THE EXPANSION OF THE BIOLOGICAL WEAPONS CONVENTION: THE HISTORY AND PROBLEMS OF A VERIFICATION REGIME

*Kristen Paris**

* J.D., cum laude, 2001 University of Houston; B.S., magna cum laude, 1998 University of Houston. Ms. Paris is an associate in the Intellectual Property Section of Locke Liddell & Sapp LLP.

I. INTRODUCTION

The threat of biological warfare is real. The September 11, 2001 attacks on New York and Washington, D.C. and the letters contaminated with anthrax that have killed five Americans and infected many others, show the willingness of terrorists to murder large numbers of people arbitrarily. Theoretically, however, there should be no threat of biological warfare, in light of the Biological Weapons Convention ("BWC")—signed April 10, 1972 and entered into force three years later on March 26, 1975[1]—which bans the development, production, and stockpiling of biological weapons for purposes other than preventive or peaceful reasons.[2] The BWC also forbids developing, producing, stockpiling, acquiring, or retaining delivery systems, munitions, and other equipment used to launch biological weapons.[3] The BWC, supported by both the United States and the former Soviet Union,[4] is remarkable in the fact that it is the first international treaty to prohibit an entire class of weapons.[5] As of April 2002, 162 nations have signed and 144 countries have ratified the BWC.[6]

However, the BWC is a weak agreement, and nations

---

1. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *opened for signature* Apr. 10, 1972, 26 U.S.T. 583, 1015 U.N.T.S. 163 (entered into force Mar. 26, 1975) [hereinafter Biological Weapons Convention].

2. *See id*. 26 U.S.T. at 585, 1015 U.N.T.S. at 164.

3. *Id*. art. I, 26 U.S.T. at 587, 1015 U.N.T.S. at 166.

4. *Id.* 26 U.S.T. at 583, 1015 U.N.T.S. at 164.

5. Tibor Toth, et al., *Verification of the BWC*, *in* CONTROL OF DUAL-THREAT AGENTS: THE VACCINES FOR PEACE PROGRAMME 67 (Erhard Geissler & John P. Woodall, eds., 1994).

6. Biological Weapons Convention, http://www.state.gov/t/ac/trty/4718.htm (last visited Apr. 23, 2002) (U.S. Dept. of State website containing text of treaty and list of State Parties and signatories).

continue to develop, produce, stockpile, and use deadly biological agents for purposes other than preventive or peaceful reasons.[7] Non-compliance with the BWC was made evident in 1992 when, then Russian President, Boris Yeltsin admitted that the former Soviet Union had possessed an offensive biological weapons program for twenty years.[8] The world's confidence in the effectiveness of the BWC in banning biological weapons was further shaken in 1995 when Iraq was found to have a biological weapons program.[9] More recently, North Korea, Syria, Iran, and Sudan, along with Iraq, were accused by the United States of violating the BWC.[10]

One of the main reasons the BWC is such a weak agreement is because it does not have a verification regime.[11] Only

---

7. *See, e.g.,* John-Thor Dahlburg, *Russia Admits It Violated Pact on Biological Warfare*, L.A. TIMES, Sept. 15, 1992, at A1.

8. *Id.* In 1999, Ken Alibek reported that there are four main laboratories in Russia still involved in offensive biological research: a large complex in Kirov, 1,000 kilometers east of Moscow; Compound 19 in Ekaterinburg (formally Sverdlovsk); Sergeiv Possad, the closest biological warfare facility to Moscow and one of the biggest viral facilities in the country; and the newly-established town of Strizhy, also near Kirov. Al J. Venter, *Spectre of Biowar Remains*, JANE'S DEFENCE WEEKLY, Apr. 28, 1999, at 22.

9. *See* William J. Broad & Judith Miller, *Iraq's Deadliest Arms: Puzzles Breed Fear*, N.Y. TIMES, Feb. 26, 1998, at A1 (discussing the United Nations Special Commission ("UNSCOM") discovery that Iraq had acquired nutrients that could be used for growing deadly germs, and the fact that Saddam Hussein's son-in-law, Lt. Gen. Hussein Kamal, who soon thereafter defected to Jordan, confirmed the suspicions of the inspectors).

10. *Bolton Says Iraq, North Korea Violate Biological Weapons Pact*, Statement of the Honorable John R. Bolton, Under Secretary of State for Arms Control and International Security, United States Department of State to the Fifth Review Conference of the Biological Weapons Convention, Geneva, Switzerland, *available at* http://www.usembassy.org.uk/acda268.html (Nov. 19, 2001) [hereinafter Bolton Statement]; *see also* Steven Mufson, *U.S. Says Iraq, Others Pursue Germ Warfare*, WASH. POST, Nov. 20, 2001, at A8. Despite the unwritten rule not to "name names," the United States pointed the finger at six countries for pursuing biological warfare programs. *Id.* During a speech on November 19, 2001 at the opening of the Fifth Review Conference, Bolton accused Iraq, North Korea, Libya, Syria, Iran and Sudan of pursuing these programs. *Id*. "Prior to September 11, some would have avoided this approach. The world has changed, however, and so must our business-as-usual approach." *Id*. It is "beyond dispute" that Iraq has a biological warfare program. *Id*. North Korea's biological warfare program is "extremely disturbing" and probably can produce sufficient agents within weeks of a decision to do so. *Id*. Sudan is neither a party nor a signatory to the BWC. *See id.*

11. *See* Erhard Geissler, *Arms Control, Health Care and Technology Transfer*

according to Article VI does any party, "which finds that any other State Party is acting in breach of obligations deriving from the provisions of the Convention[, have the right to] lodge a complaint with the Security Council of the United Nations."[12] When this occurs, "[e]ach State Party to this Convention [must] cooperate in carrying out any investigation which the Security Council may initiate . . . ."[13]

To strengthen the BWC, review conferences have been held in Geneva approximately every five years since the BWC went into effect.[14] Overall, these conferences have reemphasized the basic prohibitions of the BWC and have attempted to resolve issues and problems that arise between the State Parties.[15] Most importantly, the conferences have continually grappled with the absence of a verification regime.[16] More recently, on December 7, 2001, the State Parties to the BWC adjourned the Fifth Review Conference in disarray and planned to meet again November 11-22, 2002 to continue the Fifth Review Conference.[17]

Section II of this article examines the history of biological warfare leading to the BWC and the basics of biological warfare. Section III discusses the BWC's elimination of the weaknesses of prior attempts to ban biological warfare, and inspects some of the key provisions contained in the BWC. The measures currently taken to correct the problems associated with

---

Under the Vaccines for Peace Programme, *in* CONTROL OF DUAL-THREAT AGENTS: THE VACCINES FOR PEACE PROGRAMME 25 (Erhard Geissler & John P. Woodall, eds., 1994). The term "verification" refers to the measures taken to monitor compliance with negotiated agreements. Phillip R. Trimble, *Beyond Verification: The Next Step in Arms Control*, 102 HARV. L. REV. 885, 885 (1989). Therefore, it includes the intelligence activities required to collect data on the subject matter of a treaty and the process of interpreting the data in light of treaty requirements. *See id.* at 885-89. However, in public debate and in most academic commentary, verification refers mostly to data collection and not to the problems of treaty interpretation. *See id.* at 885-86.

12. Biological Weapons Convention, *supra* note 1, art. VI, 26 U.S.T. at 588, 1015 U.N.T.S. at 167.

13. *Id.*

14. LEONARD A. COLE, THE ELEVENTH PLAGUE: THE POLITICS OF BIOLOGICAL AND CHEMICAL WARFARE 179 (1997).

15. *See id.* at 179-80.

16. *See id.*

17. Mike Allen & Steven Mufson, *U.S. Scuttles Germ War Conference*, WASH. POST, Dec. 8, 2001, at A1.

verification of the BWC and the issues that affect verification of the BWC are addressed in Section IV. Lastly, Section V discusses the scope of the Chemical Weapons Convention, a treaty that has had ample influence on the verification regime of the BWC.

II. OVERVIEW OF BIOLOGICAL WARFARE

A. History

The use of disease as a weapon of war can be traced back to ancient history. A handbook issued in 2001 by the Army Medical Research Institute of Infectious Diseases reports that biological weapons were used as early as the sixth century B.C.[18] During that time, the Assyrians used rye ergot, a fungus disease, to poison enemy wells, and Solon used the purgative herb hellebore during the siege of Krissa.[19] In 1346 A.D., Tartars held the walled city of Kaffa under siege by catapulting plague-infested bodies into the city.[20] Some speculate this may have been a cause of the Black Death pandemic in the fourteenth and fifteenth centuries that killed a substantial portion of Europe's population.[21] In addition, the English used smallpox as a weapon during the French and Indian War when they gave infected blankets to the American Indian tribes hostile to the British.[22]

B. The Basics of Biological Warfare

Biological warfare, also referred to as "germ warfare"[23] or "bacteriological warfare,"[24] is defined as the use of "living

---

18. U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES, MEDICAL MANAGEMENT OF BIOLOGICAL CASUALTIES HANDBOOK 9 (4th ed. 2001), *available at* http://www.usamriid.army.mil/education/bluebook/Mmbch4AdobePDFVer4-02.pdf (Feb., 2001).

19. *Id.*

20. Judith Miller, *Biological Weapons, Literally Older Than Methuselah*, N.Y. TIMES, Sept. 19, 1998, at B7.

21. *Id.*

22. *Id.*

23. *See, e.g.,* Mufson, *supra* note 10.

24. *See, e.g., Chemical and Bacteriological (Biological) Weapons and the Effects of Their Possible Use*, *Report of the Secretary-General*, U.N. Doc. A/7575 & S/9292 (1969).

organisms, whatever their nature, or infective material derived from them, which are intended to cause disease or death in man, animals or plants, and which depend for their effects on their ability to multiply in the person, animal or plant attacked."[25] A few examples of biological weapons include tularemia, anthrax, Q fever, epidemic typhus, smallpox, brucellosis, VEE, botulinum toxin, dengue fever, Russian spring-summer encephalitis, Lassa fever, Marburg, and Ebola.[26]

The allure of biological weapons is great.[27] Unlike any other weapon, biological agents become more dangerous with the passage of time.[28] As former President Clinton said of all the new threats, "the one that 'keeps me awake at night' is the possibility of germ attack."[29] He added that a "biological attack could spread . . . 'kind of like the gift that keeps on giving.'"[30] Some viruses, such as Marburg, are so dangerous that "casually inhaling as few as three microscopic viral particles several days after an attack [is] enough to kill [a person]."[31]

Unlike nuclear weapons, which destroy everything in the target area, biological weapons leave infrastructure intact.[32] However, the effects of biological weapons on people may be as extensive and grim as those from a nuclear bomb.[33] "Anthrax . . .

---

25. *Id.* at 5.

26. Geissler, *supra* note 11, at 29 (listing other biological warfare agents including: Chikungunya virus; Crimean-Congo hemorrhagic fever virus; Hantaan (Korean hemorrhagic fever) virus; Monkeypox virus; Rift Valley fever virus; Western equine encephalitis; White pox virus; Yellow fever virus; Junin (Argentinian hemorrhagic fever) virus); *see also* 42 C.F.R. § 72, app. A (2000) (listing select agents).

27. *See* Broad & Miller, *supra* note 9.

28. *See id.*; *see also* COLE, *supra* note 14, at 160.

29. Judith Miller & William J. Broad, *Clinton Describes Terrorism Threat for 21st Century*, N.Y. TIMES, Jan. 22, 1999, at A1.

30. *Id*.

31. KEN ALIBEK & STEPHEN HANDELMAN, BIOHAZARD: THE CHILLING TRUE STORY OF THE LARGEST COVERT BIOLOGICAL WEAPONS PROGRAM IN THE WORLD, TOLD FROM THE INSIDE BY THE MAN WHO RAN IT 22 (1999). Much of what is known about Russia's biological warfare program comes from Ken Alibek, who was formerly known as Dr. Kanatjian Alibekov, and who was a top official in the Soviet biological warfare program for twenty years before coming to the United States. *Id.* at x-xi.

32. *Id.* at 22 (explaining that biological weapons should be called "mass casualty weapons" rather than "weapons of mass destruction").

33. Broad & Miller, *supra* note 9.

can kill a human after exposure to less than 10,000 germs, all of which would fit comfortably on the period at the end of this sentence."[34]

Furthermore, biological weapons are cheap compared with other weapons.[35] In 1969, a United Nations panel received information that "for a large-scale operation against a civilian population, casualties might cost about $2000 per square kilometer with conventional weapons, $800 with nuclear weapons, $600 with nerve-gas weapons, and $1 with biological weapons."[36] As a consequence, biological weapons have become known as the "Poor Man's Atomic Bomb."[37]

One of the principal advantages of biological weapons is their extreme lethality.[38] A study by the Office of Technology Assessment estimated that the aerosolized release of only 100 kilograms (about 220 pounds) of anthrax bacteria upwind of the Washington, D.C. area could result in 130,000 to three million deaths.[39] This extreme lethality reduces the costs and complexity of biological weapons production. This eliminates the need for a large infrastructure of personnel and facilities, which in turn eases the problem of security and avoidance of detection.

Lastly, most biological materials are dual-use items, having legitimate commercial applications as well as being capable of producing biological weapons.[40] This is different from nuclear warfare, which requires dedicated facilities, or chemical warfare,

---

34. *Id.*

35. United Nations Association of Great Britain and Northern Ireland, *Biological Weapons*, *at* http://www.una-uk.org/UN&C/Disarmament/biological.html (Oct. 2001).

36. NEIL C. LIVINGSTONE & JOSEPH D. DOUGLASS, JR., CBW: THE POOR MAN'S ATOMIC BOMB 7 (1984) (quoting a group of chemical and biological experts appearing before the U.N. Panel).

37. *Id.*

38. *See* OFFICE OF TECHNOLOGY ASSESSMENT, PROLIFERATION OF WEAPONS OF MASS DESTRUCTION: ASSESSING THE RISKS 52-55 (1993) (comparing lethality of nuclear, chemical, and biological weapons) [hereinafter PROLIFERATION OF WEAPONS OF MASS DESTRUCTION].

39. *Id.* at 54.

40. *See* Milton Leitenberg, *The Conversion of Biological Warfare Research and Development Facilities to Peaceful Uses*, *in* CONTROL OF DUAL-THREAT AGENTS: THE VACCINES FOR PEACE PROGRAMME 84-85 (Erhard Geissler & John P. Woodall, eds., 1994) (describing non-offensive research opportunities in biological agents).

where the agents have little if any civilian application.

C. The Geneva Protocol

The use of biological weapons, like the use of chemical weapons, was originally prohibited by the 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare ("Geneva Protocol").[41] The text of the Geneva Protocol states, "the High Contracting Parties . . . agree to extend this prohibition to the use of bacteriological methods of warfare" and proclaims that such weapons have been "justly condemned by the general opinion of the civilised [sic] world."[42]

However, the Geneva Protocol does not effectively prevent biological warfare.[43] The Geneva Protocol was established as a result of the devastation caused by the use of chemicals in World War I.[44] Therefore, it predominantly addresses the use of chemical weapons, while briefly recognizing the dangers of biological weapons.[45] Biological warfare is incidental to the Geneva Protocol; biological weapons are not even mentioned in the Preamble.[46] Moreover, the Geneva Protocol does not ban the design, testing, production, or stockpiling of biological weapons or their precursors. This lack of a ban enables countries to continue producing and stockpiling these weapons, ensuring ready access to such weapons. Further, even with the Geneva

---

41. Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, June 17, 1925, 26 U.S.T. 571, 575, 14 I.L.M. 49, 49 [hereinafter Geneva Protocol]; CHARLES C. FLOWERREE, *The Biological Weapons Convention and the Researcher*, *in* THE MICROBIOLOGIST AND BIOLOGICAL DEFENSE RESEARCH: ETHICS, POLITICS, AND INTERNATIONAL SECURITY 113 (Raymond A. Zilinskas, ed. 1992).

42. Geneva Protocol, *supra* note 41, 26 U.S.T. at 575, 14 I.L.M. at 49.

43. FLOWERREE, *supra* note 41, at 113.

44. *Id.*

45. *Id.*

46. Richard Falk, *Inhibiting Reliance on Biological Weaponry: The Role and Relevance of International Law*, *in* PREVENTING A BIOLOGICAL ARMS RACE 241, 248-49 (Susan Wright ed., 1990) (noting that the Preamble of the Protocol begins, "Whereas the use in war of asphyxiating, poisonous or other gases and of all analogous liquids [sic] materials or devices, has been justly condemned by the general opinion of the civilized world . . ." and goes on to assert an international law obligation "binding alike the conscience and practice of nations.").

Protocol in force, many nations have reserved the right to use biological weapons against non-parties and to respond in kind to biological weapons attacks.[47] In addition, the term "bacteriological" used within the text of the Geneva Protocol does not include all types of biological weapons.[48] Lastly, the Geneva Protocol does not prohibit the use of biological weapons in peacetime, or their internal use by a government against its own citizens.[49] It also does not contain a verification regime to investigate suspected violations and ensure compliance with the prohibition.[50] Because of these problems with the Geneva Protocol, countries continued to produce and even use biological weapons under the Geneva Protocol, rendering it ineffective.[51]

III. KEY PROVISIONS OF THE BWC

Some of the weaknesses of the 1925 Geneva Protocol were eliminated by the BWC. Article I of the BWC sets out the basic obligation of the Convention. The State Parties agree:

> [N]ever 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.[52]

---

47. Michael P. Scharf, *Clear and Present Danger: Enforcing the International Ban on Biological and Chemical Weapons Through Sanctions, Use of Force, and Criminalization*, 20 MICH. J. INT'L L. 477, 481 (1999).

48. BAREND TER HAAR, THE FUTURE OF BIOLOGICAL WEAPONS 3 (1991) (noting that in 1925, microorganisms such as viruses and rickettsias were not known, but it is understood that the scope encompasses all types of microorganisms).

49. *See id*. at 2, 3.

50. *See id*.

51. *See id.* at 3 (explaining "that both parties and nonparties to the [Geneva Protocol (including the United Kingdom, Japan, and the United States)] believed they should acquire a stockpile of chemical [and biological] weapons to deter other countries from using them"). Geneva Protocol signatories who have since acceded to the BWC have withdrawn their reservations to the Geneva Protocol with respect to biological weapons. PROLIFERATION OF WEAPONS OF MASS DESTRUCTION, *supra* note 38, at 21 n.17.

52. Biological Weapons Convention, *supra* note 1, art. I, 26 U.S.T. at 587, 1015 U.N.T.S. at 166. The phrase "whatever their origin or method of production" is intended

The key words "never in any circumstances"[53] ensure that the prohibition remains binding during war and builds on the Geneva Protocol by ruling out any possibility of retaliation. Further, the Geneva Protocol's use of the word "bacteriological," which does not seem to cover microorganisms such as viruses or rickettsias, was replaced.[54] The word "biological" was inserted into the title of the BWC and the words "microbial or other biological agents" were included in Article I to ensure a broader scope.[55]

The BWC includes other important provisions. The Preamble of the BWC expresses the determination to "achiev[e] effective progress towards general and complete disarmament, including the prohibition and elimination of all types of weapons of mass destruction."[56] The Preamble also articulates a goal to "exclude completely the possibility of bacteriological (biological) agents and toxins being used as weapons" and states "that such use would be repugnant to the conscience of mankind."[57]

Article II of the BWC states that each party should destroy or divert to peaceful purposes "all agents, toxins, weapons, equipment and means of delivery."[58] This article requires each

---

to ensure that the term "toxins" will be interpreted broadly and will include synthetic toxins. *See* Trimble, *supra* note 11, at 907.

53. Biological Weapons Convention, *supra* note 1, art. I, 26 U.S.T. at 587, 1015 U.N.T.S. at 166.

54. TER HAAR, *supra* note 48, at 10.

55. *See* Biological Weapons Convention, *supra* note 1, art. I, 26 U.S.T. at 587, 1015 U.N.T.S. at 166.

56. *Id.* pmbl., 26 U.S.T. at 585, 1015 U.N.T.S. at 164.

57. *Id.*, 26 U.S.T. at 586, 1015 U.N.T.S. at 166.

> Unlike other arms control treaties, the BWC does not prohibit the *existence* of certain kinds of agents and activities, but their *utilization* for hostile purposes. The [Chemical Weapons Convention, *infra* note 160], prohibits the existence of a defined group of chemicals. . . . [O]ne can prohibit the production and hence the mere existence of those nerve agents that cannot be used for peaceful purposes. . . . [T]he same is not possible for agents covered by the BWC.

Erhard Geissler et al., *Implementing Article X of the Biological Weapons Convention*, *in* ENHANCING THE BIOLOGICAL WEAPONS CONVENTION 158 (Oliver Thränert ed., 1996). Plague or anthrax cannot be prohibited because they are needed for peaceful purposes, such as vaccines. *Id.*

58. Biological Weapons Convention, *supra* note 1, art. II, 26 U.S.T. at 587, 1015 U.N.T.S. at 166.

party to destroy existing stockpiles of biological weapons within nine months of the treaty's entry into force.[59] According to Nicholas Sims, a lecturer at the London School of Economics and Political Science, Article II is at the heart of the BWC because it provides for actual disarmament and sets a time limit for destruction of the weapons.[60]

Article III urges State Parties to prevent proliferation by providing that each State Party "[undertakes] not to transfer to any recipient whatsoever, directly or indirectly, and not in any way to assist, encourage, or induce any State, group of States or international organizations to manufacture or otherwise acquire any of the agents."[61] Article IV requires parties to take "necessary measures to prohibit and prevent the development, production, stockpiling, acquisition, or retention of the agents, toxins, weapons, equipment and means of delivery" within their territory.[62] This article implicitly instructs parties to create legislation or other actions in order to comply with the BWC. Article V deals with the consultative process for problems arising from treaty implementation.[63] It reads, "[c]onsultation and cooperation pursuant to this article may also be undertaken through appropriate international procedures within the framework of the United Nations and in accordance with its Charter."[64] Article X of the BWC allows parties to "participate

---

59. *Id.*

60. NICHOLAS A. SIMS, THE DIPLOMACY OF BIOLOGICAL DISARMAMENT 20 (1988) (explaining that the nine month time limit, in contrast to the three month limit originally proposed, recognizes the need to allay fears concerning the disposal of agents and toxins, requiring elaborate and expensive safeguards to destroy).

61. Biological Weapons Convention, *supra* note 1, art. III, 26 U.S.T. at 587, 1015 U.N.T.S. at 167.

62. *Id.* art. IV, 26 U.S.T. at 588, 1015 U.N.T.S. at 167.

63. *See id.* art. V, 26 U.S.T. at 588, 1015 U.N.T.S. at 167. In an example of the difficulty of using Article V, the United States attempted to gain information from the former Soviet Union concerning the outbreak of anthrax. However, the Soviet Union claimed that the outbreak was caused by contaminated meat, rendering the article of little value. *See* COLE, *supra* note 14, at 178-79; *see also* Paul G. Cassell, Note, *Establishing Violations of International Law: "Yellow Rain" and the Treaties Regulating Chemical and Biological Warfare*, 35 STAN. L. REV. 259, at 265 & n.29, 272-73 & n.65 (1983).

64. Biological Weapons Convention, *supra* note 1, art. V, 26 U.S.T. at 588, 1015 U.N.T.S. at 167.

in . . . peaceful purposes" arising from "further development and application of scientific discoveries in the field of bacteriology (biology)."[65] Furthermore, Article X stipulates three rights of the parties in regards to biotechnology: (1) the right "to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes"; (2) the right "to the further development and application of scientific discoveries in the field of bacteriology (biology) for prevention of disease, or other peaceful purposes" through the cooperation of parties in a position to do so individually or together with other states or international organizations; and (3) the right not to be hampered in the

> economic or technological development . . . or international cooperation in the field of peaceful bacteriological (biological) activities, including the international exchange of bacteriological (biological) agents and toxins and equipment for the processing, use or production of bacteriological (biological) agents and toxins for peaceful purposes in accordance with the provisions of the Convention.[66]

Article XI allows amendments to the BWC. Article XII provides for conferences to review "new scientific and technological developments relevant to the Convention."[67] The

---

65. *Id.* art. X, 26 U.S.T. at 590, 1015 U.N.T.S. at 167-68. Contrasting opinions about the implementation of Article X have impeded the overall discussion about strengthening the BWC. *See* Geissler et al., *supra* note 57, at 158-59. There are states that tend to trivialize the importance of this Article because it has little to do with arms control and is out of place in an arms control treaty. *Id*. However, other states emphasize the importance of this Article because they are concerned that further strengthening of the BWC would be impossible without the high level implementation of Article X. *Id*. The main problem with Article X is the contradiction between Articles III and X. *Id*. The problem is seen as a major loophole of the BWC. As mentioned, Article III encourages State Parties not to transfer, assist, encourage, or induce the manufacture or acquisition of biological agents. *Id*. However, Article X requests the fullest possible exchange of equipment, materials and scientific and technological information for peaceful purposes. *Id*. One of the tasks of the Ad Hoc Group is to consider "specific measures designed to ensure effective and full implementation of Article X." *Id*.

66. Biological Weapons Convention, *supra* note 1, art. X, 26 U.S.T. at 590, 1015 U.N.T.S. at 167-68.

67. *Id*. arts. XI, XII, 26 U.S.T. at 590-91, 1015 U.N.T.S. at 168.

BWC encourages consultation and information exchanges among states.[68] Further, violation allegations may be brought to the U.N. Security Council, but the Security Council is empowered only to investigate and report its findings.[69]

IV. STRENGTHENING THE BWC

A. The History of Strengthening the BWC

Absent from the BWC is a verification regime to determine if State Parties are complying with its provisions. There are no effective means to detect and prevent countries from cheating and producing biological weapons. The review conferences mentioned in the previous section have tried to improve on the lack of verification provisions.

The First Review Conference of the BWC, held in Geneva in 1980, began to question the importance of verification when suspected violations of the BWC arose.[70] The questioning came about in part because the United States and other countries were suspicious of a 1979 epidemic in the Soviet city of Sverdlovsk (now Yekaterinburg).[71] The United States believed the epidemic, in which hundreds died, was caused by the accidental release of anthrax from a nearby military facility.[72] The Soviets, however, claimed that the outbreak was caused by meat contaminated with anthrax and was unrelated to biological warfare.[73]

---

68. *See, e.g., id.* art. V, 26 U.S.T. at 588, 1015 U.N.T.S. at 167.

69. *See id.* art. VI, 26 U.S.T. at 588-89, 1015 U.N.T.S. at 167.

70. *See Final Declaration of the First Review Conference*, art. VI, BWC/CONF.I/10, *available at* http://projects.sipri.se/cbw/docs/bw-btwc-reviewconf-1.html (Mar. 3-21, 1980).

71. COLE, *supra* note 14, at 178.

72. *Id.*

73. *Id.* (noting that Soviet authorities refused to allow on-site investigations by outsiders, but in 1992, then Russian President, Boris Yeltsin acknowledged that the Soviet claims were fabricated and that the epidemic had resulted from an accidental release of anthrax from a research military facility). Yeltsin went on to disclose that the Soviet Union had conducted an illegal biological warfare program in violation of the BWC. Lester C. Caudle III, *The Biological Warfare Threat*, *in* MEDICAL ASPECTS OF CHEMICAL AND BIOLOGICAL WARFARE 451, 453 (Frederick R. Sidell et al. eds., 1997), *available at* http://www.nbc-med.org/SiteContent/HomePage/WhatsNew/MedAspects/Ch-

Because of these suspicions, the Swedish delegation to the First Review Conference suggested creating a permanent committee to investigate suspected violations.[74] The committee would arrange investigations including on-site visits, and only when these procedures had been exhausted could a party complain to the Security Council.[75] However, the Soviet delegate rejected this suggestion and opposed changes to the BWC.[76] The Soviets felt that it would be a mistake to amend a treaty that was operating well.[77] Instead of amending the BWC, the United Kingdom suggested that the Conference should enhance Article V by interpreting the phrase "'through appropriate international procedures within the framework of the United Nations' as implying the automatic establishment of a consultative committee of experts."[78] However, the United Kingdom's suggestion was ignored; instead, a sentence was added to Article V of the Final Declaration of the First Review Conference to "include, *inter alia*, the right of any State Party subsequently to request that a consultative meeting open to all States Parties be convened at expert level."[79]

The First Review Conference concluded with the first attempt to invite parties to take confidence-building measures, which are often used to determine if a party to a treaty is complying with the treaty.[80] Article II of the Final Declaration of

---

21 electrv699.pdf (last visited Mar. 23, 2002). He further acknowledged that the country had failed to implement its commitment under the BWC to destroy existing biological weapons and had failed to conduct research only for defensive purposes. *Id*.

74. COLE, *supra* note 14, at 179-80

75. TER HAAR, *supra* note 48, at 18-19.

76. COLE, *supra* note 14, at 180 (noting the Soviet claim that the anthrax outbreak in Sverdlovsk was merely a public health matter).

77. TER HAAR, *supra* note 48, at 19.

78. *Id*.

79. *See id*.; *Final Declaration of the First Review Conference*, *supra* note 70, art. V.

80. TER HAAR, *supra* note 48, at 19 (noting that the BWC does not specify measures that would give parties confidence that other parties are honoring their obligations). Confidence-building measures ameliorate tensions and avert war. *Confidence- and Security-Building Measures*, *at* http://www.osce.org/docs/english/csbme.htm (last visited Mar. 23, 2002). These measures work to eliminate secrecy in military activity to help states distinguish real from unfounded fears about the intent of or threat posed by a real or potential adversary. *Id*. However, agreements implementing

the First Review Conference included the confidence-building measure where the parties voluntarily declared that they have never possessed biological warfare agents or equipment. Or, if they have possessed such agents or equipment, the parties have destroyed them or diverted them to peaceful purposes.[81]

The Second Review Conference in 1986 focused on ways to further implement and reaffirm the BWC.[82] The charges about Sverdlovsk were serious, and confidence in the BWC was low.[83] Most countries were convinced that the lack of verification provisions was unacceptable.[84] "If doubts about compliance were allowed to remain, they would eventually undermine the [C]onvention."[85]

At the time, the United States felt differently about the lack of verification provisions. The United States felt that the BWC was flawed and beyond repair[86] because of the absence of verification provisions making verification impossible.[87] In spite of this, the United States was committed to supporting and strengthening the basic concepts of the BWC and decided to participate in future negotiations on a verification protocol.[88]

The parties involved in the Second Review Conference agreed to postpone decisions involving the improvement of the verification procedures until the Chemical Weapons Convention's negotiations were concluded.[89] Some of the parties

---

confidence-building measures must not threaten the involved states' national security. *Id*.

81. *Final Declaration of the First Review Conference*, *supra* note 70, art. 11.

82. *See Final Declaration of the Second Review Conference*, BWC/CONF.II/13/II, *available at* http://projects.sipri.se/cbw/docs/bw-btwc-reviewconf-2.html (Sept. 8-26, 1986).

83. COLE, *supra* note 14, at 180.

84. *See id.*

85. TER HAAR, *supra* note 48, at 27.

86. *Id*. (stating that two reasons existed for the United States' discontent: "the unwillingness of the socialist bloc to disprove the evidence that pointed toward violations[,] and the U.S. difficulty in convincing other governments its accusations were well founded").

87. *Id*.

88. *Id*.

89. *Id*. at 30 ("Most delegations agreed that it would not be useful to . . . [verify] the convention as long as the conference on disarmament was still working out verification provisions of a chemical weapons convention.").

felt that the verification provisions under negotiation for the Chemical Weapons Convention would provide a model for the BWC provisions.[90] Instead of adopting verification provisions, the parties adopted a series of confidence-building measures designed to encourage openness by providing data on national activities related to biological weapons.[91] Specifically, the parties pushed data exchange measures to promote cooperation in the areas of permitted technologies.[92] The parties also encouraged the publication of biological research directly related to the BWC and promised to exchange information on outbreaks and infectious diseases.[93]

The Third Review Conference in 1991 took a more ambitious path to improve the BWC's effectiveness by devoting a substantial amount of time to remedying the verification problem.[94] The Conference set up an Ad Hoc Group of Governmental Experts ("VEREX") to identify and examine potential verification measures from a scientific and technical standpoint.[95] The Conference provided a set of criteria that VEREX could use when developing verification measures:

> (a) the strengths and weaknesses of a verification measure based on the amount of information the measures provide; (b) the ability of a verification measure to differentiate between prohibited and permitted activities; (c) the ability of a verification measure to resolve ambiguities about compliance; (d) the financial, legal, and safety implications of a

---

90. *Id*.

91. *See Final Declaration of the Second Review Conference*, *supra* note 82, art. V. However, participation in these confidence-building measures has been limited. Stockholm International Peace Research Institute, *Biotechnology and the Future of the Biological and Toxin Weapons Convention*, 3, *available at* http://projects.sipri.se/cbw/research/cbw-papersfactsheets.html (Nov. 2001).

92. *See Final Declaration of the Second Review Conference*, *supra* note 82, art. V.

93. *Id*.

94. *See Final Declaration of the Third Review Conference*, BWC/CONF.III/23, *available at* http://projects.sipri.se/cbw/docs/bw-btwc-reviewconf-3.html (Sept. 9-27, 1991).

95. *Id*. (noting that VEREX is "open to all States parties," and that "the Group shall be chaired by Ambassador Tibor Toth (Hungary), who shall be assisted by two Vice-Chairmen to be elected by the States Parties participating in the first meeting").

> verification measure; (e) the technology, material, manpower and equipment requirements of a verification measure; (f) the implication of a verification measure on the confidentiality of commercial proprietary information; and (g) the impact of a verification measure on scientific research, scientific cooperation, industrial development, and other permitted activities. [96]

VEREX met four times between March 1992 and September 1993.[97] VEREX I identified and compiled a list of potential verification measures to determine if a party to the BWC is engaging in prohibited activities.[98] Twenty-one possible measures for verification, both off-site and on-site, were explored.[99] "Some examples include[d] surveillance on publications and legislation, scheduled declarations of activities, visual inspection from both remote distances and on[-]site, medical examination of the work force, identification of key equipment and continuous monitoring by instruments and personnel."[100]

VEREX II reviewed state of the art technologies and their limitations applicable to each possible measure mentioned above.[101] VEREX III evaluated the pros and cons of each potential measure, focusing specifically on the limitations and

---

96. *Id*.

97. *See Ad Hoc Group of Governmental Experts to Identify and Examine Potential Verification Measures from a Scientific and Technical Standpoint*, Report, BWC/CONF.III/VEREX/9, para. 3, at 2 (1993) (Summary Report (BWC/CONF.III/VEREX/8)) [hereinafter VEREX Report]; Toth et al., *supra* note 5, at 68-69 (noting that "[a]s many as 53 States Parties participated in the sessions as did an observer representing the World Health Organization," and "[a]n additional observer representing the United Nations Industrial Development Organization . . . [also] took part in VEREX I.").

98. VEREX Report, *supra* note 97, para. 4, at 3 (Summary Report (BWC/CONF.III/VEREX/8)).

99. *Id.*

100. Center for Defense Information, *Biological Weapons Convention Overview*, *at* http://www.cdi.org/issues/cbw/bwc.html (last updated Nov. 15, 2000) [hereinafter *Biological Weapons Convention Overview*]

101. VEREX Report, *supra* note 97, at 1–31 (Annex I, VEREX-1 Summary (BWC/CONF.III/VEREX/2)).

advantages of combining various measures.[102] The evaluation of VEREX III showed that no single potential measure could function alone. However, a combination of potential measures can provide enhanced capabilities.[103]

VEREX IV completed its work by the end of 1993 and prepared a final report.[104] The final report of VEREX included 21 verification measures, both on and off-site.[105] Off-site measures included "information monitoring, data exchange, remote sensing, and inspections."[106] On-site measures included inspections and exchange visits.[107]

Ultimately, VEREX members believed verification was possible and concluded that "some of the potential verification measures would contribute to strengthening the effectiveness and improving the implementation of the Convention, [while] also recognizing that appropriate and effective verification could reinforce the Convention."[108] Because of the dual-use nature of almost all biological weapons-related facilities, equipment, and materials, VEREX concluded that no single approach could be used.[109] Instead, a combination of measures has the potential to

---

102. *See id.* at 10 (Attachment to the Summary Report (Table)).

103. *See id*. para. 21, at 7 (Summary Report (BWC/CONF.III/VEREX/8)).

104. *See id.* para. 3, at 2 (Summary Report (BWC/CONF.III/VEREX/8)). The Ad Hoc Group concluded

> that potential verification measures as identified and evaluated could be useful to varying degrees in enhancing confidence, through increased transparency, that States Parties were fulfilling their obligations under the BWC. While it was agreed that reliance could not be placed on any single measure to differentiate conclusively between prohibited and permitted activity and to resolve ambiguities about compliance, it was also agreed that the measures could provide information of varying utility in strengthening the BWC.

Id. para. 31, at 8 (Summary Report (BWC/CONF.III/VEREX/8)).

105. *See id.* para. 4, at 3 (Summary Report (BWC/CONF.III/VEREX/8)); *see also The Biological Weapons Convention: Report of the Ad Hoc Group of Governmental Experts*, *at* http://www.fas.org/nuke/control/bwc/news/931123-bwc.htm (created Nov. 23, 1993) [hereinafter *Report of the Ad Hoc Group*].

106. *Report of the Ad Hoc Group*, *supra* note 105.

107. *Id*.

108. VEREX Report, *supra* note 97, para. 32, at 8 (Summary Report (BWC/CONF.III/VEREX/8)).

109. *Id*. para. 23, at 7 (Summary Report (BWC/CONF.III/VEREX/8)).

strengthen the BWC.[110]

In addition to creating VEREX, the Third Review Conference expanded a previous confidence-building measure to include the exchange of information on national biological defense research programs.[111] Other confidence-building measures were added, including encouraging State Parties to declare past activities involving offensive and/or defensive biological research and development programs.[112] The Conference also created a confidence-building measure in which parties were asked to declare facilities that produced vaccines for humans.[113]

The parties to the BWC held a special conference in 1994 to consider VEREX's final report.[114] At this special conference the State Parties established an Ad Hoc Group to "consider appropriate measures, including possible verification measures, and draft proposals to strengthen the [C]onvention, to be included, as appropriate, in a legally binding instrument, to be submitted for the consideration of the States Parties."[115] Since January 1995, the Ad Hoc Group has held meetings in Geneva to negotiate a protocol to strengthen the effectiveness and improve the implementation of the BWC.[116] The draft version of

---

110. *Id*. para. 29, at 8 (Summary Report (BWC/CONF.III/VEREX/8)). The VEREX Report proposed five combinations "as examples to illustrate the evaluation of enhanced capabilities and limitations of measures": (1) declarations plus multilateral information sharing plus satellite surveillance plus visual inspection; or (2) the combination of surveillance of publications plus surveillance of legislation plus data on transfers, transfer requests and production plus multilateral information sharing plus exchange visits; or (3) the combination of interviewing plus visual inspections, identification of key equipment plus auditing plus sampling and identification; or (4) declarations plus multilateral information sharing plus on-site visual inspection; or (5) declarations plus information monitoring. *Id.* para. 11, at 5 (Summary Report (BWC/CONF.III/VEREX/8)).

111. *Final Declaration of the Third Review Conference*, *supra* note 94.

112. *Id*.

113. *Id*.

114. *See Special Conference (VEREX)*, BWC/SPCONF/1, *available at* http://www.brad. ac.uk/acad/sbtwc/verex/verex1.htm (last visited Jan. 23, 2002).

115. *Id*.

116. *See* Graham S. Pearson, *The Ad Hoc Group: The Final Year*, ASA NEWSLETTER, Applied Science and Analysis, Inc., Dec. 31, 1999, at 1; *see also Ad Hoc Group Documents*, *at* http://www.brad.ac.uk/acad/sbtwc/adhocgrp/bw-adhocgrp.htm (last

the protocol negotiated at the meetings of the Ad Hoc Group is known as the "rolling text."[117]

The Fourth Review Conference, held in 1996, supported the Ad Hoc Group intensification of the verification protocol.[118] As a result, the State Parties asked the Ad Hoc Group to create a draft verification protocol before the Fifth Review Conference scheduled for November 19 - December 7, 2001.[119]

B. The Draft Protocol

At the request of the State Parties, Ambassador Tibor Toth released a 210-page draft Protocol[120] on March 30, 2001.[121] The draft Protocol consists of thirty articles, three annexes, and nine appendices.[122] Many provisions were copied from the "rolling text."[123] Article 16 of the draft Protocol establishes an international implementing body called the Organization for the

---

visited Mar. 23, 2002) (listing the documents and working papers produced by the Ad Hoc Committee).

117. *See, e.g.*, *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*, 3 *available at* http://www.brad.ac.uk/acad/sbtwc/ahg47/doc47-1.pdf (Oct. 15, 1999).

118. *Fourth Review Conference Final Declaration, Part II*, *at* http://www.brad.ac.uk/acad/sbtwc/revconf/4final3.htm (updated Nov. 12, 1998) (declaring the determination of the States Parties to work through the Ad Hoc Committee to improve the implementation and effectiveness of the Convention).

119. *Id*. Note that since 1995, the work of the Ad Hoc Group has moved through three stages: (1) the preliminary work built upon the VEREX negotiations and final report to identify elements of a protocol; (2) a rolling text of the draft Protocol; and (3) the inclusion of detailed provisions and then to negotiations moving to a final framework for the protocol and the details of key elements. *See* Pearson, *supra* note 116, at 1, 6-8.

120. *Protocol to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on Their Destruction*, BWC/ADOCGROUP/CRP.8, 3, *at* http://www.armscontrol.org/pdf/bwcprotocol.pdf (Apr. 3, 2001) [hereinafter Draft Protocol].

121. Jenni Rissanen, *Chair Releases His "Composite Text" for Verification Protocol*, DISARMAMENT DIPLOMACY, Mar. 2001, *at* http://www.acronym.org.uk/55bwc.htm.

122. Draft Protocol, *supra* note 120, at 2-3.

123. *The BTWC Protocol: A Primer*, at http://www.brad.ac.uk/acad/sbtwc/btwc/primer.html (last visited Mar. 23, 2002) (noting that over ninety-nine percent of the language in the draft Protocol was taken from the "rolling text"); *see* Draft Protocol, *supra* note 120, arts. 4, 9, 10 at 16-21, 54-66.

Prohibition of Biological Weapons ("OPBW").[124] The OPBW would oversee the Protocol's implementation, fulfill general administrative duties, ensure compliance with the BWC, and punish any violators of the BWC.[125] Some of the specific powers the OPBW would include conducting investigations of suspect illicit activity, collecting declarations of facilities and activities relevant to the BWC, and performing on-site visits to declared facilities.[126]

1. Declarations of Facilities and Activities

The draft Protocol requires State Parties to submit initial and annual declarations on their biological weapons programs.[127] Declarations, in general, are defined as "[m]andatory, periodic reporting on a regular basis of information considered to be of relevance for verification of the BWC."[128] Declarations are confidence-building measures that provide a forum for nations to share information regarding their biological activities and explain activities that may cause compliance concerns.[129]

Initial declarations require a State Party to provide information on past offensive and defensive biological weapons programs.[130] For example, a State Party would be required to report if it possessed biological weapons between January 1, 1946 and the State Party's ratification date.[131] The draft Protocol requires annual declarations from facilities that work with listed agents and toxins, and from maximum biological and high biological containment facilities.[132] Annually, State Parties

124. Draft Protocol, *supra* note 120, art. 16, at 85.

125. *See id*. art. 16, at 85-97.

126. *See id*.

127. *Id.* art. 4, at 16.

128. Graham S. Pearson, *Discriminating Triggers for Mandatory Declarations*, at 2, *available at* http://www.brad.ac.uk/acad/sbtwc/briefing/bp3.pdf (Sept. 1997).

129. *Id*. at 1.

130. Draft Protocol, *supra* note 120, art. 4(5), at 17. A State Party would have to file initial declarations regarding national biological defense programs or activities even though national biological defense programs or activities are explicitly permitted under the BWC. *See* Biological Weapons Convention, *supra* note 1, art. X, 26 U.S.T. at 590, 1015 U.N.T.S. at 167-68.

131. Draft Protocol, *supra* note 120, art. 4(3), at 16.

132. *Id*. art. 4(6), at 17. *See* Draft Protocol, *supra* note 120, at Annex A, at 113-

would also have to report national biological defense programs or activities.[133] According to the draft Protocol, a State Party would have the power to review another State Party's initial and annual declarations.[134] A State Party, however, would be penalized for failing to submit its initial and annual declarations.[135]

Declarations may increase a State Party's confidence that other State Parties are in compliance with the BWC by increasing transparency and avoiding false suspicions of non-compliance. However, it should be noted that a major weakness of declarations is that their usefulness depends on their accuracy; a nation most likely will not declare a prohibited activity.

2. On-site Visits to Declared Facilities

On-site visits involve varying degrees of intrusiveness and costs. They are usually restricted to the "well-known and mainly government establishments involved in biological activities such as genetic engineering or biological defense research institutions and vaccine producing factories."[136] Because of the large number of biological facilities, on-site visits are frequent but cursory.[137]

Article 6 of the draft Protocol provides for three types of visits to relevant facilities by the OPBW.[138] They are: randomly

---

14, for the list of agents and toxins, which includes human and zoonotic pathogens, plant pathogens, animal pathogens, and toxins. Also provided is a list of equipment that includes a questionnaire asking to indicate whether any of the listed equipment was present at a declared facility and whether it was utilized during the previous calendar year. *Id.* Maximum biological and high biological containment facilities are defined in Article 2, paragraphs 11 and 10 respectively. *Id*. art. 2(11), (10), at 8.

133. *Id*. art. 4(6), at 7. Note that the draft Protocol limits the number of declarable defense facilities and exempts smaller defense facilities from providing declarations. *Id*.

134. *Id*. art. 6(2), at 24.

135. *See id*. art. 5, at 22-23. For example, a punishment might include a State Party losing the power to review other State Parties' declarations. *Id*. art. 5, at 22.

136. Ali A. Mohammadi, *Verifying the Biological Weapons Convention: The Role of Visits and Inspections*, *in* ENHANCING THE BIOLOGICAL WEAPONS CONVENTION 154, 155 (Oliver Thränert ed., 1996).

137. *Id.* Note that the OPBW would have the power to conduct 120 on-site visits each year. Draft Protocol, *supra* note 120, art. 6(5), at 24.

138. Draft Protocol, *supra* note 120, art. 6(5), at 24-25.

selected transparency visits, voluntary assistance visits, and voluntary clarification visits.[139]

Randomly selected transparency visits would, of course, be conducted on a random basis and only made on declared facilities.[140] The OPBW would be limited to only seven randomly selected transparency visits per country per year and no facility could receive more than three visits within a five year period.[141] The probability of a State Party receiving a visit would be proportional to the number of facilities it declares.[142] According to the draft Protocol, these visits will ensure the accuracy of declarations, enhance transparency, and provide understanding of the facilities and activities declared.[143]

The draft Protocol includes protections for the facilities that are randomly selected.[144] For example, fourteen days before the actual visit, notice of the visit and the location of the facility to be visited must be given to the visited State Party.[145] During the visit, the State Party has "the right to take measures to protect national security and commercial proprietary information."[146]

The second type of visit, voluntary assistance visits, would allow a State Party to obtain Protocol implementation assistance and "relevant technical assistance and information."[147] The third and final type of visit, a voluntary clarification visit, discussed in Articles 6 and 8 of the draft Protocol, allows a State Party to clarify an "ambiguity, uncertainty, anomaly or omission" in another State Party's declarations.[148]

3. Investigations of Suspect Illicit Activity

The draft Protocol also provides for field and facility

139. *Id*. art. 6(15), at 27; 6(49), at 35; 6(55), at 35-36.
140. *Id*. art. 6(15), at 27.
141. *Id*. art. 6(7), at 25-26.
142. *Id*.
143. *Id*. art. 6(15), at 27.
144. *See id*. art. 6(21)-(48), at 28-34.
145. *Id*. art. 6(22), at 28.
146. *Id.* art. 6(30), at 30.
147. *Id*. art. 6(49), at 35.
148. *Id*. art. 6(57), at 36; *see id.* art. 8(1), at 51.

investigations to address suspected violations of the BWC.[149] Field investigations are initiated when there is a release of, or an exposure to, biological agents, indicating a violation of the BWC.[150] Facility investigations are initiated when there is a concern that a facility might be violating the BWC.[151] Investigation procedures are extensive and include timing, degree of access, and approval details based on the type of investigation.[152]

Any State Party has the authority to request an investigation of any territory under the control of another State Party.[153] Any State Party may also request an investigation of any territory under the control of a non-State Party when a State Party allegedly caused the violation.[154] The draft Protocol envisions that investigations will be triggered by an unusual outbreak of disease or allegations of biological weapons use.[155]

Reaching decisions on the types of investigations to include in the verification regime is difficult. State Parties are justifiably concerned about the confidentiality of sensitive information. Investigations are troubling to the U.S. industry because of the enormous consequences of a potential loss of

---

149. *Id*. art. 9(3), at 54.

150. *Id*.

151. *Id*.

152. *See id*. art. 9(1)-(50), at 54-63.

153. *Id*. art. 9(1), at 54. Note that this provision would be a far-reaching verification procedure similar to the challenge inspection provision of the Chemical Weapons Convention. *See infra* Part V. Debbie Ryan Bing-Zaremba explored the constitutionality of investigations: (1) under the Fourth Amendment's warrant and probable cause requirement; (2) under the Fourth Amendment's reasonableness test; and (3) as an administrative search. Debbie Ryan Bing-Zaremba, *Comment: Knock, Knock, Who's There?: Can Chemical Weapons Inspectors Enter U.S Facilities Without a Search Warrant*, 11 TEMP. INT'L & COMP. L.J. 57, 58 (1997). She concluded that although investigations are probably unconstitutional when evaluated under the Fourth Amendment's clause requiring that a warrant be issued upon probable cause, an investigation may be constitutional if the Supreme Court foregoes a warrant because it feels an investigation implicates U.S. national security. *Id.* at 70. An additional factor weighing in favor of the government's interest in a warrantless search is that the investigation is neither personal in nature nor aimed at the discovery of evidence of a crime; rather, it is aimed at detecting non-compliance with the BWC. *Id.* at 75.

154. Draft Protocol, *supra* note 120, art. 9(12), at 55-56.

155. *Id*. art. 9(6), (9), at 54, 55.

national security or commercial proprietary information.[156] In the United States, the loudest protests about protecting sensitive information have come from commercial biotechnology companies, who are concerned that inspections of their laboratories will leave them vulnerable to industrial espionage.[157] The United States favors limiting inspections and "managed access."[158] Managed access includes early notification of an inspection, allowing facility managers to "partially reconfigure computers and production equipment with proprietary information."[159] Other techniques are being developed to disrupt secret DNA sequences while allowing the inspectors to look for suspicious biological agents.[160]

4. Export Controls

Article 7 of the draft Protocol requires a State Party to take measures "to regulate the transfer of agents, toxins, equipment and technologies relevant to Article III of the Convention."[161] These measures include reviewing, amending, or establishing any legislative, regulatory, or administrative provisions to ensure that dual-use items are transferred only for permitted purposes.[162] This particular article of the draft Protocol is very controversial among the State Parties, leading some scholars to believe it was written as only a guideline, "with no hard obligations."[163]

---

156. Ronald M. Atlas, *Combating the Threat of Biowarfare and Bioterrorism: Defending Against Biological Weapons is Critical to Global Security*, 49 BIOSCIENCE 465, 470 (1999).

157. ALIBEK, *supra* note 31, at 285. Note that some of the loudest protests have come from the Pharmaceutical Manufacturers Association ("Pharma"). Center for Global Health & Security, *Policy Brief: Chemical and Biological Weapons Terrorism: National Security Responses*, *at* http://www.psr.org/s11/chembiopolicy.html (last visited Mar. 23, 2002).

158. Atlas, *supra* note 156, at 470. "Managed access" allows the facility to control what the inspectors may do on-site to limit potential loss of sensitive information. *Id*.

159. ALIBEK, *supra* note 31, at 285.

160. *Id*.

161. Draft Protocol, *supra* note 120, art. 7(1), at 47.

162. *Id.* art. 7(1), (4), at 47.

163. Barbara Hatch Rosenberg, *Allergic Reaction: Washington's Response to*

5. Other Provisions of the Draft Protocol of the BWC

There are a few other important verification measures included in the draft Protocol. The draft Protocol requires State Parties to pass legislation, prohibiting citizens from violating the BWC.[164] In addition, the draft Protocol includes measures to promote scientific and technological exchanges and foster international cooperation among the State Parties.[165] In this regard, "[e]ach State Party shall promote and support" a range of activities.[166] For instance, the State Parties would be asked to "promote and support" the

> improvement and development of the capabilities of States' Parties . . . in the surveillance, prevention, detection, diagnosis and treatment of diseases caused by microbial and other biological agents or toxins, in particular infectious diseases, as an integral part of a global effort to improve the monitoring of emerging and re-emerging diseases in humans, animals and plants.[167]

State Parties would also be required to "promote and support" the exchange of technology for: "peaceful uses of genetic engineering"; "the monitoring, diagnosis, detection, prevention and control of outbreaks of diseases, and international co-operation on the research, development and production of vaccines"; and the establishment of cooperative research activities to improve capabilities to combat disease.[168] State Parties would be allowed to work with relevant international organizations and agencies, including the World Health Organization, the International Center for Genetic Engineering and Biotechnology, and the International Vaccine Institute to implement these activities.[169]

---

the BWC Protocol, ARMS CONTROL TODAY, July/Aug. 2001, *available at* http://www.armscontrol.org/act/2001_07-08/rosenbergjul_aug01.asp.

164. Draft Protocol, *supra* note 120, art. 7(1), at 47.

165. *Id*. art. 14, at 73-83.

166. *See id*. art. 14(4), at 74-75.

167. *Id*. art. 14(4)(c), at 74.

168. *Id*. art. 14(4)(g), (f), (j), at 74-75.

169. *Id*. art. 14(4), at 74.

C. The Rejection of the Draft Protocol by the United States

Six and a half years after negotiations of the formal Protocol for enforcing compliance with the BWC began, the United States rejected the draft Protocol and any further efforts to elaborate a Protocol.[170] On July 25, 2001, Ambassador Donald Mahley, the head of the U.S. Ad Hoc Group delegation, in a speech before the Ad Hoc Group, said the United States would not support the current text, even with changes.[171] "[T]he current approach . . . is not . . . capable of achieving the mandate set forth for the Ad Hoc Group, [of] strengthening confidence in compliance with the Biological Weapons Convention."[172] He explained that approaches that work for other types of weapons are not suitable for biological weapons because of the inherent difficulty of creating measures suitable to address a biological weapons threat.[173]

The United States has numerous reasons for rejecting the draft Protocol. One of the main concerns of the Bush Administration is that the measures proposed in the draft Protocol are intrusive on the U.S. Government and private companies, putting national security and commercial proprietary information at risk.[174] "Implementation of such a protocol would . . . cause . . . problems . . . for [U.S.] biological weapons defense programmes . . . [and] would . . . risk . . .

---

170. Jenni Rissanen, *United States' Position on Protocol Unmoved*, *at* http://www.acronym.org.uk/bwc/bwc11.htm (Oct. 15, 2001); *see also* U.S Department of State International Information Programs, *Wolfowitz Cites Importance of Biological Weapons Treaty*, *at* http://www.usembassy.org.uk/acda245.htm (July 28, 2001) (explaining that Deputy Secretary of Defense Paul Wolfowitz, feels the draft Protocol is "ill conceived" and unenforceable).

171. U.S. Department of State International Information Programs, *U.S. Says Biological Weapons Protocol Would "Not Achieve Its Objectives," at* http://usinfo.state.gov/ topical/pol/ arms/stories/01072501.htm (July 25, 2001) [hereinafter Mahley Statement].

172. *Id*.

173. *Id*. "If [the United States is] to find an appropriate solution to the problem, [the United States] need[s] to think 'outside the box.'" *Id*. This will necessitate "new and innovative paradigms to deal with the magnitude of biological activity that can be a threat, the explosively changing technology in the biological fields, and the varied potential objectives of a biological weapons program." *Id*. The United States "simply cannot try to patch or modify the models [it] has used elsewhere." *Id*.

174. *See id*.

intellectual property problems for [U.S.] pharmaceutical and biotech industries."[175] For example, the United States believes that on-site visits to declared facilities would jeopardize U.S. commercial proprietary information while leaving "almost no chance of discovering anything useful to the BWC" if done in a "less-than-innocent" facility in another country.[176] In the opinion of the United States, the draft Protocol could "serve to misdirect world attention into non-productive channels."[177]

According to the United States, the safeguards in the draft Protocol, formulated to protect information, are inadequate.[178] The U.S. biodefense program is the most extensive program of any State Party involved in the negotiations of the Protocol, having a greater amount of national security at risk.[179] Additionally, U.S. commercial proprietary information in the biological field is diverse.[180] Even if the safeguards set out in the draft Protocol are used extensively, there is no assurance that biodefense secrets or commercial proprietary information will be protected.[181]

Further, according to the United States, the draft Protocol does "not improve our ability to verify compliance."[182] The on-site visits, no matter how intrusive, most likely will not provide useful, accurate, or complete information.[183] The United States also explains that declarations of facilities and activities relevant to the BWC will not be accurate, timely, or

175. Graham S. Pearson et al., *The U.S. Rejection of the Composite Protocol: A Huge Mistake based on Illogical Assessments*, *at* http://www.brad.ac.uk/acad/sbtwc/briefing/exec22.htm (last visited Feb. 10, 2002) (emphasis omitted). Note that the disclosure of biodefense secrets does not only affect the United States. Mahley Statement, *supra* note 171. The United States shares its biodefense secrets with other countries to help them protect themselves against biological warfare. *Id*.

176. Mahley Statement, *supra* note 171.

177. *Id*.

178. *Id*.

179. *Id*.

180. *Id*. (quoting Donald Mahley, special negotiator for chemical and biological arms control issues, as stating, "The nature of proprietary information . . . ranges from overall capacities, which reveal market size and profit potential, to routine physical production configurations that provide efficiency and output advantages").

181. *Id*.

182. *Id*.

183. *Id*.

comprehensive.[184] In the United States alone there are thousands of relevant facilities, and making an accurate declaration will be impossible.[185]

The United States believes the draft Protocol does not deter or complicate a rogue state's ability to have a biological warfare program.[186] Declarations will be taken from randomly selected facilities among the relevant facilities of potential proliferators.[187] On-site visits will then take place at only a sample of these randomly selected facilities.[188] Also, the territories of State Parties who are least likely to be proliferators will be targeted.[189]

The draft Protocol, in the opinion of the United States, compromises countries' restrictions on the export of dual-use items that could be used in building an offensive biological weapons capability.[190] "While the United States agrees with the concept that global technological development in biotechnology helps create a more secure environment, [it] view[s] this as a subordinate element to the compliance-enhancement aspects of any Protocol to the Biological Weapons Convention."[191] The United States emphasizes that the BWC is a disarmament treaty, not a trade treaty.[192]

Some feel that the United States' rejection of the draft Protocol has jeopardized the future of the BWC.[193] The United States, however, does not believe the rejection of the draft Protocol weakens the BWC.[194] Mahley responded to

184. *Id*.

185. *See id*. Mahley adds that facilities potentially relevant to the BWC change in number and location frequently. *Id*.

186. *See id*.

187. *Id*.

188. *Id*. Mahley calls this procedure "twice-removed randomness." *Id.*

189. *Id*.

190. *See id*.

191. *Id*.

192. *Id*. (quoting Mahley as stating, "There are competent organizations throughout the world whose principal function is to fight disease, enhance trade, and promote development. The United States supports those organizations, and applauds their successes in their own areas of competence.").

193. *Id.*

194. *Id.*

international criticism with the statement that, "[The weakening of the global norm against the BWC] will happen only if we convince ourselves that it is happening, and we would urge others to join with us in ensuring such a reaction does not take place."[195] The United States insists that it realizes the threat of biological warfare is real and is devoted to finding other useful tools to strengthen the BWC.[196]

On November 1, 2001, President Bush reiterated the United States' commitment to strengthening the BWC "as part of a comprehensive strategy for combating the complex threats of weapons of mass destruction and terrorism."[197] President Bush further stated, "if we can strengthen the Convention against the threat of biological weapons, we will contribute to the security of the people of the United States and mankind as a whole."[198]

D. The Fifth Review Conference

The Fifth Review Conference of the BWC began on November 19, 2001 and focused on establishing a verification system to strengthen the BWC.[199] In an opening speech, John R.

---

195. *Id*.

196. *Id*.

197. President Bush, Statement on BWC, *Strengthening the International Regime Against Biological Weapons*, *available at* http://www.acronym.org.uk/bwc/bush.htm (Nov. 1, 2001).

198. *Id*. During his statement, President Bush proposed that parties:

- Enact strict national criminal legislation against prohibited BW activities with strong extradition requirements;
- Establish an effective United Nations procedure for investigating suspicious outbreaks or allegations of biological weapons use;
- Establish procedures for addressing BWC compliance concerns;
- Commit to improving international disease control and to enhance mechanisms for sending expert response teams to cope with outbreaks;
- Establish sound national oversight mechanisms for the security and genetic engineering of pathogenic organisms;
- Devise a solid framework for bioscientists in the form of a code of ethical conduct that would have universal recognition; and
- Promote responsible conduct in the study, use, modification, and shipment of pathogenic organisms.

Id.

199. *See* Jenni Rissanen, *Left in Limbo: Review Conference Suspended On Edge of Collapse*, DISARMAMENT DIPLOMACY, *available at* http://www.acronym.org.uk/dd/dd62/

Bolton, Under Secretary of State for Arms Control and International Security, set out the U.S. recommendations for strengthening the BWC.[200] The United States, concurring with the draft Protocol, recommends that the State Parties agree to enact national legislation.[201] In this regard, the United States wants to enact national criminal legislation to make engaging in activities prohibited by the BWC a criminal offense.[202]

The United States also feels that State Parties "should have strict standards for the security of pathogenic microorganisms and: (a) adopt and implement strict regulations for access to particularly dangerous micro-organisms, including regulations governing domestic and international transfers; and (b) report internationally any releases or adverse events that could affect other countries."[203] The United States also recommends exploring the national oversight of high-risk experiments and introducing a professional code of conduct for scientists working with pathogenic microorganisms.[204]

Instead of making the Protocol legally binding under international law, Bolton presented a U.S. plan to include the Protocol in a politically binding final document.[205] The U.S. plan omitted provisions to establish an international body to investigate suspicious facilities and to perform routine visits to declared facilities.[206] Under the U.S. plan, vague provisions for resolving compliance concerns will be clarified, the extradition of criminals who use biological weapons will be simplified, and the

---

62bwc.htm (Jan.-Feb. 2002).

200. Bolton Statement, *supra* note 10.

201. *Id*.

202. *Id*. Note that Article IV of the BWC is a general obligation to take necessary measures to prohibit biological weapons use. *See* Biological Weapons Convention, *supra* note 1, art. IV, 26 U.S.T. at 588, 1015 U.N.T.S. at 167. With national criminal legislation, the United States is trying to make a more specific commitment to the international implementation of anti-biological weapons laws. *See* Press Briefing, Arms Control Association, Combating the Spread of Biological Weapons: A Preview of the Biological Weapons Convention Review Conference (Nov. 16, 2001), Federal News Service, LEXIS, News Library.

203. Bolton Statement, *supra* note 10.

204. *Id*.

205. Allen & Mufson, *supra* note 17.

206. *Id*.

mandate of the United Nations to investigate suspicious disease outbreaks will be expanded.[207]

However, on December 7, 2001, the final day of the Fifth Review Conference, the United States unexpectedly proposed to terminate the Ad Hoc Group negotiating the verification Protocol.[208] The United States believed that the enforcement Protocol under discussion at the Fifth Review Conference would not stop rogue nations from acquiring or developing biological weapons.[209] In place of the Ad Hoc Group's negotiations, the United States suggested holding annual meetings beginning in November 2002 to "consider and assess progress by [S]tates [P]arties in implementing the new measures adopted at the Fifth Review Conference," and to "consider new measures or mechanisms for effectively strengthening the BWC."[210] The United States' proposal to terminate the Ad Hoc Group was not well received. European countries felt that the United States was acting unilaterally and not listening to concerns of allies.[211] The State Parties adjourned the Fifth Review Conference until November 11-22, 2002 to avoid failure.[212]

E. The Difficulties of a Verification Regime

Overall, it is difficult to create a verification regime. Verification "is not a mechanistic, cut and dried process that produces unambiguous evidence of noncompliance."[213] It is

---

207. *Id*. The expansion of the U.N. mandate includes allowing the secretary-general to examine suspicious disease outbreaks. Seth Brugger, *U.S. Presents Alternatives to BWC Protocol at Review Conference*, ARMS CONTROL TODAY, *available at* http://www.armscontrol.org/ act/2001_12/bwcrevcondec01.asp (Dec. 2001). Like the draft Protocol, the U.S. plan also includes cooperating with the World Health Organization in that organization's efforts to monitor and respond to global disease. *Id*.

208. Allen & Mufson, *supra* note 17.

209. *Id*.

210. Jenni Rissanen, *Anger After The Ambush: Review Conference Suspended After U.S. Asks for AHG's Termination*, *at* http://www.acronym.org.uk/bwc/revcon8.htm (Dec. 9, 2001). The United States also suggested establishing expert groups at the annual meetings. *Id*.

211. Allen & Mufson, *supra* note 17.

212. *Id*. Note that the final draft of the Fifth Review Conference was ninety-five percent completed before the United States suggested terminating the Ad Hoc Group. *Id*.

213. COLE, *supra* note 14, at 192 (quoting Michael Moodie, president of the

especially difficult to create a verification scheme for the BWC. First, verification is a daunting task in view of the number and variety of potential biological agents.[214] A paper by a Brazilian official identified 148 bacteria, rickettsiae, fungi, and toxins that could be used as weapons.[215] This report included all naturally occurring agents, but did not include genetically engineered agents.[216] A verification regime that provides assurance that biological agents are only used for permitted purposes is overwhelming.

Second, as Ambassador Ronald Lehman from the United States stated at the Third Review Conference, it is difficult to create a verification regime for the BWC because any nation with a developed pharmaceutical industry has the potential to make biological weapons,[217] because, biological agents can be used for both legitimate and prohibited purposes.[218] A verification regime would present difficulties in determining whether biological agents were being used for permitted purposes, such as vaccines, or whether they were being used for prohibited purposes, such as military weapons. In fact, the difference between permitted use and prohibited use of biological agents may depend on the intent of the user,[219] which is often impossible to verify.

In addition to the difficulties of creating a verification scheme, implementation will be troublesome. Because biological agents multiply, it is unnecessary to produce or store agents in large quantities. [220] As a result, a biological warfare program

---

Chemical and Biological Arms Control Institute).

214. *Id*. at 189-91.

215. *Id.* at 191-92 (citing Roque Monteleone Neto's paper, "Criteria for the Establishment of the First List of Agents," presented at Beyond VEREX, a forum sponsored by the Federation of American Scientists and the Special NGO Committee for Disarmament, Geneva, September 21, 1994).

216. *Id.* at 192.

217. *Final Declaration of the Third Review Conference*, *supra* note 94.

218. ALIBEK, *supra* note 31, at 285 (noting that American commercial biotechnology companies argue that open-ended inspections of their facilities will leave them vulnerable to industrial espionage).

219. COLE, *supra* note 14, at 190 (noting how difficult it is to ensure agents used in hospitals, industry, and academia are used for permitted purposes only).

220. Oliver Thränert, *Enhancing the Biological Weapons Convention*, *in*

does not necessarily imply large production sites or storage sites.[221] This makes it very difficult for a verification regime to locate the small, prohibited facilities.

During the Third Review Conference, the first Bush Administration outlined many difficulties and concerns over the establishment of a verification regime.[222] It claimed that biological weapons facilities cannot be located or monitored effectively because biological weapons do not leave distinctive "signatures."[223] Compounding this problem is the inability of a verification regime "to detect clandestine facilities."[224]

Perhaps the main source of concern regarding the verification of the BWC is the development of biotechnology. At the First Review Conference, biotechnology was not a concern.[225] In fact, a report was submitted on new scientific and technological developments and stated that genetic manipulation would not stimulate illegal activities with regard to the BWC in the foreseeable future.[226] However, by the Second Review Conference, concern about the potential use of biotechnology to change existing microorganisms into biological warfare weapons quickly developed.[227]

ENHANCING THE BIOLOGICAL WEAPONS CONVENTION 9, 16 (Oliver Thränert ed., 1996).

221. *Id.*

222. OFFICE OF TECHNOLOGY ASSESSMENT, TECHNOLOGIES UNDERLYING WEAPONS OF MASS DESTRUCTION 71 (1993), *available at* http://www.wws.princeton.edu/~ota/disk1/1993/ 9344_n.html.

223. *Id.*

224. *Id.* (noting that clandestine facilities "generat[e] false confidence that a country was in compliance with the treaty when in fact it was not").

225. The term biotechnology was not even mentioned in the conference report. *Final Declaration of the First Review Conference*, *supra* note 70.

226. TER HAAR, *supra* note 48, at 17-18.

227. *Id.* at 28-29 (explaining that the United States concluded: "[V]erification of the Convention, always a difficult task, has been significantly complicated by the new technology. The confidence derived from the belief that certain technical problems would make biological weapons unattractive for the foreseeable future has eroded. The ease and rapidity of genetic manipulation, the ready availability of a variety of production equipment, the proliferation of safety and environmental equipment and health procedures to numerous laboratories and production facilities throughout the world, are the signs of the growing role of biotechnology in the world's economy. But these very same signs also give concern for the possibility of misuse of this biotechnology to subvert the Convention.").

Just within the past two decades, the business and science of biotechnology has grown rapidly. U.S. firms developing new-generation drugs have increased from 45 in 1989 to 113 in 1996.[228] Advances in microbiology, genetic engineering, and biotechnology have produced major benefits for the health of people and animals.[229]

The growing biotechnology industry offers the potential of new and improved diagnostic techniques and medical countermeasures to an increasing range of naturally occurring diseases, however, problems developed with these advances. In order to counter diseases, the ways in which the diseases attack target populations must be understood. As scientists dissect how diseases spread and work, they gain an understanding of how these diseases could be used for military purposes. Therefore, those working in the biotechnology industry are constantly dealing with materials and concepts that could be used to devastate mankind.

The advances in biotechnology have simplified biological agent production and enhanced the agents' effects. For example, it might be possible to enhance a biological agent's resistance to degradation during its dissemination or even accelerate degradation after its use.[230] A Russian state pharmaceutical agency called Biopreparat has already proven that viruses and toxins can be genetically altered to heighten their virulence, paving the way for development of pathogens capable of overcoming existing vaccines.[231]

---

228. ALIBEK, *supra* note 31, at 285.

229. The Third Review Conference noted the potential benefits of advances in biotechnology, genetic engineering, and microbiology and urged countries to "adopt positive measures to promote technology transfer and international cooperation on an equal and non-discriminatory basis, in particular with the developing countries, for the benefit of all mankind." *Final Declaration of the Third Review Conference*, *supra* note 94, art. X.

230. TER HAAR, *supra* note 48, at 56 (noting other alterations of pathogens include enhancing virulence; making bacteria resistant to antibiotics; microencapsulating pathogens to make them resistant to sunlight; and developing pathogens which might overcome vaccine-caused immunization).

231. Caudle, *supra* note 73, at 454 (Biopreparat is a network of nominally civilian research institutes. It was created in 1973 by the Soviet Central Committee and the Council of Ministers as a cover for the existing military program. It employed more than 25,000 people at eighteen or more research and development facilities. Its budget in

V. THE EFFECT OF THE CHEMICAL WEAPONS CONVENTION ON THE BIOLOGICAL WEAPONS CONVENTION

Lastly, it is generally expected that the verification scheme of the BWC should be modeled on the Chemical Weapons Convention's ("CWC") verification regime.[232] The scholars justify this view by pointing out the similarities between chemical and biological weapons:[233] both chemical and biological agents are frequently dual-use; both are sensitive to technological change; both are weapons of mass destruction, and both have their origins in the 1925 Geneva Protocol.[234] However, biological agents do differ from chemical agents, for example, in the way they reproduce.[235] Therefore, a verification regime for the BWC will pose special problems and will require different solutions for the specific characteristics of biological agents.

The CWC came into force on April 29, 1997.[236] As of January

---

the early 1980s was 200 million rubles, or tens of millions of American dollars per year. The goals of Biopreparat were to genetically alter known pathogens to make them resistant to Western drugs and to produce new strains of powerful diseases. In 1983, scientists developed their first superplague: a new strain of tularemia.).

232. TER HAAR, *supra* note 48, at 76. The Second Review Conference noted in September of 1986 that the CWC negotiations had not reached an agreement on effective verification. *Final Declaration of the Second Review Conference*, *supra* note 82, art. IX. The Second Review Conference further urged the Conference on Disarmament to exert all possible effort to "conclude an agreement on the total ban on chemical weapons with effective verification provisions by the earliest possible date." *Id*.

233. *See* Barbara H. Rosenberg & Gordon Burck, *Verification of Compliance with the Biological Weapons Convention*, *in* PREVENTING A BIOLOGICAL ARMS RACE 300, 303 (Susan Wright ed., 1990) (noting that toxins are covered by both the CWC and BWC); Matthew Meselson, *International Criminalization of Chemical and Biological Weapons*, THE AMERICAN ACADEMY OF ARTS AND SCIENCES BULLETIN, Winter 2001, http://www.amacad.org/blvlivn2/blvlivn2_28c.htm ("Prohibitions against the hostile use of poison and disease go back to Hindu, Roman, Koranic, and old European law—to times long before infectious agents were recognized as being different from poisonous ones.").

234. *See* Julian Perry Robinson, *Some Lessons for the Biological Weapons Convention from Preparations to Implement the Chemical Weapons Convention*, *in* ENHANCING THE BIOLOGICAL WEAPONS CONVENTION 86, 86–93 (Oliver Thränert ed., 1996).

235. TER HAAR, *supra* note 48, at 111.

236. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, Jan. 13, 1993, art. XXI, S. TREATY DOC. NO. 45, 32 I.L.M. 800, 821 [hereinafter Chemical Weapons Convention] (stating that the CWC enters into force six months after being ratified by 65 nations);

2002, 145 countries, including the United States, have ratified or acceded to the CWC.[237] The CWC prohibits the development, production, possession, and use of chemical weapons and chemical weapons facilities.[238] It also prohibits parties from engaging in any military preparations to use chemical weapons and from assisting or inducing anyone to engage in an activity that is prohibited by the CWC.[239] The CWC also requires parties to eliminate all chemical weapons and chemical weapons production facilities under their jurisdiction or control within ten years of accession.[240]

Most importantly, the CWC includes an Annex on Implementation and Verification ("Verification Annex"), which covers: the designation of inspectors and their privileges and immunities; rules concerning the conduct of inspections; the destruction of old weapons; and the destruction or conversion of production facilities.[241] The Verification Annex comprises over half of the document[242] and is the most comprehensive verification scheme of any international treaty.[243] The Verification Annex specifies that each State Party agree to subject its chemical industry (both governmental and private) to annual data declarations regarding their activities and to on-site inspections of its facilities.[244]

Dafna Holtzer, *Chemical Weapons Convention Unique Test Case*, U.N. CHRONICLE, Sept. 22, 1997, at 46.

237. Ratifications to the CWC, *at* http://projects.sipri.se/cbw/docs/cw-cwc-rat.html (updated Jan. 16, 2002); *see also* Non-Signatories to the CWC, *at* http://projects.sipri.se/cbw/docs/cw-cwc-nonsig.html (updated Jan. 17, 2002) (listing the following 20 countries that have not signed the CWC: Andorra, Angola, Antigua and Barbuda, Barbados, Belize, Egypt, Iraq, North Korea, Lebanon, Libya, Niue, Palau, Sao Tome and Principe, Solomon Islands, Somalia, Syria, Taiwan, Tonga, Tuvalu, and Vanuatu).

238. Chemical Weapons Convention, *supra* note 236, art. I(1)(a), S. TREATY DOC. NO. at 3, 32 I.L.M. at 804.

239. *Id.*

240. *Id.*, art. IV(6), S. TREATY DOC. NO. at 11, 32 I.L.M. at 807.

241. COLE, *supra* note 14, at 188.

242. *See* Chemical Weapons Convention, *supra* note 236, Annex on Implementation and Verification, S. TREATY DOC. NO. at 61-166, 32 I.L.M. at 824-70.

243. PROLIFERATION OF WEAPONS OF MASS DESTRUCTION, *supra* note 38, at 114 n.1.

244. Bing-Zaremba, *supra* note 153, at 62.

The data declaration procedure is the basic tool for ensuring compliance with the CWC.[245] Each State Party has thirty days from the date the CWC is entered into force to declare any chemical weapons it owns or any that are on territory under its jurisdiction and control.[246] The State Party must specify the location, amount, and type of each declared chemical weapon.[247] Each party must also declare the existence of all chemical weapons production facilities or similar activities and specify the location and nature of each activity.[248]

The most interesting section of the Verification Annex is Part X, which involves challenge inspections.[249] Any State Party may request a challenge inspection of another State Party.[250] After notifying the challenged state, the head of the Technical Secretariat will dispatch an inspection team.[251] The inspection must begin no later than 108 hours after the team arrives in the challenged country.[252]

---

245. *Id.* at 64. ("All declared facilities are subject to random on-site inspections."). On-site inspections verify the accuracy of the information supplied in the data declarations. *Id*. These on-site inspections are governed by the facility agreements that specify the frequency and intensity of inspections and details of the inspection procedures. *Id*.

246. Chemical Weapons Convention, *supra* note 236, art. III, S. TREATY DOC. NO. at 8, 32 I.L.M. at 806.

247. Bing-Zaremba, *supra* note 153, at 63.

248. *Id.*

249. Chemical Weapons Convention, *supra* note 236, Annex on Implementation and Verification, pt. X, S. TREATY DOC. NO. at 150-61, 32 I.L.M. at 864-69. "The provision for challenge inspection is the most far reaching verification procedure of any arms control agreement." Bing-Zaremba, *supra* note 153, at 65. For instance, "any State Party has the right to request a challenge inspection of [the] facilities located in another State Party's territory if it suspects non-compliance." *Id.* Furthermore, "there is no requirement that the requesting State Party attempt to reconcile any concerns with the proposed inspected State Party prior to requesting a challenge inspection." *Id.* In addition, "there is no limit on the number of challenge inspections to which a facility may be subjected." *Id.* Therefore, "with these broad rights . . . challenge inspections may occur frequently." *Id*.

250. Bing-Zaremba, *supra* note 153, at 65.

251. Chemical Weapons Convention, *supra* note 236, Annex on Implementation and Verification, pt. X(14), S. TREATY DOC. NO. at 152, 32 I.L.M. at 865. The inspection team must arrive at the inspection site within thirty-six hours of their arrival in the challenged state. *Id*.

252. *Id.* at pt. X(39), S. TREATY DOC. NO. at 157, 32 I.L.M. at 867.

The CWC, like the draft Protocol of the BWC verification regime, does recognize a country's right to protect confidential information by means of managed access.[253] The CWC states, "[i]f the inspected State Party provides less than full access to places, activities, or information, it shall be under the obligation to make every reasonable effort to provide alternative means to clarify the possible non-compliance concern that generated the challenge inspection."[254]

The Verification Annex also establishes a variety of inspection procedures.[255] The goal of the first type of inspection is to verify the destruction of chemical weapons at a certain facility.[256] The purpose of the second type is to verify whether a chemical weapons production facility was destroyed or converted.[257] The third, fourth, and fifth types of inspection investigate whether certain chemicals, listed in the corresponding schedules discussed below, were used in building chemical weapons.[258] The sixth type of inspection procedure pertains to production facilities that produce chemicals not found in any of the three schedules,[259] and the seventh type involves short-notice inspections of countries suspected of violating the CWC.[260] The final type of inspection pertains to the investigation of sites where chemical weapons possibly were used.[261]

The Verification Annex is built upon a classification of the

---

253. *Compare id.*, *with* Draft Protocol, *supra* note 120, art. 9(28), at 59.

254. Chemical Weapons Convention, *supra* note 236, Annex on Implementation and Verification, pt. X(42), S. TREATY DOC. NO. at 157, 32 I.L.M. at 867 (providing that the BWC allows removal of sensitive papers from office spaces, shrouding sensitive displays and equipment, logging off computer systems, and restricting sample analysis to the presence or absence of chemicals listed in the schedules).

255. *See supra* notes 243-54 and accompanying text.

256. Chemical Weapons Convention, *supra* note 236, Annex on Implementation and Verification, pt. IV(A)(50), S. TREATY DOC. NO. at 94, 32 I.L.M. at 841.

257. *See id.* pt. V(44), S. TREATY DOC. NO. at 114, 32 I.L.M. at 844-53.

258. *Id.* pt. VI(28), S. TREATY DOC. NO. at 129, 32 I.L.M. at 853-62; pt. VII(12), S. TREATY DOC. NO. at 134, 32 I.L.M. at 858; pt.VIII(10), S. TREATY DOC. NO. at 141, 32 I.L.M. at 861.

259. *Id.* pt. IX(9), S. TREATY DOC. NO. at 146, 32 I.L.M. 863.

260. *Id.* pt. X(10)-(13), S. TREATY DOC. NO. at 152, 32 I.L.M. 865.

261. *Id.* pt. XI(1)-(2), S. TREATY DOC. NO. at 162, 32 I.L.M. 869.

most relevant chemicals according to their risk.[262] The classification includes three schedules of toxic chemicals and their precursors.[263] Schedule 1 includes agents that pose "high risk to the object and purpose" of the CWC.[264] Schedule 2 lists chemicals with a "significant risk" to the CWC and Schedule 3 includes agents that "otherwise" pose a risk to "the object and purpose" of the CWC.[265] Countries must declare their stocks of these scheduled materials and their production facilities.[266] Countries declaring the quantities and locations of Schedule 1 chemicals are providing assurances that the chemicals "are applied to research, medical, pharmaceutical or protective purposes."[267] There are no limits on the quantity of Schedule 2 and 3 chemicals, but each year the country must declare the locations, purposes, and amounts of these chemicals produced, processed or consumed above certain thresholds.[268]

VI. CONCLUSION

When the BWC was negotiated thirty years ago, the use of biological weapons was improbable. Biological weapons were seen as unreliable, slow in action, and unpredictable in effect. Today, with increased development in biotechnology, fear of other countries having a significant biological weapons program, and recent anthrax attacks on the United States, the threat of biological warfare is real. As a result, efforts to reduce disease, whether natural or man-made in origin, should be among the highest priorities of governments worldwide.

---

262. *See id.* Annex on Chemicals, S. TREATY DOC. NO. at 48-49, 32 I.L.M. at 821-24.

263. *Id*. Annex on Chemicals (1)-(3), S. TREATY DOC. NO. at 48-49, 32 I.L.M. at 821-24.

264. *Id*. Annex on Chemicals, sched. 1, S. TREATY DOC. NO. at 48, 50-51, 32 I.L.M. at 822-23 (Schedule 1 agents include nerve agents such as sarin, mustard agents, saxitoxin, and ricin).

265. *Id.* Annex on Chemicals, scheds. 2-3, S. TREATY DOC. NO. at 48-49, 52-53, 32 I.L.M. at 822-23 (Schedule 2 agents include BZ, arsenic, and thiodiglycol, and Schedule 3 agents include phosgene and hydrogen cyanide.).

266. COLE, *supra* note 14, at 188.

267. *Id*.; Annex on Implementation and Verification, pt. VI(2)(a), S. TREATY DOC. NO. at 129, 32 I.L.M. at 853.

268. COLE, *supra* note 14, at 188.

Creating a verification regime for a treaty is difficult. Verification involves costs, especially in terms of risks to a country's national security and commercial proprietary information. Creating a verification regime for the BWC, however, is especially difficult. Biological agents are dual-use items, having both legitimate and illicit uses. Determining which agents are being used for permitted purposes is a daunting task. The number and variety of potential biological agents is enormous, and assuring that they are used only for permitted purposes is overwhelming. Further, while advancements in biotechnology promise to increase the quality of life, they may provide for biological weapon development.

Conversely, a verification regime can enhance both national and international security by building confidence that other parties to the treaty are in compliance. Imposing the risk of discovery and increasing the cost and difficulty of clandestine programs makes a verification regime worthwhile. A verification regime will create an international legal norm against biological weapons that can be used in the future to prevent the production of biological weapons.

Perhaps the U.S. recommendation to enact national criminal legislation is a logical beginning, its passage a signal of continued commitment to the BWC. The U.S. plan requiring State Parties to secure and regulate access to dangerous microorganisms and to explore the national oversight of high-risk experiments is likewise important when strengthening the BWC.

Most importantly, a legally binding instrument providing for, *inter alia*, declarations, on-site visits, and investigations of suspect illicit activity is essential to a verification regime. It is well known that a legally binding instrument, like the draft Protocol, will not establish a perfect verification regime. The draft Protocol is simply another tool countering the proliferation of biological weapons. Yet the draft Protocol may possess important symbolic value in reaffirming the international commitment to the principles of the BWC. "The protocol would help to protect the United States by strengthening the global norm against the possession of biological weapons, providing the machinery to promptly investigate allegations of noncompliance,

and deterring biological weapons proliferation."[269] The Protocol will reinvigorate the moral repugnance to biological weapons, and will provide legal justification for action against countries that violate the norm.

269. Marie Isabelle Chevrier, *A Necessary Compromise*, ARMS CONTROL TODAY, *available at* http://www.armscontrol.org/act/2001_05/chevrier.asp (May 2001).