Chapter 2
An Overview of International Efforts to Prohibit Biological Weapons

Only in recent years have biological weapons been widely recognized as being of the ominous rank as nuclear weapons. A single munition from either class of weapons can slay inconceivably large numbers of humans and lay waste to plants and animals. Perhaps the belated appreciation of the devastating character of biological weapons explains why in comparison to the nearly continuous efforts to rein in nuclear arms in the last century, the international community has attempted only sporadically to restrain the spread of germ weapons. This chapter provides an overview of international arms control efforts concerning biological weapons.

The 1925 Geneva Protocol banned the use of biological, toxin, and chemical weapons, but nearly a half-century passed before the international community developed a more comprehensive prohibition against the production and possession of germ weapons. Opened for signature on 10 April 1972, the Biological and Toxin Weapons Convention (BWC) contains a sweeping prohibition against germ weapons. The linchpin of this treaty is Article I, which mandates:

> [E]ach State Party. . .undertakes never in any circumstances to develop, produce, stockpile, or otherwise acquire or retain (1) microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective, or other peaceful purposes; (2) weapons, equipment, or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.[1]

In addition, the BWC enjoins participating states not to transfer any of those agents, toxins, weapons, equipment, or means of delivery to any recipient for non-peaceful purposes and not to otherwise abet the proliferation or acquisition of biological agents or weapons. The BWC also requires states that possess biological weapons to destroy them within nine months of the treaty's activation.[2]

Since the BWC entered into force on 26 March 1975, it has been ratified by 143 countries and signed by an additional eighteen. To the extent that membership is an indicator of success, the world's nations view the BWC as a significant arms control agreement with the potential to enhance international security. However, this accord lacks what many see as a fundamental component of any arms control treaty—the means to verify compliance or to detect noncompliance.

The absence of cooperative verification provisions is typical of arms control treaties negotiated during the Cold War. The BWC was crafted in the early 1970s, a time when the type of highly intrusive on-site inspections needed for effective verification were widely viewed as politically unacceptable,

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[1] Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons, Article I. Hereinafter referred to as the Biological and Toxin Weapons Convention.

[2] Biological and Toxin Weapons Convention, Articles II, III, and IV.

infeasible, or unnecessary. Moreover, the negotiators were not pressed to include verification measures in the BWC because at that time policy makers viewed biological weapons as lacking military utility. As noted, that perception has changed significantly over the last twenty-five years due to violations of the BWC and to advances in biotechnology.[3] In an example of the former, the USSR, one of the BWC's co-depositaries, maintained a significant covert biological weapons program for decades.[4] Some observers first realized that the Soviet Union was cheating on the BWC in 1979, when a suspicious outbreak of anthrax occurred in the city of Sverdlovsk. The source of this outbreak was eventually traced to an accidental release from a Soviet biological weapons facility.[5] This incident raised concerns about the strength of the treaty and underscored the shortcomings of its mechanisms for resolving compliance problems. The BWC allows participating states to raise compliance "complaints" with the United Nations (UN) Security Council and requires an accused state to cooperate with efforts to ascertain the validity of a complaint. The Security Council would initiate any non-compliance investigation.[6] The drawback of this approach is that any permanent member of the Security Council can veto the launch of an investigation.

In addition to blatant indications that some states were not adhering to their obligations under the BWC, the field of biotechnology underwent something of a technical revolution in the latter part of twentieth century. Technical advances amplified the potential military utility of biological weapons. For example, genetic engineering has made it possible to alter some biological agents so that they are resistant to environmental stresses and not susceptible to vaccines or antibiotics.[7] Thus, experts began to worry that advancements in biotechnology, microbiology, genetic engineering, and related scientific disciplines would make circumvention of the BWC's prohibitions easier to accomplish and more difficult to catch.

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[3] Jonathan B. Tucker, "Strengthening the Biological Weapons Convention," *Arms Control Today* 25, no. 3 (April 1995): 9.

[4] For an insider's account of this program, see Ken Alibek and Stephen Handelman, *Biohazard* (New York: Random House, 1999). More briefly, see Milton Leitenberg, "The Conversion of Biological Warfare Research and Development Facilities to Peaceful Uses," in Erhard Geissler and John P. Woodall, eds., *Control of Dual-Threat Agents: The Vaccines for Peace Programme*, Stockholm International Peace Research Institute Chemical and Biological Warfare Studies 15 (London: Oxford University Press, 1994), 77–105; Anthony Rimmington, "From Military to Industrial Complex? The Conversion of Biological Weapons Facilities in the Russian Federation," *Contemporary Security Policy* 17, no. 1 (April 1996): 80–112.

[5] Although Soviet authorities initially claimed that the more than sixty deaths resulted from the consumption of contaminated meat, an independent group of scientists concluded that an accidental release of *Bacillus anthracis* was indeed the cause of the Sverdlovsk anthrax outbreak. Matthew Meselson et al., "The Sverdlovsk Anthrax Outbreak of 1979," *Science* 226, no. 5188 (18 November 1994): 1202–8. For more on the Soviet/Russian biological weapons program, see Milton Leitenberg, *Biological Weapons Arms Control*, Project on Rethinking Arms Control, Report No. 16 (University of Maryland, College Park: May 1996), 3–16.

[6] Biological and Toxin Weapons Convention, Article VI.

[7] US Congress, Office of Technology Assessment, *Technologies Underlying Weapons of Mass Destruction* (Washington, DC: Government Printing Office, December 1993), 114–5. The USSR, for example, made several of its bioagents resistant to multiple antibiotics. Alibek, *Biohazard*, 155–6, 160, 167, 261, 281.

Given these circumstances, the BWC's members decided that the treaty needed to be strengthened with a legally binding verification protocol. The feasibility of strengthening the BWC and the appropriate means of doing so are, however, strongly debated within the international community. Briefly, proponents of creating a verification protocol argue that it would increase the cost and difficulty of a clandestine weapons program, enhance confidence among compliant states, provide a legal framework for challenge inspections, and ultimately decrease the number of sites of proliferation concern. They cite the 1993 Chemical Weapons Convention (CWC) as a model of a verifiable arms control agreement. Critics, on the other hand, argue that the BWC cannot be effectively verified. They point to obstacles such as the dual-use nature of biological production facilities, the likelihood that a verification protocol would generate false confidence in compliance, and the possibility that inspections would expose facilities to foreign espionage. Opponents to a verification protocol also note that the BWC has a loophole because it does not directly prohibit research with biological agents.[8]

THE ONSET OF EFFORTS TO STRENGTHEN THE BWC

The BWC requires all member states to participate in review conferences to be held at five-year intervals. The objective of these meetings is to undertake an article-by-article review of the BWC's operation, ascertaining whether the purposes of the treaty's preamble and main articles are being achieved. Each such review should "take into account any new scientific and technological developments relevant to the" BWC.[9] The culmination of each review conference is a final declaration that "can also serve as a basis for further strengthening of the Convention."[10]

The First Review Conference was held in March 1980. As the meeting unfolded, participating countries raised concerns about verification and compliance, but a majority finally agreed that the existing international procedures for consultation and cooperation would be adequate to resolve any problems that might arise concerning the BWC. In the Final Declaration, the participants thus reaffirmed their support

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[8] For a variety of opinions about the ability to verify the BWC, see S.J. Lundin, ed., *Views on Possible Verification Measures for the Biological Weapons Convention*, Stockholm International Peace Research Institute, Chemical and Biological Warfare Studies, Report No. 12 (London: Oxford University Press, 1991); Joseph Finder, "Biological Warfare, Genetic Engineering, and the Treaty That Failed," *Washington Quarterly* 9, no. 2 (Spring 1986): 5–14; Douglas J. Feith, "Biological Weapons and the Limits of Arms Control," *National Interest* (Winter 1986/87): 80–4; and Federation of American Scientists, "Progress in Identifying Effective and Acceptable Measures for a Compliance Protocol for the Biological Weapons Convention," Working Group on Biological and Toxin Weapons Verification, Working Paper (Washington, DC: May 1993).

[9] Biological and Toxin Weapons Convention, Article XII.

[10] United Nations, *Third Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction: Final Declaration,* Document BWC/CONF.III/23, Part II, 1991, 10.

for the treaty and found that Article I of the BWC "had proved sufficiently comprehensive to cover recent scientific and technological developments relevant to the Convention."[11]

The Second Review Conference took place in September 1986 amid a surge in concern about the "adequacy of the Convention in light of advances in genetic engineering and biotechnology…and allegations of breaches of the Convention."[12] The BWC's members were faced with the challenge of restoring confidence in the treaty's viability. This gathering coincided with the growing recognition of the value of confidence-building measures (CBMs), which encompass a variety of measures that states in regions of tension can undertake to promote openness in military matters and to build a climate of trust among nations.[13] The BWC's members sought to incorporate these mechanisms into the treaty regime. In the Final Declaration, the participants agreed to implement data exchanges concerning biological activities permitted under the treaty. An ad hoc meeting of scientific and technical experts therefore assembled in the spring of 1987 to design procedures for annual data exchanges among the BWC's members.[14] Beginning that year, states were asked to voluntarily submit pertinent data to the UN. Among the data to be declared annually was information on outbreaks of infectious diseases, the publication of scientific research results, and biological research laboratories that specialize in permitted protective, prophylactic, and other peaceful biological activities that are directly related to the BWC.[15]

Not long after these CBMs were instituted, members of the BWC arrived at a consensus that their non-legally binding nature was insufficient to produce meaningful results. The agreed CBMs did not authorize the UN to demand that states make declarations, and states that failed to submit data did not incur any penalty. Whether they were suspected of having covert biological weapons programs or not, most countries simply neglected to provide the information requested in the CBMs. For example, during the initial ten years after the CBMs were agreed upon, only fifty-two nations provided data at least once,

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[11] Aida Luisa Levin, "Historical Outline," in *Strengthening the Biological Weapons Convention by Confidence-Building Measures*, Erhard Geissler, ed., Stockholm International Peace Research Institute, Chemical and Biological Warfare Studies, Report No. 10 (London: Oxford University Press, 1990), 8. For more on the early years of the BWC, see also Nicholas A. Sims, *The Diplomacy of Biological Disarmament: Vicissitudes of a Treaty in Force, 1975–85* (London: MacMillan Press, 1988); and Barend ter Haar, *The Future of Biological Weapons* (New York: Praeger, 1991), 1–53.

[12] Levin, "Historical Outline," 9.

[13] For more on the origin, art, and practice of CBMs in a variety of contexts, see Johan Jorgen Holst and Karen Melander, "European Security and Confidence Building Measures," in *Arms Control and Military Force*, Christoph Bertram, ed. (London: International Institute for Strategic Studies, 1980): 223–31; Richard E. Darilek, "The Future of Conventional Arms Control in Europe—A Tale of Two Cities: Stockholm, Vienna," *Survival* 29, no. 1 (January/February 1987): 5–19; and Michael Krepon, ed., *A Handbook of Confidence-building Measures for Regional Security* (Washington, DC: Henry L. Stimson Center, January 1995).

[14] US Arms Control and Disarmament Agency, *Arms Control and Disarmament Agreements: Texts and Histories of the Negotiations* (Washington, DC: Government Printing Office, 1990), 132.

[15] Erhard Geissler, "Agreed Measures and Proposals to Strengthen the Convention," in *Strengthening the Biological Weapons Convention by Confidence-Building Measures*, 44–7.

and only eleven participated every year.[16] Prior to the Third Review Conference in September 1991, most countries thus recognized the inadequacy of relying solely upon voluntary CBMs for enhancing confidence in the compliance with the BWC.

In addition, other developments contributed to widening concerns about the BWC's weakness. A number of reports alleged that as many as ten countries possessed or were in the process of acquiring biological weapons.[17] Moreover, after the 1991 Gulf War, the UN Special Commission on Iraq uncovered evidence that Iraq, a signatory of the BWC, had a biological weapons program. The extent of this program—encompassing weaponization of several agents and deployment of germ-filled missiles and other munitions during the war—is still being investigated.[18] The situation in Iraq again highlighted the lack of an independent inspectorate to monitor the BWC's prohibitions. Aside from the difficulty of dealing with the proliferation of biological weapons at the state level, one 1991 report maintained that "an increased risk now exists that the acquisition and use of biological weapons is being contemplated not only by nations but by subnational groups."[19] Later underscoring this point, the Japanese cult Aum Shinrikyo, infamous for its use of poison gas in a March 1995 terrorist attack in Tokyo, also endeavored but failed to develop a biological weapons capability.[20]

Thus, the 1991 Review Conference authorized a group of governmental experts to identify and examine potential BWC verification measures from a scientific and technical standpoint. This Ad Hoc

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[16] Another notable problem is that the international community did not set aside resources to analyze the data. Marie Chevrier, "Doubts About Confidence: The Potential and Limits of Confidence-Building Measures for the Biological Weapons Convention," in *Biological Weapons Proliferation: Reasons for Concern, Courses of Action* (Washington, DC: Henry L. Stimson Center, January 1998), 5–6.

[17] Lundin, "Introduction," in *Views on Possible Verification Measures for the Biological Weapons Convention*, 9; US Congress, Office of Technology Assessment, *Proliferation of Weapons of Mass Destruction: Assessing the Risks* (Washington, DC: Government Printing Office, August 1993), 14–5, 63–6; Testimony of James Woolsey, US Congress, Senate Committee on Governmental Affairs, *Proliferation Threats of the 1990's*, 103d Cong., 1st sess., S. Hrg. 103–208 (Washington, DC: Government Printing Office, 24 February 1993), 8–18; Office of the Secretary of Defense, *Proliferation: Threat and Response* (Washington, DC: Government Printing Office, November 1997).

[18] UN Security Council, "Note by the Secretary-General," Document S/1997/774, 6 October 1997. See also, R. Jeffrey Smith, "Iraq's Drive for a Biological Arsenal: US Pursuing 25 Germ Warheads It Believes Are Still Loaded With Deadly Toxin," *Washington Post*, 21 November 1997. UN inspections in Iraq were aborted in 1998, when Iraq insisted that the Special Commission leave the country. Barbara Crossette, "Iraqis Break Off All Cooperation with Inspectors," *New York Times*, 6 August 1998. In December 1999, a new inspection agency called UNMOVIC—the United Nations Monitoring, Verification and Inspection Commission—was created. "Security Council Establishes New Monitoring Commission for Iraq," UN Press Release SC/6775, 17 December 1999. However, as of this printing UNMOVIC inspectors had yet to set foot in Iraq.

[19] Lundin, "Introduction," in *Views on Possible Verification Measures for the Biological Weapons Convention*, 7. For a more comprehensive look at attempts to use biological agents for terrorist purposes, see Jonathan B. Tucker, "Historical Trends Related to Bioterrorism: An Empirical Analysis," *Emerging Infectious Diseases* 5, no. 4 (July/August 1999): 498–504; W. Seth Carus, *Bioterrorism and Biocrimes: The Illicit Use of Biological Agents in the 20th Century*, Working Paper, Center for Counterproliferation Research (Washington, DC: National Defense University, July 1999).

[20] Many press reports have erroneously credited the cult with the successful dissemination of anthrax and botulinum toxin. Aum's attempts to develop a biological weapons program were extensive, but ultimately unsuccessful. See Amy E. Smithson and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response* (Washington, DC: Henry L. Stimson Center, October 2000), 72–111.

Group of Verification Experts, known as VEREX, examined and evaluated twenty-one measures that ranged from off-site surveillance of publications to on-site monitoring and inspections. VEREX evaluated each proposed verification measure according to the amount of data it could or could not provide; its ability to differentiate between activities that are prohibited and permitted under the BWC; its capability to clarify ambiguities concerning compliance; its requirements for manpower, technology, equipment, or other material; its implications for the protection of confidential business information and for the development of permitted research and scientific activities; and its financial, legal, organizational, and safety ramifications.[21] In all, VEREX met four times from March 1992 to September 1993. In its final report, VEREX concluded that no single approach could adequately monitor the BWC. Rather, VEREX recommended a combination of means—including off-site and on-site measures—to make the BWC a more effective instrument. Off-site measures included national declarations of biological weapons defense programs, vaccines, and facilities handling specific organisms and toxins; on-site measures included short-notice inspections and information visits to declared facilities.[22]

In April 1992, Russian President Boris Yeltsin conceded that the Soviet Union had violated the BWC and issued a decree outlawing the continuation of the biological weapons program.[23] Acknowledging international concern, Moscow decided to work with the BWC's two other co-depositary nations to try to establish some confidence that Russia was no longer operating an offensive program. A trilateral process, formally initiated in September 1992, involved visits to military and non-military facilities of possible compliance concern.[24] US and British officials visited several Russian facilities and vice versa, but the trilateral process gradually lost momentum and did not completely alleviate remaining compliance concerns about Russia's biological facilities.[25] Although collaborative research grant programs have brought numerous scientists and other visitors to many of the institutes involved in the

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[21] US Arms Control and Disarmament Agency, "Fact Sheet: The Biological Weapons Convention," Office of Public Affairs (Washington, DC: 18 August 1993): 1–2.

[22] United Nations, *Special Conference of the States Parties to the Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction: Final Report*, Document BWC/SPCONF/1, 19–30 September 1994, 14–5.

[23] R. Jeffrey Smith, "Yeltsin Blames '79 Anthrax on Germ Warfare Efforts," *Washington Post*, 16 June 1992; J. Dahlburg, "Russia Admits It Violated Pact on Biological Warfare," *Los Angeles Times*, 15 September 1992; "Decree of the Russian Federation on Fulfilling International Obligations with Regard to Biological Weapons," Moscow, 11 April 1992.

[24] Among other steps taken to end the offensive program, Russia stated that it had cut personnel in the program by fifty percent and reduced research funding by 30 percent. US Department of State, "Joint US/UK/Russian Statement on Biological Weapons," Press Release, Office of Public Affairs (Washington, DC: 14 September 1992). See also, "Proprietary Agreement: Procedures for Respecting Proprietary Information During Visits to Non-Military Biological Sites Pursuant to Paragraph 4(A) of the Joint US/UK/Russian Statement on Biological Weapons," Moscow, 12 May 1993.

[25] R. Jeffrey Smith, "US Wary of Russian Germ Arms; Despite Assurances from Yeltsin, Effort May Be Continuing," *Washington Post*, 8 April 1994; R. Jeffrey Smith, "US to Press Moscow on Alleged Arms Violations," *Washington Post*, 9 May 1994; US Arms Control and Disarmament Agency, *Threat Control Through Arms Control: 1994 Report to Congress,* (Washington, DC: US Arms Control and Disarmament Agency, 13 July 1995): 70; US Department of Defense, *Proliferation: Threat and Response*, 46.

former Soviet biowarfare program, no outsiders have ever been to the four military facilities at the core of this program.[26]

In September 1994, a Special Conference of BWC members convened in Geneva to discuss the findings of VEREX. This Special Conference called for the formation of the Ad Hoc Group to draft verification measures to be incorporated into a legally binding protocol to the BWC. The Ad Hoc Group was also to address the creation of measures to investigate the alleged use of biological weapons, as well as the following issues:

- the definition of terms and objective criteria (e.g., lists of biological warfare agents and possible threshold quantities);
- the possible incorporation of existing and additional enhanced CBMs into the verification regime;
- the development of a system of measures to promote compliance with the BWC; and,
- the delineation of a program for technical cooperation in the field of biotechnology for peaceful purposes.[27]

The Ad Hoc Group, which is open to all states parties to the BWC, began negotiations in 1995. Twenty-two rounds of negotiations were held through March 2001, with well over sixty member countries participating and additional countries observing. Upon completion, the Ad Hoc Group is to present its draft text to a Special Conference of the BWC's members and then to the UN General Assembly for approval. Once a completed monitoring protocol is endorsed by these two bodies, it must then be ratified by all of the BWC's members, taking effect for each participating state as it completes the ratification process.

Late in 1996, the Fourth Review Conference was held. An Iranian proposal to amend Article I by adding a prohibition against the use of biological weapons did not receive widespread support. Instead, seeking to reinforce the broad scope of the BWC's Article I prohibitions, the Final Declaration emphasized that those prohibitions apply to the emerging fields of molecular biology and genome studies. The Final Declaration called for the enactment of national penal legislation to criminalize individuals engaged in biological weapons activities.[28] Although the Final Declaration stated the importance of

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[26] The four military sites are Sergiyev Posad, Kirov, Yekaterinburg, and Strizhi. For more on the collaborative research grant programs that are helping to transform the weapons institutes to peaceful, commercial research centers, see Amy E. Smithson, *Toxic Archipelago: Preventing Proliferation from the Former Soviet Chemical and Biological Weapons Complexes* (Washington, DC: Henry L. Stimson Center, December 1999).

[27] United Nations, *Special Conference of the States*, Document BWC/SPCONF/1, 10.

[28] From the outset, the Harvard-Sussex project has advocated this laudable concept. For more details, see Matthew Meselson, "Averting the Hostile Exploitation of Biotechnology," *CBW Conventions Bulletin* 48 (June 2000): 16–19; "Draft Convention on the Prevention and Punishment of the Crime of Developing, Producing, Acquiring, Stockpiling, Retaining, Transferring or Using Biological or Chemical Weapons," *CBW Conventions Bulletin* 42 (December 1998): 2–5.

adherence to the BWC's provisions, it made no specific reference to the Soviet/Russian and Iraqi biological weapons programs, the existence of which by that time was well-known.[29] This omission, indicative of the political sensitivity of directly naming BWC violators, was perhaps a harbinger of how challenging it would be to conclude a verification protocol. Despite the difficult nature of this task, however, the Final Declaration mandated that the Ad Hoc Group "intensify its work with a view to completing it as soon as possible before the commencement of the Fifth Review Conference."[30]

Since the onset of negotiations, the Ad Hoc Group has made incremental progress. In the July 1997 negotiating session, the series of papers that had been produced in previous meetings was presented as a rolling text. This 246-page document consisted of twenty-three articles, seven annexes, and five appendices.[31] Virtually every line of this initial draft protocol was bracketed, indicating a lack of agreement on the proposed measure or language.

Over the intervening years of quarterly group meetings, however, the negotiators have found some compromise language. Activities began shifting in 1998 as the negotiators began submitting fewer working papers and focusing more keenly on working with the wording already in the rolling text. The amount of bracketed language decreased by mid-2000,[32] but the remaining brackets were in intensely disputed sections of the draft protocol.

Notably, opinions are most divergent about some of the Ad Hoc Group's main taskings—definition of terms and objective criteria; incorporation of enhanced CBMs into a regime; measures to promote compliance with the BWC; and a program for cooperation in biotechnology for peaceful purposes. For example, brackets in the August 2000 rolling text showed some declaration thresholds that were powers of ten apart from one another.[33] In March 2001, Ad Hoc Group Chairman Tibor Toth placed

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[29] For more, see Malcolm R. Dando and Graham S. Pearson, "The Fourth Review Conference of the Biological and Toxin Weapons Convention: Issues, Outcomes, and Unfinished Business," *Politics and the Life Sciences* 16, no. 1 (March 1997): 105–26.

[30] United Nations, *Fourth Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction: Final Declaration*, Document BWC/CONF.IV/9, 25 November–6 December 1996.

[31] United Nations, *Procedural Report of the Ad Hoc Group of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction*, Document BWC/AD Hoc Group/38, 6 October 1997.

[32] Graham S. Pearson, "Progress in Geneva: Strengthening the Biological and Toxin Weapons Convention," *CBW Conventions Bulletin* 51 (June 2000): 33–8.

[33] For facilities working with listed agents and toxins that exceeded specific thresholds in the previous year, the range of production capacities that would trigger declarations included:

(i) Any fermenter(s)/bioreactor(s) with a total internal volume of **[10] [25] [50] [100]** litres or more; or

(ii) Continuous or perfusion fermenters/bioreactors with a flow rate capable of exceeding [2] litres an hour; or

(iii) A chemical reaction vessel or equipment used for recovery with a total internal volume of **[10] [50] [100]** litres or more; or

compromise language on the table with what is known as the chairman's text. The tabling of such a text usually signals the onset of a negotiating endgame.[34]

With the Fifth Review Conference slated for 19 November through 7 December 2001, the Ad Hoc Group has relatively little time to conclude its work. Not long before tabling his composite text, however, Ambassador Toth did not appear all that certain that a protocol could be completed by the fall of 2001: "The question is whether we can make it, or not. It's a tough agenda and there are big differences there to be cracked."[35] If indeed the Ad Hoc Group does complete a text by November 2001, it will have done so in far less time than was required to draft the Chemical Weapons Convention, which was the product of negotiations stretching over twenty-four years.

(iv) More than **[1,000] [2,000]** embryonated eggs on an annual basis; or

(v) More than **[100] [1,000] [2,500]** litres of tissue culture or other medium on an annual basis. [Emphasis added.]

United Nations, *Procedural Report and Rolling Text of the Ad Hoc Group*, BWC/Ad Hoc Group/52, 11 August 2000, Article III (D)(1)(h).

[34] A chairman's text for the Chemical Weapons Convention was tabled in March 1992, setting off a furious pace of negotiations over the summer and conclusion of the text by August 1992.

[35] John Zarocostas, "Gaps Remain in Weapons Ban Talks," *United Press International*, 23 February 2001.