



## **Iranian Nuclear, Biological and Chemical Weapons: Implications and Responses +**

By W. Seth Carus\*

The United States currently characterizes Iran as one several so-called "rogue" states that possess programs to develop weapons of mass destruction, which include nuclear, biological, and chemical (NBC) weapons. Since the 1990-1991 confrontation with Iraq, these weapons are viewed in Washington as a threat to the security of the United States and its friends and allies.

Iran is said to possess chemical and biological weapons, and the means to deliver them, and is reportedly working to acquire nuclear weapons. Given the enmity that exists between the United States and Iran, and the possibility that military hostilities could erupt between the two countries, these Iranian weapons programs are a source of serious concern to policymakers in Washington.

In this short essay, I will briefly examine three issues that help provide a better understanding of the implications of the Iranian NBC program for the security of the United States and of the Middle East.

First, what is Iran doing in the NBC and delivery system arena, and why is it pursuing those objectives?

Second, what are the implications of these capabilities for the United States, for its allies and friends in the region, and for others?

Third, what steps should the United States take in response to Iranian activity?

What follows is a summary of what is known about Iran's NBC programs, focusing primarily on U.S. government

assessments. There have been numerous surveys of Iranian activities; no effort will be made here to repeat what others have done more thoroughly.<sup>1</sup> Rather, I will concentrate on the officially stated views of the U.S. government, since such statements reflect the intelligence reporting that guides policymaking. However, I will assess the validity of the official assessments to determine whether there is reason to be skeptical of the official views.

### **OFFICIAL ASSESSMENTS**

Iran's nuclear weapons program originated prior to the 1979 revolution. It fell apart during the revolution, and was resuscitated only in 1989 after the end of the Iran-Iraq War. According to a recent Department of Defense estimate:

At this stage, Iran's scientific and technical base remains insufficient to support major nuclear programs. The Iranians recognize their dependence on foreign assistance and are encouraging younger Iranians to study abroad to gain needed technical knowledge.<sup>2</sup>

The Arms Control and Disarmament Agency (ACDA) gave the following assessment of Iran's nuclear activities: "Although Iran's rudimentary program has apparently met with limited success so far, we believe Iran has not abandoned its efforts to expand its nuclear capabilities with a view to supporting nuclear weapons development."<sup>3</sup> In 1993, the Central Intelligence Agency calculated that Iran

could develop a nuclear weapon in eight to ten years. More recently, the Secretary of Defense stated that it might take Iran from seven to fifteen years to develop a weapon.

The Department of Defense reports that Iran's chemical weapons program started in 1983 as a response to Iraq's use of chemical weapons. Iran produced its first chemical agent in 1984, but cumulative production is "a minimum several hundred tons of blister, blood, and choking agents."<sup>4</sup> Some sources have claimed that the Iranians might have as much as 2,000 tons of chemical agent, possibly including a nerve agent.<sup>5</sup>

Iran's biological weapons program also was initiated in the early part of the war with Iraq. According to the Department of Defense, Iran "is conducting research on toxins and organisms with biological warfare applications."<sup>6</sup> According to the ACDA, Iran probably has produced biological warfare agents and apparently has weaponized a small quantity of those agents."<sup>7</sup>

## ASSESSING THE ASSESSMENTS

What are we to make of these assessments? Notwithstanding the official assessments, I remain intensely skeptical about the ability of the Iranians to match their achievements to their ambitions.

My skepticism reflects in part the singular lack of success of the Iranians in pursuing ballistic missile programs. The Iranian ballistic missile program dates to at least 1987. Although Iranian officials claimed that the program had a high priority in early 1988 during the "War of the Cities," (in which Iran and Iraq fired missiles at each other's population centers) there is no evidence to suggest that Iran has been able to produce a single guided missile of indigenous design. Indeed, Iran's entire inventory is composed of foreign-supplied

missiles, except for some missiles assembled in Iran from kits provided by North Korea. Clearly Iran has ambitions to produce its own ballistic missiles, including more accurate systems with greater range. Equally clearly, however, it has found it difficult to make significant progress in its efforts to do so.

Iran initiated a Scud production program in 1987. The Scud missile is based on primitive technology dating to the 1940s. Indigenous efforts to develop the Scud failed, and in the end the Iranians were forced to go to North Korea for assistance. Given that there is nothing in Scud technology that should be inaccessible to the Iranians, this strongly suggests that Iran has considerable difficulty in systems' integration. Accordingly, one should be skeptical of blithe claims that Iran will quickly implement design efforts to develop more sophisticated systems.

This is evident from what appears to be a diminished level of concern regarding the immediacy of Iran's efforts to acquire nuclear weapons. This reflects the extent of the problems that face Iran as it attempts to develop an indigenous nuclear weapons program. Iran lacks the infrastructure needed to produce fissile material, and it will take some time for it to acquire both the facilities and the expertise to do so. Thus, the primary threat comes from illicit acquisition of either fissile material or complete weapons from the stockpiles of the former Soviet Union. It is impossible to assess the possibility that Iran could acquire a nuclear capability through this route. U.S. policymakers have given a high priority to efforts to forestall such attempts.

Unfortunately, it will be difficult to verify Iranian possession of nuclear weapons if it uses covert means to acquire the fissile material or the complete weapon. As a result, we may be faced with a circumstance in which Iran might have a nuclear weapons' capability and we would

have no means of confirming the claim. This could be especially problematic if the Iranians allowed rumors of nuclear weapons to reach other countries, while publicly maintaining that it had no such capabilities. Conversely, the Iranians could try to make people think that they had nuclear weapons, even without actually having them. In either case, the United States should expect to face an increasingly ambiguous military and diplomatic challenge arising from Iran's nuclear program.

Iran is credited with more success in its efforts to acquire chemical and biological weapons. It has a stockpile of chemical agents, and may have weaponized biological weapons. Estimates of Iranian chemical weapons stockpiles should be treated with some caution. While the size of the stockpile is potentially of military significance, the quality of it is uncertain.

Some portion of Iran chemical weapon inventory is reported to be composed of hydrogen cyanide.<sup>8</sup> There is only one problem with this attribution: there is no evidence that anyone ever made hydrogen cyanide into an effective chemical agent. Cyanide gas was extensively used by the French during World War One, but German accounts suggest that it probably caused no casualties. Indeed, the body naturally detoxifies hydrogen cyanide and it is lighter than air, so that it is difficult to produce concentrations sufficiently great to incapacitate. Equally important, the United States found that the burster charges in aircraft bombs needed to disperse the hydrogen cyanide often ignited the agent.<sup>9</sup>

There is one other significant point to make about hydrogen cyanide as a chemical agent. It is significantly less effective than other chemicals. According to one estimate, twenty tons of hydrogen cyanide is needed to equal the military effectiveness of one ton of sarin nerve agent. Thus, if Iran possessed 100 tons of hydrogen

cyanide, it would have the operational significance of only five tons of sarin.

This discussion of hydrogen cyanide illustrates an important point. Possessing a chemical agent is not the same as possessing a militarily useful war fighting capability. Indeed, the history of chemical warfare is replete with examples of technical surprises, where the chemical agent does not operate as anticipated, or operational ineptitude, where the employment of the agent significantly reduced its operational effectiveness.

Moreover, the Iraqi experience also suggests some caution in evaluating chemical weapons inventories. Iraq apparently had great difficulty manufacturing and storing sarin, its standard nerve agent. UNSCOM reporting suggests that the sarin deteriorated after production because of impurities in the agent and poor storage techniques. For that reason, it adopted a binary combination that was storable and could be used to generate an extremely impure version of sarin immediately prior to use.

There is no reason to believe that the Iranians would not face similar obstacles in their efforts to produce chemical weapons capabilities. Given the limited employment of chemical agents attributed to the Iranians during the Iran-Iraq war, there is no reason to believe that the Iranians gained the operational experience needed to teach them how to effectively use their chemical weapons.

This discussion suggests several conclusions. Iran has been forced to rely on an ineffective agent for some part of its chemical agent inventory. It also illustrates the extent to which it is possible to exaggerate the operational significance of a chemical inventory if insufficient attention is given to the technical details of the arsenal.

These comments are not intended to minimize concerns for Iranian efforts to

develop NBC capabilities. Rather, they are intended to put those efforts into some kind of reasonable perspective. NBC capabilities should be evaluated with the same critical eye that any military capabilities are considered. Just as we do not equate possession of advanced weapons with possession of real military capabilities, so should we attempt to carefully assess the real military significance of Iranian chemical weapons inventories.

Very little can be said about the allegations of Iranian biological weapons development. We believe that biological weapons, if properly utilized, should pose a lethality similar to that of nuclear weapons. What we do not know is the extent to which the Iranians have solved all the problems associated with production and dissemination of biological agents. Without such knowledge, it is impossible to assess the true threat posed by Iran's biological weapons.

## **MOTIVATIONS**

There is limited data to support any sophisticated evaluation of Iranian motivations for developing NBC weapons. While there have been a few revealing statements by senior Iranian officials, we know little about the inner decisionmaking process involving Iran's NBC program. As a result, we must rely primarily on imputed motives based on analysis. The one key exception to this are Iranian views of missiles. We have some interesting insights into Iranian thinking about missiles, because at one point (March 1988) the senior Iranian leadership was quite open about its views on these matters.

I would suggest that there are three factors that motivate Iran's NBC and missile programs.

First, it appears that the chemical and biological weapons programs and efforts to acquire ballistic missiles were initiated in

response to the Iraqi threat. Given subsequent revelations about the size and sophistication of Iraq's weapons programs, it is highly likely that concern for Iraq continues to motivate Iranian efforts.

Second, Iranians probably view NBC programs as affirmations of Iran's status as a regional power. Thus, there is a critical prestige element in the activities.

Finally, Iran also probably views its programs as a potential response to military threats from the United States and Israel.

The relative weight of these three items is difficult to assess. What is clear is that Iran has powerful motivations to maintain NBC and missile programs. In the absence of a potent security umbrella, Iran is likely to pursue NBC capabilities even in the absence of hostile relations with the United States and Israel. In particular, until Iran's security concerns regarding Iraq are rectified, there is little prospect that Iran will unilaterally abandon its NBC programs.

If this assessment is correct, Iran's weapons programs may be targeted at the United States, but not exclusively. This suggests that even if there is a rapprochement between the United States and Iran, the rationale for the weapons programs will remain.

## **IMPLICATIONS OF IRANIAN NBC CAPABILITIES**

What are the implications of Iran's efforts to acquire NBC weapons, especially for the United States and its friends and allies in the Middle East?

Iran has several alternative uses for its NBC capabilities against the United States. Iran could use the weapons to deter the United States from getting involved in a conflict with Iran. To implement such a strategy, Iran could threaten to use its weapons against U.S. forces deployed in the region, or it could threaten covert use of weapons against targets in the United States.

If deterrence fails and the United States attacks Iran, the weapons could be used to limit the scope of actions against Iran and the regime. Thus, Iran could threaten use of its arsenal if certain thresholds were crossed. In this way Iran could ensure that a limited war remained limited.

The weapons also could be used to drive a wedge between the United States and its friends and allies in the region. By suggesting that countries hosting the United States might come under attack from Iranian NBC weapons, Iran could ensure that no countries support U.S. military actions and that they do not allow the United States to operate from facilities in the region.

Finally, the weapons could be used as part of a war fighting strategy to compensate for Iranian conventional weapons deficiencies. Thus, Iran could target U.S. military forces, key facilities supporting U.S. operations in the Gulf, or critical reinforcement nodes.

There are limits on Iran's ability to employ these alternative strategies. Iran's leadership is certainly aware of the military capabilities of the United States and would need to find an approach that minimized the risks of retaliation. Given the gross disparity in military power between the United States and Iran, this will certainly be evident to all but the most obtuse member of the regime. This tends to suggest that Iranian use of NBC weapons is most likely to be carefully considered and will involve a considerable degree of subtlety.

The possession of NBC weapons adds to the threat that Iran already can pose to the GCC countries. These countries lack the military capability to oppose Iran on their own, and are heavily dependent on the protective shield offered by the U.S. military presence. Iran presumably would seek to use its NBC weapons to undermine the credibility and acceptability of the U.S. military presence. In particular, Iran would want the GCC countries to believe that by

hosting the United States they are opening themselves up for NBC strikes.

Iran would have to adopt a carefully modulated approach, since the GCC countries will not want to become puppets of the Iranians. For their own survival, they must find ways of protecting their independence of action. If Iran is too blunt in its actions, the GCC countries would have incentives to side with the United States despite the risks. Thus, Iran needs to couple their threats with diplomatic initiatives that give the GCC countries some reason to believe that it will be possible to establish an acceptable relationship with Tehran.

## **U.S. RESPONSES**

What steps should the United States take in response to Iranian NBC efforts?

Generically, the United States takes three approaches to the proliferation of NBC weapons. First, it seeks to rollback existing capabilities. Second, it tries to inhibit further proliferation. Finally, it attempts to manage the consequences of proliferated capabilities. All three approaches are relevant to United States approaches towards Iran.

### Rollback existing capabilities:

Efforts to roll back existing NBC programs have a higher priority today than in the past. This includes both the voluntary and involuntary destruction of capabilities. Current examples of such efforts include verification of the elimination of the Soviet BW program, of the Iraqi CBW and ballistic missile programs, and the South African nuclear program. A new requirement during the 1990s will be implementation of the Chemical Weapon Convention (CWC) requiring such programs for the numerous countries with arsenals of chemical munitions. Depending on circumstances, it may be necessary to ensure the elimination

of nuclear, biological, and missile capabilities in other countries as well.

Rollback initiatives may be the primary responsibility of international agencies, such as the International Atomic Energy Agency (IAEA) or the planned implementing agency for the CWC, or of the United States as party to bilateral and multilateral initiatives, as is the case with the Soviet BW program. Even when international agencies are involved, however, the United States will often take a leading role in providing support, or in monitoring the success of the international initiative.

Specialized resources are needed for inspection and destruction of equipment and facilities. This process needs to be tailored to the specific circumstances of each case. In most circumstances, there will be gaps in our knowledge of past activity, and as a result rollback efforts cannot be based on pre-set target lists. In addition, it is possible that concealment and deception will be used to protect selected aspects of programs. For these reasons, it is critical that experts intimately familiar with the activities of a program over an extended period of time be included in rollback efforts.

Recent experience indicates that it can be extremely difficult to uncover illicit weapons activities, even with highly intrusive verification efforts. While the UN inspectors in Iraq have accomplished much in the effort to control Iraq's NBC and missile programs, six years of intrusive inspections have yet to reveal the full scope of Iraqi activity. This suggests that we should not expect that arms control measures will be able to bring Iranian programs under control unless the Tehran regime wants to terminate those activities.

#### Inhibit further proliferation

A traditional focus of U.S. nonproliferation policy are efforts to prevent countries from acquiring nuclear, chemical,

or biological weapons, or missiles capable of delivering such weapons. Because of the extent to which countries have acquired capabilities, however, a growing focus of such efforts are initiatives to prevent countries from enhancing the size and sophistication of existing arsenals.

Despite some failures, there have been considerable successes in our efforts to stem proliferation. Although more than two dozen countries might be capable of developing nuclear weapons capabilities, the actual number of nuclear capable states is relatively small. Similarly, we have successfully slowed the spread of chemical, biological, and missile capabilities.

In some cases, it may be possible to convince or force a country to stop programs before they become operational. This is the importance of the initiatives to halt the nuclear programs of Iran, Iraq, and North Korea, and was the reason for the importance of the efforts to stop the Argentinean and Brazilian nuclear programs and to prevent the spread of nuclear weapons among the newly independent states of the former Soviet Union.

In other cases, inhibiting proliferation means slowing programs, even though there is little reason to believe that they can be stopped. Thus, much of our activity in the chemical arena is intended to deny easy access to precursor chemicals needed to produce chemical agents, thus raising the costs and slowing pace of capabilities acquisition.

Often we are trying to buy time, hoping that changing circumstances will alter the cost-benefit assessment that encouraged the proliferation activity in the first place. Alternatively, the time allows us breathing space which can be used to develop counters to the capability.

These approaches are particularly relevant in the case of Iran. While the Iranians have made some progress in developing chemical and biological

weapons, as well as missile delivery systems, their existing capabilities appear relatively rudimentary. Presumably, they have an incentive to acquire more sophisticated agents and better delivery mechanisms.

Managing the consequences of proliferated weapons capabilities

We may fail in our efforts to forestall proliferation. When that happens, it is necessary to manage the potentially deleterious consequences. In many cases, the task is primarily diplomatic. Thus, we have conducted an active diplomacy to manage the dangers posed by nuclear proliferation in South Asia, and may need to do more during periods of intense conflict.

In some cases, we may wish to adopt diplomatic initiatives intended to increase the costs or reduce the perceived benefits of possessing such weapons. This could entail providing defense assistance to allies (or even neutral and hostile countries, if appropriate), including CBW defenses and missile defenses. Alternatively, it could involve use of sanctions or military action by the U.S., depending on the circumstances.

With the Defense Counterproliferation Initiative, the Clinton Administration recognized that it is possible that hostile third world nations might be willing to use their NBC arsenals against the United States or its friends and allies. This means we must be prepared to operate in localities where our forces may be vulnerable to such weapons.

## **IRAN-SPECIFIC POLICIES**

Efforts by the United States to constrain Iranian NBC activities are consistent with general U.S. nonproliferation and counterproliferation policies. Since the early 1980s, the United States has used a range of diplomatic tools against Iran. Working with other members of the

international community, through such multilateral institutions as the Nuclear Suppliers Group and the Australia Group, the United States has tried to limit Iran's access to the technology and materials it needs to develop NBC weapons. In addition, the United States has conducted aggressive bilateral diplomacy aimed at countries still providing support for the Iranians.

These efforts have been remarkably successful. While some countries continue to do business with Iran in the NBC arena (including Russia and China), most countries have come to accept that efforts need to be made to constrain Iranian NBC activities. Thus, Iran has only limited access to the foreign suppliers that it needs to support its activities.

## **Rollback**

The ultimate objective of any nonproliferation program aimed at Iran should be ensuring the termination of its NBC and missile programs. This is not an easy task, but it is not impossible. This is evident from examining the track record of the international community in tackling nuclear proliferation.

## Conditions for Success

Nearly five years ago, Joseph Yager of SAIC conducted an interesting study of what he called "nuclear rollback," which he defined as a "voluntary and credible renunciation of efforts to move closer to a nuclear weapons capability."<sup>4</sup> According to Yager's study, twenty countries have made serious attempts to acquire nuclear weapons capabilities. This total includes the five declared nuclear weapons states, five additional countries deemed current "proliferation problem cases" (India, Israel, Libya, Pakistan, and North Korea), four countries that abandoned programs due to military defeat or revolution (Germany, Iran, Iraq, and Japan) and six cases of rollback

(Argentina, Brazil, South Africa, South Korea, Sweden, and Taiwan). In his study, Yager focused on four of the rollback countries, treating South Korea and Taiwan as special cases due to the leverage exercised by the United States over their national security. Note that Yager treated both Iran and Iraq as solved problems, a view that was perhaps excessively optimistic based on our current knowledge of the two countries.

Based on his study, Yager concluded that his four cases of rollback shared five conditions essential for rollback. First, in each case the leadership of the country reassessed the military utility of nuclear weapons. Second, favorable domestic political developments enabled the leadership to abandon weapons development programs. Third, external pressures and inducements played a role in the decisions to rollback. Fourth, none of the countries openly acknowledged an interest in acquiring nuclear weapons. Finally, all the countries faced economic constraints that limited their pursuit of nuclear weapons.

Several interesting conclusions can be drawn from Yager's analysis. First, it is evident that nonproliferation activities do not defeat nuclear weapons programs. Rather, they serve primarily to delay the completion of nuclear programs and to raise the costs of public declarations favoring acquisition of nuclear weapons. Second, the domestic political context is critical in the termination of programs. Rollback can occur only if those individuals or groups favoring renunciation have the desire and the political power to enforce such action. Finally, the international context is critical in the evaluation of the military utility of nuclear weapons.

I would argue, however, that there are several other factors significant in the decision to abandon nuclear weapons programs that are of significance to countries like Iran. Yager chose to ignore

five countries (Germany, Iraq, Japan, South Korea, and Taiwan) that I believe provide an important insight into decisions regarding nuclear weapons. Consider the three defeated countries, Germany, Iraq and Japan. While it is true that military defeat led to immediate termination of nuclear weapons programs, that is not a complete explanation. The Germans and the Japanese have had ample opportunities to review their non-nuclear posture, and both have decided not to pursue nuclear weapons programs. This, I believe, reflects an accurate calculation that the benefits of acquisition are far outweighed by the costs. In particular, the special importance that they assigned to their security relationship with the United States and the Western countries, as well as the anticipated reaction of other countries made nuclear weapons both undesirable and counterproductive. This is significant in the context of Iraq, also a defeated country but one that appears reluctant to abandon its ability to pursue NBC and missile programs. This suggests that when a leadership believes that it needs such capabilities, military defeat is not a sufficient condition to cause abandonment of the efforts.

It appears that these same considerations were significant in the case of South Korea and Taiwan. While it is true that the United States had extraordinary leverage over these two countries, this leverage resulted largely from the important role that the United States played in ensuring the security of those two countries. Thus, I would argue that essentially the same conditions that applied to Yager's four cases of rollback also are pertinent in other examples.

Whether these conclusions also apply to chemical and biological weapons programs is less certain. There has been no effort made to study rollback in the chemical and biological arena, although it is known that some countries have abandoned their

programs (Germany and Japan had programs during the Second World War; the United States, Britain, and Canada abandoned their programs when they adhered to the BTWC). The context also is decidedly different. There is a treaty that bans possession of biological weapons (the 1972 Biological and Toxin Weapons Convention), and there will soon be a similar treaty for chemical weapons (the Chemical Weapons Convention, scheduled to enter into force this year). In contrast, possession of nuclear weapons is not generally proscribed, except for those countries adhering to the Nuclear Non-Proliferation Treaty (and even it permits a country to withdraw from the treaty).

From these additional observations, I would draw an additional conclusion: that NBC programs can be terminated only with willing agreement. There is no military solution to NBC programs. Despite unfavorable conditions, a country will pursue NBC capabilities if they appear sufficiently important.

#### **APPLYING THE CRITERIA TO IRAN**

It appears that three of the five criteria identified by Yager apply to Iran, but that two do not.

The Iranians have never officially acknowledged an interest in possessing NBC weapons. Despite some rather direct statements made by Iranian officials about the value of NBC weapons, Iran cannot afford to officially acknowledge such intentions. As a signatory to the NPT, BTWC, and the CWC, Iran cannot adopt any other position without undermining efforts to acquire NBC weapons. This is most clearly evident in the case of nuclear weapons since, if Iran stated that its ultimate aim was acquiring nuclear weapons, then China and Russia, both signatories to the NPT, would be forced to terminate their nuclear assistance programs. Finally, Iran is

faced by severe economic constraints that limit its ability to pursue NBC programs.

While it is clear that three of Yager's factors appear positive for rollback in the Iranian case, the other two factors are decidedly negative. There is no reason to believe that Iran will decide that it has no military rationale for its NBC capabilities, and there is little reason to believe that the existing clerical regime will be inclined to take steps to terminate these programs.

Accordingly, I would argue that two conditions are essential to an Iranian decision to terminate its NBC programs. First, a regime must come to power that can establish better ties to other countries in the region. Specifically, the regime must be able to reconcile major differences with the United States and with the GCC and other significant Arab states. Second, the regime must be willing and able to enter into regional security arrangements that accomplish many of the same objectives as the NBC programs.

Yet, it is also true that the United States lacked leverage in many of the cases where successes ultimately emerged. Crucial to the ultimate success was persistence, ensuring that when the opportunity arose we were positioned to pursue nonproliferation objectives. Thus, the true objective is delay by preventing a country from acquiring capabilities through raising costs.

#### U.S. Military Pressure on Iran

Note that threats of military response to Iranian NBC activities can have either negative or positive consequences, depending on the reaction in Tehran. The prospect that the United States might attack Iran increases its sense of threat, and thus potentially makes NBC capabilities more useful as a deterrent. At the same time, to the extent that a small NBC capability increases prospects for a preemptive attack, Iran's overall security is reduced.

From this perspective, the United States could pursue radically different policies in the context of its broader approach towards Iran. For example, if we believed that Iran was motivated to pursue NBC capabilities because of the threat of U.S. military action, then we could pursue a conciliatory policy intended to reduce Iran's sense of threat from the United States, and to make it believe that it can cope with regional threats using its own resources.

If, however, we believe that it has additional motivations to pursue NBC capabilities, then a conciliatory approach might do little to reduce the motivations to acquire such capabilities. This suggests that NBC issues should not drive U.S. policy, but should be integrated into the foreign policy objectives that the United States adopts towards Iran.

#### **BOTTOM LINE**

In conclusion, I would advance several observations about Iran's NBC programs.

First, the United States has been remarkably successful in constraining Iranian capabilities. While we have not stopped Iran from pursuing development NBC weapons and missile delivery systems, the capabilities that Iran has acquired so far are remarkably rudimentary, and the time line for major successes appears lengthy.

Second, the real threat these capabilities pose is to the security of our friends and allies in the region. These countries, and especially the GCC countries, must believe that the United States will protect them from Iran. This also means convincing them that the United States will not provoke the Iranians. So long as they have confidence in the United States, I believe that they have strong incentives not to be coerced by Iran.

Third, we need to continue to pursue a strategy that mixes multilateral and

bilateral approaches. This is not a problem that can be solved by unilateral U.S. action. We need the full support of like minded governments around the world.

Finally, the problem is not uniquely tied to the current regime. A fundamental shift in Iranian policy might facilitate rollback efforts, but it is also possible that a new regime might pursue the same policies. Moreover, while the United States might be willing to accept a pro-Western regime in control of existing Iran's NBC programs, it is unlikely that other countries in the region would feel similarly. Hence, the problem is likely to outlast the current regime.

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*\*Seth Carus is an analyst at the Center for Counterproliferation Research, National Defense University.*

#### **NOTES**

1. Arms Control and Disarmament Agency, Adherence to and Compliance with Arms Control, May 1996.
2. Office of the Secretary of Defense, Proliferation: Threat and Response (Washington: Government Printing Office, April 1996), p. 15.
3. Andrew Rathmell, "Chemical weapons in the Middle East -Lessons from Iraq," Jane's Intelligence Review, December 1995.
4. Office of the Secretary of Defense, Proliferation: Threat and Response (Washington: Government Printing Office, April 1996), p. 16.

5. Arms Control and Disarmament Agency, Adherence to and Compliance with Arms Control, May 1996.
6. For the First World War experience with hydrogen cyanide, see L. F. Haber, *The Poisonous Cloud: Chemical Warfare in the First World War* (Oxford: Clarendon Press, 1986), and Augustin Prentiss, *Chemicals in War: A Treatise on Chemical Warfare* (New York: McGraw-Hill Book Company, 1937), pp. 171-174. World War Two research is discussed in Stanford Moore and Marshall Gates, "Hydrogen Cyanide and Cyanogen Chloride," pp. 7-16, in Division 9, National Defense Research Committee, Office of Scientific Research and Development, *Chemical Warfare Agents and Related Chemical Problems*, parts I-II (Washington, D.C.: 1946).
7. Excellent accounts have appeared in the works of Anthony Cordesman, Michael Eisenstadt, Ahmid Hashim, and Leonard Spector.
8. Office of the Secretary of Defense, *Proliferation: Threat and Response* (Washington: Government Printing Office, April 1996), p. 14.
9. Office of the Secretary of Defense, *Proliferation: Threat and Response* (Washington: Government Printing Office, April 1996), p. 15.
10. This analysis is based on data provided by Joseph A. Yager, *Prospects for Nuclear Proliferation Rollback*, Discussion Paper, McLean, Virginia, Science Applications International Corporation, July 6, 1992. See also Joseph A. Yager, *Prospects for Nuclear Proliferation Rollback*, Seminar Report, McLean, Virginia, Science Applications International Corporation, August 14, 1992.