

In the panoply of global security interests as they have emerged after the Cold War, biological weapons are nearly an afterthought. It is common to hear such weapons lumped together with nuclear and chemical weapons—and their delivery systems—in descriptions of the emerging proliferation challenge, but with little or no differentiation of the biological aspect from the larger context.

Why, in fact, do biological weapons (BW) merit any specific concern? After all, despite the high potential lethality of such weapons, their use in modern warfare has been virtually unknown. Moreover, there has been a global arms control regime in place in the biological domain for over two decades—the Biological and Toxin Weapons Convention (BWC)—with more than 100 states parties.

The answer is straightforward: the biological warfare problem appears to be growing worse. There are four reasons for thinking so.

#### UNDERSTANDING THE NEW BW PROBLEM

First, militarily significant noncompliance by BWC signatories has now been established. The BWC forbids the production of biological warfare agents and their use, but it permits research on such agents for the purpose of producing vaccines and antidotes.<sup>1</sup> The dividing line between these two categories is not always clear. Moreover, noncompliance with the BWC may consist of research and development programs aimed at creating a weapons stockpile even if the stockpile has not yet come into existence. Thus, different cheating scenarios present different levels of significance for other states, with research and development programs of less immediate significance than accumulations of stockpiles. Fears have existed throughout the life of the BWC that some states might be engaged in illicit research and development programs. Today, there is confirmation that two states have had aggressive programs aimed at creating a significant war-fighting capability.

Iraq has acknowledged the existence of a program in the years prior to 1991 for the purpose of developing and producing an arsenal of biological weapons.<sup>2</sup> Despite the work of the United Nations Special Commission (UNSCOM), significant doubts remain about the exact nature of that program and whether weapons themselves were stockpiled (there is, however, widespread agreement that it could be easily and quickly reconstituted should international monitoring efforts grow lax).

Noncompliance by the former Soviet Union and indeed by Russia has also been established.<sup>3</sup> Western doubts of Cold War vintage about the existence of an offensive BW capability in the Soviet Union have been confirmed by the Russian government, which also professes some difficulty in closing down inherited military biological warfare programs. The apparent unwillingness of the Russian military to relinquish programs in this domain, in contrast to its willingness to undertake sharp cuts in its nuclear, chemical, and conventional capabilities, raises a major question about the exact nature of continuing work.

These biological warfare activities in Iraq and Russia have a significance beyond these countries and their potential military adversaries because they raise larger questions about the compliance problems associated with the BWC. As crafted in the early 1970s, in the wake of unilateral U.S. abandonment of its offensive BW capability and a subsequent bilateral U.S.-Soviet disarmament commitment undertaken in the spirit of détente, the BWC lacks verification provisions. Its compliance provisions consist only of a commitment to dispute reso-

**VIEWPOINT:**  
**CONTROLLING THE  
PROLIFERATION OF  
BIOLOGICAL WEAPONS**  
by Brad Roberts

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lution among states parties and a recourse to the United Nations in the event of continuing unresolved compliance questions. The absence of verification provisions and of meaningful compliance measures stands in stark contrast to the record of arms control in the nuclear, chemical, and conventional areas. More than virtually any other arms control treaty, the BWC is believed by many today to be a hollow measure, devoid of significant political content or operational punch.

A second reason that the problem of biological weapons appears to be getting worse is the proliferation of these weapons. When the BWC was crafted, it was generally understood that only one or two states other than the superpowers had armed themselves with biological weapons. Indeed, proliferation concerns figured only at the margins in the effort to create the treaty. Today, between 10 and 15 countries possess or are actively working to create an arsenal of biological weapons, according to official sources in the United States and overseas.<sup>4</sup> The numbers vary, depending on the source. Although the U.S. government has not released a comprehensive list, it is generally understood that the group includes Iraq, Iran, Syria, Libya, China, North Korea, and Taiwan, among others. Moreover, little is publicly known about the important variations likely to exist among these programs, and perhaps in other, undetected ones. Are biological agents stockpiled, weaponized, mated to delivery systems? If so, in what quantities, of what types, and with what doctrines or strategies of use?

But the fundamental point is simple: the biological threat overshadows the nuclear threat in the sense that more countries are today able to make war with the former than the latter.

A third reason to think that the problem of biological weapons is getting worse is the revolution in biological sciences that has occurred in the two decades since the BWC was crafted. No other controlled technology has witnessed a revolution of such breadth and impact. The biotechnology revolution has generated a fear that recombinant DNA and related genetic technologies will be used to craft "designer" bugs, otherwise known as "novel agents," that may attack and kill selectively, whether by racial group or some other genetically derived identifying factor. Such a possibility appears remote at this time. In the short term, biotechnology's impact appears more significant in undermining those technical factors that heretofore have limited the utility of biological weapons.<sup>5</sup>

Biological weapons are widely misconstrued to have little or no military utility; in fact, their potential utility is quite significant, but it is more difficult to be certain of achieving it than it is in the nuclear or even the chemical domains. The biotechnology revolution may make it easier to protect one's own forces against one's own biological weapons, to better control their dispersal into the environment, and even to limit the risks associated with their production, storage, transportation, and delivery on target. This suggests that countries seeking a weapon of high potential lethality, but also unable to secure nuclear or war-winning conventional forces, may, unlike Western militaries, seek to develop and exploit biological weapons.

The fourth reason relates to the changes that have occurred in the international system with the end of the Cold War. These changes have unleashed a number of political, military, and economic pressures that have accelerated the diffusion of weapons and military capability. This comes at a time of the general diffusion of technology and dual-use industries. The aspect of biological weapons that lends them particular importance in this era is their utility for so-called "asymmetric" strategies. In such strategies, weaker states seek to pit their strengths against the weaknesses of stronger ones in order to deter intervention or prevent the stronger state from bringing to bear its full military potential.<sup>6</sup>

Such strategies appear increasingly likely at a time when some states seek to challenge the status quo while coalitions of other states seek to enforce norms through collective security operations. For the former, biological weapons may be deemed useful in blunting the front edge of an invasion, when interventionary forces are at their most vulnerable, or in creating a political backlash against intervention within the major powers. In circumstances short of war, biological weapons may be deemed less useful; nuclear weapons continue to operate more fundamentally on perceptions than do biological weapons, especially given the outlaw status of the latter. But a state brandishing biological weapons as an instrument of last resort or threatening to unleash them in terrorist strikes would gain important leverage in times of crisis. The leaders of such states may also reckon that the threat or actual use of biological weapons would be less likely to incite a powerful counterresponse by the stronger adversary than would nuclear use.

## THINKING THROUGH POLICY RESPONSES

If the problem of biological weapons is growing worse, why should our focus be on the arms control dimension?

In fact, arms control is not the only policy priority in the area of biological weapons. Steps to significantly reduce the vulnerability of U.S. forces to the crippling effects of biological attack are an urgent priority. Happily, this has been recognized by some elements of the Department of Defense and some headway is now being made on this problem, largely because of the huge vulnerability found in the lead-up to Desert Storm.<sup>7</sup> The military forces of other nations also anticipating possible engagement in regions where biological weapons have proliferated must also make such preparations, but at the moment only the British and perhaps the Russian militaries have taken some steps in this direction.

Steps to strengthen controls over the exports of infectious materials and associated technologies are also an important priority. A cooperative effort is in place under the aegis of the Australia Group, but it needs to be expanded to a broader group of states and more efficiently enforced.<sup>8</sup> Such export controls will necessarily, if only occasionally, conflict with the shared commitment of the international community to undertake joint and open research aimed at eliminating outbreaks of infectious diseases.

But neither military measures nor export controls are sufficient, alone or in combination, to meet the emerging BW problem. Even with the provision of battlefield sensors and a sufficient supply of vaccines and antidotes, the military cannot happily contemplate a possible future security environment in which biological weapons are widely diffused, integrated into the military operations of adversaries, and used. The human and military costs attendant to the projection of power into regions in conflict in such circumstances would be very high, whatever the degree of protection afforded troops. From a U.S. perspective, there is little question that such costs would raise doubts about the political will of U.S. leaders and the American public to support military operations overseas.

And export controls are at best a stopgap measure designed to reinforce the anti-BW norm or derail critical BW programs of special military significance; the existing diffusion of dual-use technologies suggests the limited utility of these approaches. Thus negotiated limitations, even imperfect ones, are critical elements of the larger strategy to meet the BW challenge.

The effort to strengthen the BWC has focused over the years on the confidence-building agenda. More specifically, states parties to the treaty, meeting periodically in review conferences, have determined that the challenge confronting the BWC regime derives from doubts about compliance rather than actual noncompliance. Hence emphasis has been given to designing and implementing a series of confidence-building measures (CBM), including certain declarations about the existence or nonexistence of biological warfare-related programs or facilities of possible relevance, as well as a commitment to conduct research for defensive purposes, where deemed necessary, within a context of openness and transparency.

These steps have been useful in sustaining the interest of some important members of the international community in the BWC. But their implementation has been disappointing, as too few states have taken seriously the obligation to participate in them. Moreover, with the revelations about Iraq and Russia, it is clear that a compliance problem in fact exists.

The rejuvenation of the anti-BW regime begins with the effort to deal with these major existing problems of noncompliance. In the case of Iraq, UNSCOM has made some progress in uncovering the Iraqi BW program and putting in place a long-term monitoring process to forestall or prevent its regeneration; whether it will be successful in doing so—and, indeed, whether it has uncovered the full contours of the pre-war program—are open questions. In the case of Russia, a process has been put in place to discern the outlines of the problem and to work with civilian authorities in Russia to bring about full Russian compliance. This is a tripartite process, bringing together the three depository states—the United States, Britain, and Russia—in a series of mutual visits.<sup>9</sup>

This rejuvenation will continue with some strengthening of the BWC regime itself. At the last BWC review conference in September 1991, there was general agreement that the CBM/transparency route had taken the treaty as far as it can in dealing with its problems—not that the CBM process and transparency measures should be abandoned, only that supplemental measures are necessary. There was widespread interest in adding verification and compliance mechanisms to the BWC, although there was also a sharp dispute about the actual verifiability of the treaty, with the United States as the most adamant party that the treaty is unverifiable (and insistent that the false confidence generated by an ineffective verification regime would entail unacceptable risks).<sup>10</sup>

A compromise was struck in the form of a decision to convene a group of experts to consider the utility and effectiveness of verification mechanisms generally. The so-called VEREX group defined more than a score of possible mechanisms and assessed their separate utilities. In September 1994, states parties met to evaluate the merit of adopting some or all of these mechanisms. They were given a mandate to draft a protocol for the convention for consideration by states parties at a review conference in early 1996.<sup>11</sup>

Some arms control experts have lauded the idea of importing the basic provisions of the verification mechanism for the new Chemical Weapons Convention (CWC): controlled lists of substances with inspections of different degrees of intrusiveness depending on their type, backed by a right to challenge inspections of undeclared, suspect facilities, at both military and commercial sites. But simply grafting this mechanism onto the BWC will prove no more feasible than grafting the basic features of the Nuclear Non-Proliferation Treaty onto the CWC proved to be. In fact, there are important—indeed, fundamental—differences between the chemical and biological weapons domains. The threshold at which militarily-significant cheating occurs is much lower in the biological than in the chemical domains, meaning that smaller facilities and stockpiles can pose a significant operational threat. Compliance is thus more difficult to verify (and noncompliance more difficult to deter or detect) than in the chemical area; this is not to say that it is necessarily impossible, just harder. There are also important differences at the commercial level; the concern about protecting proprietary information is strong in the chemical domain but even sharper in the biotechnologies. There is also an important difference as regards the BW problem itself—perhaps twice as many countries are working to create chemical weapons than biological ones, thus suggesting that a larger cost or risk is worth bearing to address the problem in the chemical domain than in the biological one—at least at this time.

The debate about the verifiability of the BWC has been fairly sterile until now, cast as it is in the sharp blacks and whites of opponents and advocates of different positions. A better way to pose the relevant questions is this: What is verifiable and at what cost? Is it possible to detect militarily-significant cheating by states parties to the BWC in a timely fashion? Is it possible to do so without compromising other interests?

Assuming that some mix of measures is adopted in 1996, what should we expect? It is likely that diplomats will find useful points of reference in the CWC—not in specific provisions, but in basic principles. These include the following: prioritization of problems of non-compliance, so that the most severe and likely ones receive the most attention; a mix of steps of varying effectiveness that together create a strong “web of deterrence,” including challenge inspections that extend into the commercial and military sectors; and a recognition that a credible treaty regime requires not just technical fixes but the political backing of key interested states and a track record of dealing effectively with significant problems of noncompliance.<sup>12</sup> The addition of verification provisions to the treaty would strengthen it, although not to the same degree that strong verification provisions will support the CWC or stronger inspection rights restore the authority of the International Atomic Energy Agency. Such provisions would increase the credibility of the regime, but they would not create an especially high degree of confidence in the compliance of all states parties. Such provisions would be useful only in the context of a broader effort to strengthen the compliance mechanisms of the treaty as well as the political commitment of states parties to the treaty’s purposes and norms.

Are such provisions possible at reasonable cost? Probably, but ensuring that they do not unduly harm commercial or legitimate, defensive military interests will require accepting less than perfect—from an arms control point of view—inspection mechanisms. That they are less than perfect means that, like the military and export control aspects discussed earlier, they must be seen as but one part of a larger strategy to manage the problem of biological weapons.

## CONCLUSION

The proliferation of biological weapons has emerged as a major new problem of international security but not yet as a major policy priority among countries concerned about proliferation. It has been easy to ignore a problem that has not yet led to massive deaths or to large geopolitical upheavals. If the controls on such weapons are not strengthened during this decade, the problem may well slip beyond the control of the international community; matters are unlikely to remain as they are today, with only a handful of countries engaged in surreptitious weapons programs, given the biotechnology revolution.

Stronger controls entail a stronger arms control regime. It is important, however, to remember that arms control should not be the sole focus of a "control strategy," and that it is essential to do what is necessary in the area of export controls and protective measures so as to diminish the incentives of proliferant states to build and use biological weapons.<sup>13</sup> It is also important to remember that strengthening the arms control component of the strategy will not be easy. The trade-offs in terms of economic, military, and political interests associated with the addition to the BWC of a transparency and compliance protocol will not be easily made; in fact, few people even among the experts understand the nature of those trade-offs. Politically, it is impossible to envisage that the BWC regime will be strengthened without some successes in other arms control domains in the interim. If the Nuclear Non-Proliferation Treaty is not extended in April 1995, or is extended only on the basis of a much weakened consensus, and if the Chemical Weapons Convention fails to enter into force, or enters into force but without key countries, then the political commitment within the international community to improve the BWC is likely to be limited. This points to a simple conclusion that preventing the proliferation of biological weapons cannot be separated from the larger task of preventing the proliferation of all weapons of mass destruction through a comprehensive strategy including not just arms control but also military, economic, and political aspects.

Senate Committee on Governmental Affairs, *Proliferation Threats of the 1990's*, 103rd Cong., 1st sess., February 24, 1993.

<sup>5</sup> Victor A. Utgoff, "The Biotechnology Revolution and its Potential Military Implications," in Roberts, *Biological Weapons*. See also Brad Roberts, "Chemical and Biological Weapons: New Technology and the Prospects for Negotiations," in Kenneth B. Moss, ed., *Technology and the Future Strategic Environment* (Washington, D.C.: Wilson Center Press, 1990).

<sup>6</sup> Thomas G. Mahnken, "America's Next War," *The Washington Quarterly* 16 (Summer 1993), pp. 171-184, and Patrick J. Garrity, "Implications of the Persian Gulf War for Regional Powers," *The Washington Quarterly* 16 (Summer 1993), pp. 153-170.

<sup>7</sup> Office of the Deputy Secretary of Defense, "Report on Nonproliferation and Counterproliferation Activities and Programs" (Washington, D.C., May 1994).

<sup>8</sup> The industrialized countries have met twice a year since 1985 in meetings chaired by Australia in order to define and respond to the proliferation of chemical weapons, with its mandate subsequently expanding to cover biological weapons as well. The so-called Australia Group has strengthened the cooperation among states concerned about proliferation, facilitated the application of compatible export controls, and led to constraints on specific materials and technologies.

<sup>9</sup> Depository states are those states with which instruments of ratification are deposited by signatory states and which thus assume particular obligations for the functioning of a treaty.

<sup>10</sup> "Speech by Ronald F. Lehman II, Director, U.S. Arms Control and Disarmament Agency, The Biological and Toxin Weapons Convention Third Review Conference, Geneva, Switzerland," Official Text (U.S. Arms Control and Disarmament Agency Office of Public Affairs, Washington, D.C., September 10, 1991). See also Michael Moodie, "Arms Control Programs and Biological Weapons," in Roberts, *Biological Weapons*.

<sup>11</sup> For an update on the trilateral and VEREX processes current to summer 1994, see Edward J. Lacey, "Tackling the Biological Weapons Threat: The Next Proliferation Challenge," *The Washington Quarterly* 17 (Autumn 1994), pp. 53-64.

<sup>12</sup> Graham S. Pearson, "Prospects for Chemical and Biological Arms Control: The Web of Deterrence," *The Washington Quarterly* 16 (Spring 1993), pp. 145-162.

<sup>13</sup> Brad Roberts, "New Challenges and New Policy Priorities for the 1990s," in Roberts, *Biological Weapons*.

<sup>1</sup> The treaty is formally known as the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction. For a complete text, see U.S. Arms Control and Disarmament Agency, *Arms Control and Disarmament Agreements* (Washington, D.C.: ACDA, 1990), pp. 133-137.

<sup>2</sup> This occurred in the context of one of the early inspections by the United Nations Special Commission on Iraq (UNSCOM). Subsequent denials by other Iraqi authorities have done little to allay concerns about the offensive rather than defensive nature of the Iraqi BW program.

<sup>3</sup> See *Adherence to and Compliance with Arms Control Agreements and the President's Report to Congress on Soviet Noncompliance with Arms Control Agreements* (U.S. Arms Control and Disarmament Agency, Washington, D.C., January 14, 1993). See also the *Joint US/UK/Russian Statement on Biological Weapons* (U.S. Department of State, Office of the Assistant Secretary/Spokesman, Washington, D.C., September 14, 1992) and John Barry, "Planning a Plague," *Newsweek*, February 1, 1993, pp. 40-41.

<sup>4</sup> See W. Seth Carus, "The Proliferation of Biological Weapons," in Brad Roberts, ed., *Biological Weapons: Weapons of the Future?* CSIS Significant Issues Series 15, no. 1 (Washington, D.C.: CSIS, 1993) and "A New Challenge after the Cold War: The Proliferation of Weapons of Mass Destruction," a report prepared by the Foreign Intelligence Service of the Russian Federation, Moscow, February 1993, translated by the U.S. Foreign Broadcast Information Service, JPRS-TND-93-007, March 5, 1993. Printed in