



Commentary

Looking Beyond the Chemical Weapons Convention

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In 1966, more than 30 years ago, the *New England Journal of Medicine* published a special article entitled “Chemical and Biological Weapons—A Primer” [1]. The authors of that article were members of Physicians for Social Responsibility (PSR), the group whose members had in 1962 authored a series of articles entitled “The Medical Consequences of Thermonuclear Weapons” in the *New England Journal*.

The 1966 article, prompted in part by U.S. use of harrassing chemical agents (“tear gas”) and of herbicides in Indochina, signaled the broadening of PSR’s agenda from single-issue concern with the testing and use of nuclear weapons to concern with the medical consequences of other weapons of mass destruction. This broadening was in part based on the view, expressed by some nations that did not possess nuclear weapons, that chemical and biological (CB) weapons could be used as a “deterrent” against the use of nuclear weapons. The article concluded that physicians had a responsibility to be concerned about CB weapons as well as nuclear weapons and to work to ensure that all these indiscriminate weapons

were never used again.

Over the three decades that have elapsed since the publication of that article, CB weapons, like nuclear weapons, have continued to pose a threat to the health of the people of the world. Development, production, stockpiling, and use of biological weapons were outlawed by the Biological Weapons Convention (BWC) of 1972, in part due to the efforts of NGOs and grassroots groups including PSR. Unfortunately the enforcement provisions of the BWC are weak and there are no effective covenantal guarantees against the preparation or use of these weapons by military forces or by terrorist groups.

Following the Gulf War, for example, UN inspectors uncovered incontrovertible evidence that Iraq had prepared biological weapons for military use [2,3]. There has been no clear evidence that biological weapons have actually been used since World War II, but the threats of production and use of biological weapons continue. Efforts to strengthen the BWC over the years since its entry into force in 1975 have been largely unsuccessful. An entire issue of the *Journal of the American Medical Association* was devoted to this issue to mark the occasion of the 52nd anniversary of the bombing of Hiroshima [4].

Provisions of the CWC

Chemical weapons, on the other hand, have indeed been used since World War II, most recently by military forces employing mustard gas and nerve agents in the Iran-Iraq War [5] and by a terrorist group in

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Japan that released sarin, a lethal nerve agent, in the Tokyo subway [6,7]. PSR and the International Physicians for the Prevention of Nuclear War (IPPNW, which had been founded in 1980), joined other groups in working for the adoption of a Chemical Weapons Convention (CWC). In January 1992 the CWC was opened in Paris for signature and was promptly signed by the United States. Five years later, on April 24, 1997, the U.S. Senate ratified the CWC and on April 29, 1997 the CWC, having been ratified by more than the required 65 nations, entered into force.

The provisions of the CWC include:

β a ban on the development, production, acquisition, stockpiling, transfer, and use of chemical weapons;

β elimination of all chemical weapons and their production facilities by 2007 (U.S. military forces are already obligated by U.S. law to do so by 2004);

β and creation of an Organization for the Prohibition of Chemical Weapons (OPCW) in the Hague to conduct routine and unannounced inspections of companies using precursor chemicals covered by the treaty.

Remaining Tasks: Universal Ratification and Enforcement

Now that the CWC has entered into force, a number of tasks remain:

1. The U.S. President and those members of the U.S. Senate who voted to ratify the CWC should be commended for doing the right thing. At the same time the U.S. government must be urged to support fully the activities of the OPCW. All relevant U.S. agencies should provide the financial, technical, and administrative assistance necessary to implement the CWC.

2. Although 102 nations, as of November 1997, had ratified the CWC, the remaining nations of the world have not yet done so. The lower house of the Russian Parliament approved the CWC by a vote of 288 to 75 on October 31, 1997 [8], but at the time of publication, the treaty still awaited approval by the upper house of the Russian Parliament, the Federation Council. In addition, Iraq, Libya, and Syria—nations that are believed to have chemical weapons programs—have not yet even signed the treaty. We must work to ensure that all nations sign, ratify, and



Figure 1. U.S. chemical weapons storage sites as of January 1996; some reductions will have taken place; amounts shown in tons (total >30,000).

observe the CWC.

3. Since it is clear that the disposal of chemical weapons required by the CWC may create health and environmental hazards [9,10,11], the treaty must be implemented in a manner that protects health and the environment. Russia, for example, is believed to have 40,000 metric tons of chemical weapons in its stockpiles—the world’s largest supply. The U.S. has 30,000 metric tons, the world’s second largest stockpile [12] (Figure 1). As the map shows, stockpiles are located in sites across the entire U.S. The 30,000 tons of stored weapons include more than three million separate items, including rockets, mines, bombs, spray tanks, and mortar and artillery shells, but not including binary weapons in which precursor chemicals are mixed to create an active agent only after firing. The chemical agents stockpiled include Lewisite, three forms of mustard agents, and four forms of nerve agents.

The U.S. had planned to use incineration for “demilitarization” of its chemical weapons and this method has actually been used at Johnston Island in the Pacific to demilitarize nerve agents shipped there from Okinawa and from NATO forces in

Europe. Facilities have been constructed for incineration of stockpiles of chemical weapons at sites in the U.S. Russia, on the other hand, plans to use chemical neutralization to dispose of its chemical weapons.

There remains considerable debate about the safety of existing and proposed methods of disposal. Incineration leads to the decomposition of the chemical agents into small particles, which are released into the atmosphere through tall smokestacks. Critics contend that the concentration of products of incineration that are released into the atmosphere, which can include dioxins, may be high enough to cause toxic effects. The proponents of chemical neutralization in Russia contend that this method would provide a safer means of disposal, but chemical neutralization leads to a complex organic "soup" that must be mixed with bitumin, a tar-like substance, before final disposal in landfills [13]. Opposition to the incineration method at U.S. weapons sites in Newport, Indiana and Aberdeen, Maryland has led to the development of alternative chemical methods of disposal. Scientific and political opposition to the use of these methods must be resolved quickly if the U.S., Russia, and other countries are to proceed with timely disposal to meet the deadlines imposed by the CWC.

4. The most important lesson to be learned, and to be widely taught, is that the development and production of weapons, and their disposal, may be extremely dangerous to health and to the environment even if the weapons are never used in war. Health professionals have a special responsibility not only to make sure that these weapons are never used but also that they are never produced.

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Hague (<http://www.opcw.org>).

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