of biological attack remains the single most important technical problem

reinforcements, as well as in support of its advance south. North Korea has pursued an indigenous chemical weapons capability since the late 1970s. This implies a reasonably well defined warfighting doctrine and training in chemical operations. For the sake of readiness, chemical munitions have been distributed to the four corps on the demilitarized zone and to artillery and mortar units.¹² Moreover, brigade-size Scud-C missile units could hit targets throughout the southern half of the peninsula.¹³

The current security environment demands that we rethink the WMD threat. We only have a general sense of how these weapons might be used. We know little about the specific doctrines, operating concepts, and tactics of potential adversaries. In addition, there are significant gaps in our knowledge of their effects according to some experts.¹⁴ Defining adversarial use of WMD is not only key to understanding the nature of the threat, but also how to respond to it.

Response—Doing the Unthinkable

The United States has traditionally relied on export controls and international conventions to stem proliferation. However, the growing threat places more emphasis on counterproliferation. Regional planning is underway and several acquisition programs have been initiated to realize the Defense Counterproliferation Initiative of 1993.¹⁵ The effectiveness of such efforts depends on understanding adversarial use. Otherwise we might spend vast sums on the wrong equipment and also develop the wrong doctrine, plans, and training. This may have already occurred. According to the Salk Institute, vaccines to be administered to U.S. troops may not immunize against certain anthrax agents. The MDPH vaccine has only been tested against natural strains of anthrax and not the genetically engineered variant developed by Russia and perhaps possessed by Iraq.¹⁶

Defining adversarial use cuts across areas of responsibility. The intelligence community must assess intentions, programs, supporting infrastructure, and operational practices of potential adversaries. There are also critical technical issues requiring research and development to discover the effects of such weapons, particularly chemical and biological agents that have emerged over the last few years. Detection of biological attack remains the single most important technical problem with respect to counterproliferation, with no definitive solution yet.

Equally important, operators must appraise adversarial use in order to define requirements. The Armed Forces do not have operational concepts that realistically portray NBC use and may be putting their trust in obsolete concepts. Developing concepts means determining probabilities and orienting them on likely uses. This requires scenario-based wargaming to include incorporating red planning cells in operational planning.

Understanding adversarial use also offers insights into deterrence, which essentially occurs in the mind of the beholder. During the Cold War, the West knew what deterred the Soviets, and it was largely punishment. Moreover, each side understood the other's nuclear doctrine and posture; so whenever signals were sent, both sides were certain they would be received and comprehended. Today minds have changed and are more numerous. There is less assurance about what deters.

Denial is key to deterrence. If potential adversaries believe that WMD may not be effective, they are less likely to waste them on military use than to preserve them for political use. Deterrence must be based on active defense capabilities and counterforce measures. When possible U.S. forces must destroy enemy WMD assets before they are employed. The Gulf War confirmed that finding targets is easier said than done. Once

found many require a hard-target kill capability. Most potential adversaries buried their arsenals deeper underground after Desert Storm.¹⁷ Denial also includes theater missile defense to protect both U.S. and allied forces. In addition, deterrence based on denial requires a serious attitude change with respect to passive defenses.

The Armed Forces must deal with the onerous task of operating in NBC environments. Their ability to function largely denies an enemy the effects of these weapons. Punishment may also play an important role in deterring WMD use. Even though adversarial intentions in this area remain obscure, many planners and analysts believe that U.S. nuclear capabilities are very much a concern to would be enemies. However, the WMD threat is real and the likelihood of employment is growing. A dramatic change in thinking is needed to deter their use and mitigate their effects. Failing to address this vexing issue will make the Nation vulnerable to physical destruction as well as psychological devastation.

JFQ

NOTES

¹ William S. Cohen, television appearance on "Meet the Press," November 23, 1997.

² Rolf Ekeus, "Beware Iraq's Biowar Legacy," *Jane's International Defense Review*, vol. 29, no. 6 (June 1996), p. 104.

³ Randall Forsberg et al., *Nonproliferation Primer* (Cambridge: MIT Press, 1995), p. 28.

⁴ Debora MacKenzie, "Naked into Battle," *New Scientist*, vol. 157, no. 2123 (February 28, 1998), p. 4.

⁵ Martin Seiff, "Christopher Backs Aid to Russia, Hits Iran Deal," *The Washington Times*, March 30, 1995, p. A21, and James Phillips, "Iran's Ominous Nuclear Ambitions," p. A18.

⁶ Jon Swain, "Iraq Making Lethal Gas in Covert Sudan Pact," *Sunday Times* (London), November 16, 1997.

⁷ Con Coughlin, "Iran in Secret Chemical Weapons Deal with India," *Electronic Telegraph*, June 24, 1996.

⁸ U.S. Congress, Office of Technology Assessment, *Proliferation of Weapons of Mass Destruction: Assessing the Risks* (Washington: Government Printing Office, August 1993).

⁹ Barbara Opall, "Study: N. Korea Can Win Waging Bio-Chem War," *Defense News*, November 4–10, 1996.

¹⁰ Geoffrey Kemp and Robert E. Harkavy, *Strategic Geography and the Changing Middle East* (Washington: Carnegie Endowment for International Peace, 1997), p. 273.

¹¹ Harold Hough, "Iran Targets the Arabian Peninsula," *Jane's Intelligence Review*, vol. 8, no. 10 (October 1996), p. 458.

¹² Joseph S. Bermudez, Jr., "Inside North Korea's CW Infrastructure," *Jane's Intelligence Review*, vol. 8, no. 8 (August 1996), pp. 378–81.

¹³ Wyn Bowen and Stanley Shepard, "Living Under the Red Missile Threat," *Jane's Intelligence Review*, vol. 8, no. 12 (December 1996), p. 561.

¹⁴ Center for Counterproliferation Research, *The Effects of Chemical and Biological Weapons on Operations: What We Know and Don't Know* (Washington: National Defense University, February 1997), p. 9.

¹⁵ Such planning is the responsibility of unified commanders, according to a briefing by the Special Operations Division (J-3), Joint Staff, "Counterproliferation: Flexible Deterrent Options," presented at a conference at Lawrence Livermore National Laboratory December 12, 1997. Acquisition efforts are addressed in *Annual Report to the President and the Congress* by Secretary of Defense William S. Cohen, April 1997, chapter 6.

¹⁶ MacKenzie, "Naked into Battle."

¹⁷ Tomas C. Linn, "The Underground Arms Race," *Armed Forces Journal International*, international edition (October 1997), p. 31.