

## Chapter 1

### Introduction

Biological weapons issues featured prominently in the security news of 2001. In the United States, the anthrax letters that killed five people and sickened seventeen captured the bulk of the attention.<sup>1</sup> Even as those events transpired, however, important developments in the six-year international effort to strengthen the Biological and Toxin Weapons Convention (BWC) were unfolding on the international stage.

While 145 countries have ratified this 1972 treaty banning the development, testing, production, storage, and use of germ and toxin weapons, it lacks legally binding verification measures.<sup>2</sup> The Ad Hoc Group, a committee open to all BWC member states, set out in 1995 to fill this void by creating a BWC monitoring protocol. Negotiations produced a draft text in March 2001, which many states believed would be formally approved at the BWC's Fifth Review Conference in the fall of 2001. Instead, the United States rejected the draft protocol in July and at the Review Conference called for the elimination of the Ad Hoc Group.<sup>3</sup> Discarding the idea of a legally binding, multilateral accord, the Bush administration advanced two alternative proposals that would involve inspections, with the remainder of the initiatives focused on steps that BWC member states could take individually to strengthen the biological weapons nonproliferation regime.<sup>4</sup>

The Henry L. Stimson Center has assembled two groups of experts from the US pharmaceutical and biotechnology industries to weigh various proposals aimed at reinforcing the BWC's prohibitions. The first group of industry experts met in 2000; the second convened in 2002.<sup>5</sup> The Stimson Center asked

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<sup>1</sup> On the anthrax letters sent to US media and political figures, Ann Gerhart and David Montgomery, "Cipro Nation; As Anthrax Scare Spreads, A Who's Who Nation of Pill Takers," *Washington Post*, 24 October 2001; John Lancaster and Justin Blum, "District Postal Worker Seriously Ill; As Capitol Reopens, Anthrax Case Revives Concern About Spores' Potency," *Washington Post*, 22 October 2001; Steve Fainaru and Joby Warrick, "Deadly Anthrax Strain Leaves a Muddy Trail," *Washington Post*, 25 November 2001.

<sup>2</sup> Note that while the BWC includes a provision to refer matters to the United Nations Security Council, it is otherwise devoid of on-site inspection tools. A list of countries that have joined the BWC can be found at <http://www.stimson.org/cbw/?SN=CB2001121271>.

<sup>3</sup> Undersecretary of State for Arms Control John Bolton stunned the conference by proposing to disband the Ad Hoc Group just minutes before the group was to conclude its work. Alexander G. Higgins, "Talks On Germ-Warfare Ban Suspended For One Year After U.S. Proposal Shocks Delegates," Associated Press, 7 December 2001. Off the record, some European delegates referred to the action as "treacherous" or "sabotage." Seth Brugger, "BWC Conference Suspended After Controversial End," *Arms Control Today*, January/February 2002. Available at [http://www.armscontrol.org/act/2002\\_01-02/bwcjanfeb02.asp](http://www.armscontrol.org/act/2002_01-02/bwcjanfeb02.asp).

<sup>4</sup> US Department of State, "New Ways to Strengthen the International Regime Against Biological Weapons," fact sheet, 19 October 2001, 1. Available at <http://www.state.gov/t/ac/bw/fs/2001/7909.htm>.

<sup>5</sup> The first industry group met on 29-30 June and 23-24 August 2000. The second industry group met on 18-19 June and 9-10 August 2002.

the first group of experts to bring their more than 200 years of cumulative experience to bear in examining the technical feasibility of monitoring the BWC. Their counsel, presented in a May 2001 Stimson Center report entitled *House of Cards: the Pivotal Importance of a Technically Sound Monitoring Protocol*, was in line with the Bush administration's subsequent decision to turn down a weak agreement. However, this group of experts fashioned inspection strategies and techniques that they believed would enable inspectors to distinguish reliably whether a facility was in compliance with the BWC's prohibitions. Therefore, they recommended that the US government move forward with field trials to explore thoroughly the feasibility of various monitoring methods, thereby informing further negotiations.<sup>6</sup>

The second group of industry expert picked up where the first one left off by considering the alternative proposals that the Bush administration advanced to replace a formal BWC monitoring protocol. This report captures the second industry group's discussions and recommendations. This chapter sets the context for their review of the US alternative proposals by first explaining the rather fitful history of international efforts to combat the spread and use of biological weapons, beginning with the BWC's entry into force. Next, the chapter presents an overview of the US proposals offered as alternatives to a formal monitoring protocol. The first chapter ends with a discussion of the methodology underlying this publication.

## **THE INTERNATIONAL REGIME AGAINST 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 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.<sup>7</sup>

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<sup>6</sup> Technical experts from the US pharmaceutical industry, research institutions, and universities stated that the draft protocol incorporated many of the appropriate monitoring tools (e.g., visual observation, review of records, interviews), but argued that the draft protocol's provisions did not allow inspectors sufficient manpower and time to be able to unravel the complexities that would undoubtedly be encountered in the field. They recommended that the Bush administration conduct technical research and the field trials required by Public Law 106-113. *House of Cards: The Pivotal Importance of a Technically Sound BWC Monitoring Protocol* (Washington, DC: Henry L. Stimson Center, May 2001).

<sup>7</sup> 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.

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.<sup>8</sup>

As noted earlier, this accord lacks what many see as a fundamental component of any arms control treaty—the means to verify compliance or to detect noncompliance. This 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, 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. That perception has changed significantly over the last twenty-five years due to violations of the BWC and to advances in biotechnology.<sup>9</sup> In an example of the former, the USSR, one of the BWC's co-depositaries, maintained a significant covert biological weapons program for decades.<sup>10</sup>

The BWC does allow 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.<sup>11</sup> The limiting 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 the 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.<sup>12</sup> Thus, experts began to worry

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<sup>8</sup> Biological and Toxin Weapons Convention, Articles II, III, and IV.

<sup>9</sup> Jonathan B. Tucker, “Strengthening the Biological Weapons Convention,” *Arms Control Today* 25, no. 3 (April 1995): 9.

<sup>10</sup> For an insider's account of this program, see Ken Alibek with 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.

<sup>11</sup> Biological and Toxin Weapons Convention, Article VI.

<sup>12</sup> 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.

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.

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.<sup>13</sup>

## **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.<sup>14</sup> The culmination of each review conference is a final declaration that "can also serve as a basis for further strengthening of the Convention."<sup>15</sup>

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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<sup>13</sup> 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).

<sup>14</sup> Biological and Toxin Weapons Convention, Article XII.

<sup>15</sup> 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.”<sup>16</sup>

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.”<sup>17</sup> 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 can undertake to promote openness in military matters and to build a climate of trust among nations.<sup>18</sup> 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.<sup>19</sup> 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.<sup>20</sup>

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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<sup>16</sup> 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.

<sup>17</sup> Levin, “Historical Outline,” 9.

<sup>18</sup> 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).

<sup>19</sup> US Arms Control and Disarmament Agency, *Arms Control and Disarmament Agreements: Texts and Histories of the Negotiations* (Washington, DC: Government Printing Office, 1990), 132.

<sup>20</sup> 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.<sup>21</sup> 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 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.<sup>22</sup> 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.<sup>23</sup> 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.”<sup>24</sup> 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.<sup>25</sup>

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<sup>21</sup> 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.

<sup>22</sup> 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).

<sup>23</sup> 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.

<sup>24</sup> 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 20<sup>th</sup> Century*, Working Paper, Center for Counterproliferation Research (Washington, DC: National Defense University, July 1999).

<sup>25</sup> 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.

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 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.<sup>26</sup> 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.<sup>27</sup>

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.<sup>28</sup> 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.<sup>29</sup> 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.<sup>30</sup> Although collaborative research grant

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<sup>26</sup> US Arms Control and Disarmament Agency, "Fact Sheet: The Biological Weapons Convention," Office of Public Affairs (Washington, DC: 18 August 1993): 1–2.

<sup>27</sup> 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.

<sup>28</sup> 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.

<sup>29</sup> 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.

<sup>30</sup> 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*,

programs have brought numerous scientists and other visitors to many of the institutes involved in the former Soviet biowarfare program, no outsiders have ever been to the four military facilities at the core of this program.<sup>31</sup>

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.<sup>32</sup>

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 these two bodies endorse a completed monitoring protocol, it must then be ratified by all of the BWC's members, taking effect for each participating state as it completes the ratification process.

Hope that a monitoring protocol could be fashioned was drawn from the 1993 Chemical Weapons Convention, which contained intricate monitoring procedures to oversee the destruction of chemical weapons arsenals and production facilities, as well as to safeguard against covert weapons programs.<sup>33</sup>

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(Washington, DC: US Arms Control and Disarmament Agency, 13 July 1995): 70; US Department of Defense, *Proliferation: Threat and Response*, 46.

<sup>31</sup> 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).

<sup>32</sup> United Nations, *Special Conference of the States*, Document BWC/SPCONF/1, 10.

<sup>33</sup> The CWC's articles consume forty-six pages, while the annexes detailing how to implement the treaty run over 140 pages. Underpinning the obligations that states take to destroy chemical weapons capabilities and forsake future weapons production, the CWC's verification annex specifies the inspection methods and procedures to be employed during routine inspections of chemical weapons defense, storage, production, and destruction facilities as well as at a variety of industrial facilities. Challenge inspection procedures are also spelled out in this annex, as are the safeguards that host facilities can employ to protect sensitive data unrelated to the treaty compliance. A separate annex lays out procedures to be used to protect

Monitoring the BWC would prove a tougher challenge, however, because nature is the source of the microorganisms that are the basis of biological weapons, and diseases must be studied if cures are to be found. Moreover, technical advances have given scientists the ability to engineer new disease strains and clean an entire manufacturing facility's fermenters and pipelines within minutes, capabilities that a government set on cheating could use to great advantage. The BWC protocol negotiators, in other words, would need to stretch the horizons of monitoring technologies and strategies if they were to succeed in creating a meaningful and feasible protocol.

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.<sup>34</sup> Although the Final Declaration stated the importance of 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.<sup>35</sup> 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."<sup>36</sup>

In the intervening months, the Ad Hoc Group 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.<sup>37</sup> Virtually every line of this initial draft protocol was bracketed, indicating a lack of

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confidential information. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction.

<sup>34</sup> This idea is embraced in the US alternative proposals discussed later in this chapter. From the outset of negotiations, the Harvard-Sussex project has advocated this 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.

<sup>35</sup> 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.

<sup>36</sup> 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.

<sup>37</sup> 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.

agreement on the proposed measure or language. Gradually, however, the negotiators seemed to find 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,<sup>38</sup> but the remaining brackets were in intensely disputed sections of the draft protocol.

Finally, in March 2001, Ad Hoc Group Chairman Tibor Toth introduced compromise language in what is known as the chairman's text. The tabling of such a text usually signals the onset of a negotiating endgame, and a draft protocol was to be concluded by the Fifth Review Conference.<sup>39</sup> Some participating governments and outside observers depicted the Review Conference as a window of opportunity not to be missed to launch the draft protocol toward its opening for signature.<sup>40</sup>

This outcome was put in doubt long before the Review Conference. In July 2001, the United States announced it would not support the chairman's text. This decision was the product of an interagency review that had unanimously concluded that while the verification mechanisms outlined in the draft protocol would do little to uncover treaty violations, they could potentially compromise national security and US industry interests.<sup>41</sup> A senior State Department official said of the draft protocol, "On a cost-benefit analysis, [the protocol] has zero benefits."<sup>42</sup>

At the Fifth Review Conference, the United States did not retreat from this position. Rather, US representatives unveiled a series of proposals, described in the next section. The Review Conference was then thrown into disarray with the unexpected, last minute US proposal to curtail the Ad Hoc Group

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<sup>38</sup> Graham S. Pearson, "Progress in Geneva: Strengthening the Biological and Toxin Weapons Convention," *CBW Conventions Bulletin* 51 (June 2000): 33–8.

<sup>39</sup> 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.

<sup>40</sup> Richard Norton-Taylor, "Britain Urges New Bio-Weapons Deal," *Guardian (London)*, 27 March 2000; Address by H E Leslie Luck, Ambassador and Permanent Representative to the United Nations and the Conference on Disarmament during the 19th Session of the BWC Ad Hoc Group, Geneva, Switzerland, 27 March 2000; "Political Decisions Needed Soon on Germ-Warfare Treaty: Chairman," *Associated Press*, 31 March 2000; "European Union Moves to Break Logjam on Anti-Germ Warfare Treaty," *Associated Press*, 29 June 1999. As one analyst noted, "Taken as a whole, it is evident that such outstanding issues are indeed soluble in such a way that different states-parties' concerns can be met while still achieving the goal of a protocol that strengthens the convention. It is simply a display of political will that is needed to go the final distance, and the window of opportunity for completion is indeed now." Graham Pearson, "The Protocol to the Biological Weapons Convention Is Within Reach," *Arms Control Today* (June 2000). Available at: <http://www.armscontrol.org/ACT/june00/bwcjun.htm>.

<sup>41</sup> Michael R. Gordon and Judith Miller, "U.S. Germ Warfare Review Faults Plan on Enforcement," *New York Times*, 20 May 2001, 1; Alexander G. Higgins, "Germ Warfare Group Suspends Negotiations Following U.S. Pullout," *Associated Press*, 3 August 2001.

<sup>42</sup> Merle D. Kellerhals, Jr., "Proposed Biological Weapons Protocol Unfixable, U.S. Official Says," US Department of State, International Information Programs, 25 July 2001. Available at <http://usinfo.state.gov/topical/pol/arms/stories/01072503.htm>.

negotiations. The conference went into a full one-year suspension, until November 2002. Indicating little interest in participating in the resumption of the Review Conference, the Bush administration has called for its speedy conclusion.<sup>43</sup>

## THE US ALTERNATIVE PROPOSALS

In offering substitute initiatives for a formal BWC monitoring protocol, the Bush administration made two types of proposals. The first type centered on traditional monitoring that would deploy inspectors to ascertain treaty compliance. In a second category of alternative proposals, the US government asks states to take a variety of actions individually.

With regard to inspection procedures, the US government proposed that BWC members ask for clarification and resolution of compliance concerns related to unusual disease outbreaks or allegations of bioweapons use. If a bilateral exchange of information did not settle matters, concerned treaty members could then request the United Nations Secretary General to send an inspection team to the site. While the US proposal centers around BWC members agreeing in advance to cooperate with such inspections, it would also allow the host country to control all access to the site so that national security and business interests could be protected.<sup>44</sup> In addition, the United States suggested that bilateral consultations should be pursued to answer compliance concerns. Such consultations could include information exchanges and other measures, such as the voluntary opening of one or more sites to inspection.<sup>45</sup>

The Bush administration also put forward an assortment of proposals whereby nations would strengthen various domestic laws, practices, and capabilities. The US Government proposed that states individually:

- Criminalize the range of offensive activities that the BWC prohibits, making such actions punishable by imprisonment and/or fines and also bolstering extradition laws;
- Support the World Health Organization's disease surveillance and rapid outbreak response capacity, as well as similar programs conducted by the Office of International Epizootics and the Food and Agricultural Organization, which oversee surveillance of plant and animal diseases;
- Join with scientific organizations to develop and adopt professional conduct codes for scientists with specific admonitions against applying their skills and knowledge for hostile purposes;

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<sup>43</sup> At a preparatory meeting in Geneva in early September, US officials threatened to name treaty violators unless the conference was concluded quickly with no further discussion of establishing a monitoring regime. David Ruppe, "BWC: With Threat, U.S. Pressures to End Review Conference Early," *Global Security Newswire*, 6 September 2002.

<sup>44</sup> The Secretary General would file a report in the aftermath of such an inspection. US Department of State, "New Ways to Strengthen the International Regime," 6.

<sup>45</sup> *Ibid.*, 4.

- Enact controls for domestic and international transfers of dangerous pathogens and report any incidents related to work with such microorganisms that could have implications for other states, possibly extending access controls to who could work with dangerous pathogens and where such work could be performed;
- Put strict biosafety procedures in place for work with human, plant, and animal pathogens, patterned on the requisite guidelines of the World Health Organization, the Office of International Epizootics, or equivalent national practices; and,
- Make scientists engaged in genetic engineering research aware of its possible military applications and begin developing guidelines for possible national oversight of genetic engineering research.<sup>46</sup>

Subsequent reaction to the US initiatives has been mixed, with many governments and nongovernmental organizations somewhat distracted by the US insistence that the Ad Hoc Group not be the forum for entertaining these or any other proposals.<sup>47</sup>

## **METHODOLOGY OF THE REPORT**

As previously noted, the Stimson Center's Chemical and Biological Weapons Nonproliferation Project convened a group of individuals with extensive experience in the US pharmaceutical and biotechnology industries to evaluate the soundness of the US alternative proposals. As the resumes contained in the appendix attest, the individuals who gathered around the Stimson conference table are each top experts in their respective fields. Together, they represent over 280 years of experience in a variety of industrial settings.

While the industry participants were not specialized in biological weapons nonproliferation *per se*, they brought significant experience to the table that is pertinent to the design of a monitoring system, biosafety, biosecurity, and the conduct of science. Their industrial specialties ranged from drug research and development to process scale-up and manufacture of medicines. Each expert is well versed in various government regulations and inspections as they pertain to biotechnology. Each is also a veteran of countless encounters with the internal scientific entities that govern research and manufacturing activities in university settings and at industrial facilities.

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<sup>46</sup> Conduct codes could be scratch-built or incorporated into existing codes, such as the one espoused by the American Society of Microbiologists. Nations could work with professional societies and national scientific academies to explore possible research oversight guidelines. *Ibid*, 3-5, 7.

<sup>47</sup> For the British's government views and a critique of two US analysts, see, respectively, *Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological Weapons* (London: Ministry of Foreign and Commonwealth Affairs, April 2002) and Jonathan B. Tucker and Raymond A. Zilinskas, "Assessing U.S. Proposals to Strengthen the Biological Weapons Convention," *Arms Control Today* 32, no. 3 (April 2002): 10-4.

The Stimson Center's role was that of convener, discussion facilitator, and report drafter. Not only did Stimson opinions not matter one iota, Stimson personnel were explicitly barred from even entering the fray. Otherwise, the main ground rule was that the floor was wide open for the participants to sort through the issues, identifying advantages, drawbacks, and gaps in the Bush Administration's proposals, thereafter developing recommendations to improve the initiatives. Unless indicated otherwise, all recommendations in the report reflect the consensus views of the group.

The remaining chapters of this report were compiled from verbatim transcripts of the meetings. Each of the participants reviewed the draft report. Afterwards, they were given the choice of being identified by name and affiliation or by a general characterization of their skills and work history. Both those who lent their name to the report and those who declined to be identified by name fully agreed that the report accurately reflects the proceedings and their specific views. The experts who decided to remain anonymous cited worries about a possible backlash from their employers or the media. All participants, it should be noted, volunteered their time for this project.