

Weapons of Mass Destruction

Victor W Sidel, Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, NY, USA
Barry S Levy, Tufts University School of Medicine, Boston, MA, USA

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Introduction

Weapons of mass destruction (WMD) is a term commonly used to refer to nuclear, chemical, and biological weapons (BW), as the term was used in the report prepared by the [Weapons of Mass Destruction Commission \(2006\)](#), but the precise meaning of the term is unclear. There is no treaty or customary international law that contains an authoritative definition. Instead, international law has generally been applied to specific categories of weapons and not to WMD as a whole. Many analysts believe the term is too broad while others see it as too narrow. Too broad, because the inclusion of chemical and biological weapons within the term has been used by the United States and other nuclear-weapons states, some experts believe, to draw attention away from the especially devastating effects of nuclear weapons and to justify use of nuclear weapons against nation-states if they were to use chemical or biological weapons. Too narrow, because other weapons – radiologic weapons, antipersonnel land mines, and explosives or incendiaries used for ‘carpet bombing’ – should, other experts argue, be included among WMD.

Definitions of WMD

The U.S. Department of Defense refers to WMD as follows:

Weapons that are capable of a high order of destruction and/or of being used in such a manner as to destroy large numbers of people. Weapons of mass destruction can be high explosives or nuclear, biological, chemical, and radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon ([Chairman of the Joint Chiefs of Staff, 2006](#)).

The U.S. Federal Bureau of Investigation also includes ‘conventional weapons’ as potential WMD: “A weapon crosses the WMD threshold when the consequences of its release overwhelm local responders” ([Federal Bureau of Investigation, 1999](#)).

Some experts consider only nuclear weapons to be true weapons of mass destruction because “only nuclear weapons are completely indiscriminate by their explosive power, heat radiation and radioactivity, and only they should therefore be called a weapon of mass destruction” ([Harigel, 1998](#)). They prefer to call chemical and biological weapons ‘weapons of terror’ when aimed against civilians and ‘weapons of intimidation’ when used against military personnel. Former U.S. Deputy Secretary of Defense Paul Wolfowitz used the term ‘weapons of mass terror,’ apparently also recognizing the distinction between the psychological and the physical effects of many weapons currently falling into the WMD category.

An additional condition often implicitly applied to WMD is that the use of the weapons must be strategic. In other words, the use would be designed to “have consequences far outweighing the size and effectiveness of the weapons themselves” ([Evans, 2004](#)). This view of the strategic nature of WMD use

also defines their function in military doctrines of total war as targeting the means a country uses to support and supply its war effort, specifically its population, industry, and natural resources.

The alleged presence of WMD in Iraq was used to justify the U.S. and UK ‘preemptive strike’ against Iraq in 2003. Although Iraq had used chemical weapons (CW) in the past, no stockpiles of WMD were found before or after the invasion. Nonetheless, allegations of possession of nuclear weapons or other WMD or of capability to develop or produce WMD have been used by the United States, in particular, to justify strikes against nation-states, particularly those termed by its administration as ‘rogue states.’ Opponents of this potential rationale for an attack by the United States note that the United States is a nation-state that possesses a large stockpile of nuclear arms and is the only nation that has ever used nuclear weapons.

Other related terms, such as ‘indiscriminate weapons’ and ‘genocidal weapons,’ describe the ways WMD may be used.

Indiscriminate Weapons

International law prohibits the use of indiscriminate weapons, but the definition is not precise. The balloons carrying incendiary bombs launched by the Japanese into the jet stream toward the United States in 1945 were termed indiscriminate weapons. The Japanese government hoped the bombs would cause forest fires in the western United States, but the balloons could not be controlled enough to fulfill even this function. The V-2 rockets used by Germany against England near the end of World War II were termed indiscriminate weapons because they could not be directed at any target smaller than an entire city. After the 1991 Gulf War, the U.S. Department of Defense reported to Congress that the SCUD missiles used by Iraq against Israel (which were not much more accurate than the V-2) were indiscriminate and that their use constituted a war crime.

A weapon should not be termed ‘indiscriminate’ merely because it is highly destructive. Nuclear weapons, for example, are not indiscriminate in the sense that they cannot be precisely aimed. They can be effectively directed against, and can destroy, military objectives. The legal issues raised by nuclear weapons are whether they will cause civilian casualties and environmental damage disproportionate to the military targets they destroy.

Genocidal Weapons

The term ‘genocide’ has been used in many ways. It is defined by Article 2 of the Convention on the Prevention and Punishment of the Crime of Genocide (2003) as follows:

Any of the following acts committed with intent to destroy, in whole or in part, a national, ethnic, racial or religious group, as such: killing members of the group; causing serious bodily or mental harm to members of the group; deliberately inflicting on the group conditions of life, calculated to bring about its physical destruction in whole or in part; imposing measures

intended to prevent births within the group; and forcibly transferring children of the group to another group.

Widely accepted examples of genocide include the 'Holocaust,' the attempt by the Nazis to kill those they defined as members of the 'Jewish race,' and the massacres of the Tutsi people of Rwanda and the people of Darfur. Many types of weapons, from machetes, knives, and clubs to the chemical agent Xylon B, have been used in the practice of genocide (Beckerman, 2006).

Weapons Included among WMD

Nuclear Weapons

Eight countries have declared they possess nuclear weapons and are known or have claimed to have tested a nuclear weapon: China, France, India, Pakistan, Russia, the United Kingdom, the United States of America, and North Korea. Israel is considered by most analysts to have approximately 100 nuclear weapons, but it maintains an official policy of nuclear ambiguity, neither denying nor confirming its nuclear status (see Table 1). Iran has produced fissile materials that could be used in making nuclear weapons, but has not, as of this date, produced any nuclear weapons. South Africa developed a small nuclear arsenal in the 1980s but disassembled it in the early 1990s, making it the only country to have fully given up an independently developed nuclear weapons arsenal. Belarus, Kazakhstan, and Ukraine inherited stockpiles of nuclear arms following the breakup of the Soviet Union but relinquished them to the Russian Federation. Countries with access to nuclear weapons through nuclear sharing agreements include Belgium, Germany, Italy, the Netherlands, and Turkey. The People's Democratic Republic of Korea (North Korea) has apparently developed and tested several nuclear weapons.

The first nuclear weapons, based on nuclear fission, were detonated in 1945. In the 1950s, the United States and then the Soviet Union detonated thermonuclear, or 'hydrogen,' bombs based on nuclear fusion (Nathan et al., 1962; Sidel et al., 1962). Overall, there exist today approximately 20 000 nuclear warheads. Many of these warheads each have an explosive force several 100 times that of the bombs dropped on Hiroshima and Nagasaki in 1945. This force is equivalent to that of 8×10^9 ton of TNT, approximately 1.5 ton for every human on the planet. The historic high in

explosive capacity of nuclear weapons stockpiles worldwide was reached in 1960 with an explosive capacity equivalent to 20 000 megatons (20×10^9 ton, or 40×10^{12} lb) of TNT, equivalent to that of 1.4 million of the nuclear bombs dropped on Hiroshima. In the United States in 1967, the nuclear stockpile had reached approximately 32 000 nuclear warheads of 30 different types. In 2011, the U.S. stockpile was about 9400 warheads. (Sutton and Gould, 2012).

The detonation of nuclear bombs over Hiroshima and Nagasaki in August 1945 during World War II led to the immediate deaths of approximately 200 000 people, primarily civilians, as well as lasting injury and later death of many others and massive devastation and widespread radioactive contamination of the environment. The impact of a nuclear war on biological and ecological systems would be devastating, possibly bringing about a nuclear winter; "nuclear war is not survivable in any humane or civilized sense." (Geiger and Leaning, 1987) In addition to the potential for the use of nuclear weapons by national armed forces, there is an increasing threat of their use by individuals and groups.

From 1945 to 1990, the United States produced approximately 70 000 nuclear weapons, and other nations also produced many nuclear weapons. Production of nuclear weapons has led to major environmental contamination. For example, the area around Chelyabinsk in Russia has been heavily contaminated with radioactive materials from the nuclear-weapons production facility in that area. The level of ambient radiation in and near the Techa River in the area has been documented as high as 28 times the normal background radiation level. As another example, leakage of radioactive materials from storage of wastes from nuclear weapons production at Hanford, along the Columbia River in Washington state, has led to extensive radioactive contamination.

Open-air testing of nuclear weapons by the United States, the Soviet Union, and other countries has also led to environmental contamination, with increased rates of leukemia and other cancers among populations who were downwind from these tests (Levy and Sidel, 2005). Thyroid cancer in children, caused by exposure to iodine-131, a radioactive isotope of iodine produced by the testing, has been documented by the U.S. National Cancer Institute (Institute of Medicine and National Research Council, 1999).

The dismantling and disposal of nuclear weapons have also led to environmental contamination. The primary site for the disassembly of U.S. nuclear weapons is the Pantex Plant, located 27.4 km (17 miles) northeast of Amarillo, in the Texas panhandle. Overall, the United States has dismantled about 60 000 nuclear warheads since the 1940s; during the 1990s, 11 751 warheads were dismantled. More than 12 000 plutonium pits (hollow shells of plutonium encased in steel or other metal, essential components of nuclear weapons) are stored in containers at Pantex. Plutonium, an element first produced in the Manhattan Project in 1942, has a half-life of 24 000 years.

In 1996 the International Court of Justice provided an advisory opinion regarding the use and threat of use of nuclear weapons. The statement is an authoritative legal pronouncement but not legally binding. It states that any threat of the use of force, or the use of force, by means of nuclear weapons that is contrary to Article 2, paragraph 4, of the United Nations

Table 1 Status of World Nuclear Forces 2015

Country	Total Inventory
Russia	7 500
United States	7 200
France	300
China	250
United Kingdom	215
Israel	80
Pakistan	100-120
India	90-110
North Korea	<10
Total	~15 700

Charter or that fails to meet all the requirements of Article 51 might be unlawful.

Despite warnings that the continued production of nuclear weapons is illegal under international law, the agreement between Russia and the United States to limit to nuclear weapons stockpiles, and the promise by President Barack Obama that the United States would not proceed with strengthening its nuclear forces, evidence for continued production of nuclear weapons has emerged in a report from the Congressional Budget Office, entitled "Projected Costs of U.S. Nuclear Forces, 2014 to 2023."

Chemical Weapons

CW are designed to produce direct chemical injury to their targets, in contrast to explosive or incendiary weapons, which produce their effect through blast or heat. Although nations signing the 1899 Hague Declaration promised not to use CW, during World War I these weapons, including, in order of use, tear gas, chlorine gas, phosgene, and mustard gas, were employed. Overall, 125 000 ton of CW were used during World War I, resulting in 1.3 million casualties. One-quarter of all casualties in the American Expeditionary Force in France were caused by them (Harris and Paxman, 1982).

In 1925, 28 nations negotiated the Geneva Protocol for the "prohibition of the use in war of asphyxiating poisonous or other gases and of all analogous liquids, materials or devices and of bacteriological methods of warfare" (Geneva Protocol, 1990). In fact, however, the Protocol prohibited only the use, not the development, production, testing, or stockpiling, of these weapons. Furthermore, many of the nations ratifying the Protocol reserved the right to use such weapons in retaliation, and the Protocol became in effect a 'no first use' treaty without verification or enforcement provisions. The United States was one of the initial signers, but the U.S. Senate did not ratify the treaty until 1975.

Despite the Geneva Protocol, use of CW continued. Italy used mustard gas during its invasion of Abyssinia (Ethiopia), and Japan used mustard and tear gases in its invasion of China. Germany, with its excellent dye and pesticide industries, developed acetylcholinesterase inhibitors known as nerve gases, and the United States and Britain stockpiled CW during World War II. Transportation and storage accidents, such as the bombing by German bombers of a U.S. freighter with a cargo of mustard gas docked at Bari in Italy, caused casualties, but there was no known direct military use of CW. Following World War II, CW were used by Egypt in Yemen, mustard and nerve gases were used in the Iran-Iraq War, and Iraq used CW against Kurdish villages in its own territory. CW stockpiles and production facilities in Iraq were ordered destroyed by the United Nations following the 1991 Persian Gulf War. The United States and Russia are known to maintain CW stockpiles, and a number of other countries have either stockpiles or facilities for rapid CW production.

During the Vietnam War, the United States military used defoliants on mangrove forests and other vegetation, which not only defoliated and killed trees and other plants but may also have led to excessive numbers of birth defects and cases of cancer among nearby residents in Vietnam. In addition, development and production of conventional weapons involve

the use of many chemicals that are toxic and can contaminate the environment. Furthermore, there is now a plausible threat of individuals or nonstate agents using CW. A Japanese cult, Aum Shinrikyo, used sarin in the subway system of two Japanese cities in the mid-1990s, accounting for the deaths of 19 people and injuries to thousands. In 2013, chemical weapons were used by the Assad regime in Syria, including an attack in August 2013 that killed, according to the U.S. government, 1429 people and injured thousands of others.

Troops can be protected against these weapons for limited periods by the use of gas masks and impenetrable garments. Such protective gear, however, reduces the efficiency of troops by as much as 50% and damages morale, so use or threat of use of CW may continue to be considered effective against troops. Civilian populations, on the other hand, cannot be adequately protected. Israel, for example, provides every civilian in the country with a gas mask and a self-injectable syringe filled with atropine, a temporary antidote to nerve gas. However, this limited protection is inadequate against weapons such as mustard gas that attack the skin, or against longer-term exposure to nerve gas. Furthermore, poorly trained civilians are likely to injure themselves with equipment like self-injectable syringes.

Production of CW has been associated with serious accidents to workers and with high levels of pollution in the production sites and nearby communities. Tests of mustard gas, nerve agents, and psychochemicals, including lysergic acid diethylamide, during and after World War II involved thousands of military personnel, many of whom subsequently claimed disabilities from the exposure. Records of participation and of effects are so poor that only a small fraction of those who participated can be identified. The potential for exposure exists, not only for military and civilian populations who may be exposed during the use of CW in wartime, but also for workers involved in the development, production, transport, and storage of these weapons and for community residents living near facilities where these weapons are developed, produced, transported, and stored. In addition, disposal of these weapons, including their disassembly and incineration, can be hazardous. Even destruction of the weapons is dangerous, since toxic ash is produced by their incineration.

The Chemical Weapons Convention (CWC), which entered into effect in 1997, prohibits all development, production, acquisition, stockpiling, transfer, and use of CW. It requires each state party to destroy its CW and CW production facilities, as well as any CW it may have abandoned on the territory of another state party. The verification provisions of the CWC affect not only the military sector but also the civilian chemical industry worldwide through certain restrictions and obligations regarding the production, processing, and consumption of chemicals that are considered relevant to the objectives of the convention. These provisions are to be verified through a combination of reporting requirements, routine onsite inspection of declared sites, and short-notice challenge inspections. The Organization for the Prohibition of Chemical Weapons (OPCW) in The Hague, established by the CWC, ensures the implementation of the provisions of the CWC. The disposal of CW required by the CWC has raised controversy about the safety of two different methods of disposal: incineration and chemical neutralization. The controversy

about safety and protection of the environment has delayed completion of the disposal by the date required by the CWC (Spanjaard and Khabib, 2003).

In the 1960s and 1970s, the United States used both tear gas and herbicides in Vietnam. Although most nations that are parties to the Geneva Protocol considered tear gas and herbicides to be CW, and thus prohibited under the provisions of the Protocol, the United States until recently rejected that interpretation. Many countries use tear gas on a regular basis to quell civil disorders. The signatories to the CWC have agreed not to use riot control agents or herbicides as weapons of war.

Biological Weapons

Biological weapons (BW) depend on the ability of microorganisms to infect and multiply in the attacked organism. In this they differ from toxins, which, as biological products used as chemicals, are covered under CW as well as BW treaties. BW are very hard to defend against and are not as controllable or predictable in their use as are CW.

The effects of BW were officially summarized as follows by a U.S. government agency in 1959:

Biological warfare is the intentional use of living organisms or their toxic products to cause death, disability, or damage in man, animals, or plants. The target is man, either by causing sickness or death or through limitation of his food supplies or other agricultural resources. ... Biological warfare has been aptly described as public health in reverse. (Department of Health, Education, and Welfare, 1959).

During World War I, Germany is alleged to have used the equine disease glanders against the cavalries of Eastern European countries. During World War II, according to testimony at the Nuremberg trials, prisoners in German concentration camps were infected during tests of BW. Great Britain and the United States, fearing the Germans would use BW in World War II, developed their own. Gruinard Island, off the coast of Scotland, was contaminated by a test use of anthrax spores by the United Kingdom and the United States; the island remained uninhabitable for decades. The United States developed anthrax spores, botulism toxin, and other agents as BW but did not use them. In the 1930s, Japanese troops dropped rice and wheat mixed with plague-carrying fleas from planes, resulting in plague in areas of China that had been free of it previously. During World War II, Japanese laboratories conducted extensive experiments on prisoners of war by means of a wide variety of organisms selected for possible use as BW, including anthrax, plague, gas gangrene, encephalitis, typhus, typhoid, hemorrhagic fever, cholera, smallpox, and tularemia. Unlike the Soviet Union, which in 1949 prosecuted 12 of those involved in this work, the United States never prosecuted any of the participants.

After World War II, development of BW continued. None of the numerous allegations of BW use have been substantiated (or even fully investigated), but it is known that extensive BW testing has been done. In the 1950s and 1960s, for example, the University of Utah conducted secret, large-scale field tests of BW, including tularemia, Rocky Mountain spotted fever, plague, and Q fever, at the U.S. Army Dugway Proving Ground in western Utah. In 1950 U.S. Navy ships released as simulants (materials believed to be nonpathogenic

that mimic the spread of BW) large quantities of bacteria in the San Francisco Bay area to test the efficiency of their dispersal. Some analysts attributed subsequent infections and deaths to one of these organisms. During the 1950s and 1960s, the United States conducted 239 top-secret, open-air disseminations of simulants, involving such areas as the New York City subways and Washington National Airport. The U.S. military developed a large infrastructure of laboratories, test facilities, and production plants related to BW. By the end of the 1960s, the United States had stockpiles of at least 10 different biological and toxin weapons. In 1979, the accidental release of anthrax spores near Sverdlovsk in the Soviet Union resulted in at least 77 cases of inhalation anthrax and at least 66 deaths (Guillemin, 2001). In 2001, an anthrax epidemic occurred when letters that were contaminated with anthrax spores were mailed to several U.S. senators and media representatives. There were 23 cases, 5 of which were fatal (Brachman, 2012).

In 1969 the Nixon Administration, with the concurrence of the Defense Department, which declared that BW lacked 'military usefulness,' unconditionally renounced U.S. development, production, stockpiling, and use of BW and announced that the United States would unilaterally dismantle its BW program. In 1973 the Soviet Union, which had urged a more comprehensive treaty, including restrictions on CW, ended its opposition to a separate BW treaty. The United States, the Soviet Union, and other nations negotiated the Convention on the Prohibition of the Development, Prevention and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (BWC). The BWC prohibits, except for "prophylactic, protective and other peaceful purposes," the development or acquisition of biological agents or toxins, as well as weapons carrying them and means of their production, stockpiling, transfer, or delivery. The U.S. Senate ratified the BWC in 1975, the same year it ratified the Geneva Protocol of 1925. As of February 2014, 155 nations had ratified the BWC, and an additional 16 nations had signed but not yet ratified it.

Invoking the specter of possible new BW and unproven allegations of aggressive BW programs in other countries, the Reagan administration initiated intensive efforts to conduct 'defensive research,' permitted under the BWC. The budget for the U.S. Army Biological Defense Research Program (BDRP), which sponsors programs in a wide variety of academic, commercial, and government laboratories, increased dramatically during the 1980s. Much of this research work is medical in nature, including the development of immunizations and of treatments against organisms that might be used as BW.

While research and development of new BW are outlawed by the BWC, it is possible that it will still occur. Novel dangers lie in new genetic technologies, which permit development of genetically altered organisms not known in nature. Stable, tailor-made organisms used as BW could travel long distances and still be infectious, rapidly infiltrate a population, cause debilitating effects very quickly, and be resistant to antibiotic treatment.

Preparedness for terrorist attacks with biological weapons has greatly improved in the United States since the anthrax epidemic and the attacks on the World Trade Center and the Pentagon in 2001. The CDC continues to provide updated information related to bioterrorism preparedness on its

website (see [Relevant Website](#)). A recently published article provides up-to-date information on the clinical management of conditions that may be related to bioterrorism. (Adalja et al., 2015).

Radiologic Weapons

'Dirty bombs,' consisting of conventional explosive devices mixed with radioactive materials, or attacks on nuclear power plants with explosive weapons could widely scatter highly radioactive materials. Another example of material that some have termed a 'radiologic weapon' is depleted uranium (DU), uranium from which the uranium isotope usable for nuclear weapons or as fuel rods for nuclear power plants has been removed. DU, which is both radioactive and toxic, is used militarily as a component or a casing for armor-penetrating shells. An extremely dense material, uranium used as a casing increases the ability of the shell to penetrate the armor of tanks; uranium is also pyrophoric and bursts into flame on impact. DU-encased shells were used by the United States during the Gulf War, the Iraq War, and the war in Kosovo; similar shells were used by the United Kingdom in the Iraq War. DU, which is both radioactive and extremely toxic, has been demonstrated to cause contamination of the soil and groundwater. Use of DU is considered legal by the nations using it, but its use is considered by other nations to be illegal under the Geneva Conventions and other international treaties.

Land Mines

As of October 2014, 56 countries and four other areas were confirmed to be mine-affected and an additional six countries had either suspected or residual mine contamination; however, massive antipersonnel mine contamination (more than 100 km²) was believed to exist only in Afghanistan, Bosnia and Herzegovina, Cambodia, Turkey, and probably Iraq. These land mines have been termed 'weapons of mass destruction, one person at a time.' They have often been placed in rural areas, posing a threat to residents of these areas and often disrupting farming and other activities. Civilians are the most likely to be injured or killed by land mines, which continue to cause approximately 3000 deaths and injuries annually (International Campaign to Ban Landmines, 2014). Since the entry into force of the Anti-Personnel Landmine Convention in 1997, production of land mines has been markedly reduced, and millions of those that had been implanted in the ground have been removed. Many of the mines are still buried, and additional resources will be required to continue unearthing and destroying them, tasks that pose inherent risks to demining personnel (Stover et al., 2000).

Explosives and Incendiary Weapons

Massive use of explosive and incendiary weapons, as in 'carpet bombing,' have caused them to be viewed as WMD (Reich and Sidel, 1967). Furthermore, the fuel-laden airplanes used in the attack on the World Trade Center and the Pentagon on 11 September 2001, have been considered WMD.

Small Arms and Light Weapons

In the Millennium Report of the UN Secretary-General to the General Assembly, Kofi Annan stated that small arms could be described as WMD because the fatalities they produce "dwarf that of all other weapons systems – and in most years greatly exceed the toll of the atomic bombs that devastated Hiroshima and Nagasaki."

How Can Use of WMD Be Prevented?

There are several ways in which health professionals can promote the control, and ultimate elimination, of weapons of mass destruction. First, health professionals can educate themselves, their colleagues, and their communities about the dangers of these weapons and what can be done to control and eliminate them. Second, health professionals can advocate for stronger domestic and international policies to control and eliminate these weapons. For example, health professionals, individually and through their professional organizations, can develop and support campaigns to influence policy makers to strengthen the CWC and the BWC. And, perhaps most importantly, health professionals can work in a number of ways to abolish nuclear weapons (Forrow and Sidel, 1998; Levy and Sidel, 2008). More information can be obtained from Physicians for Social Responsibility, the International Physicians for the Prevention of Nuclear War, and the International Campaign to Abolish Nuclear Weapons.

Several approaches to controlling nuclear weapons over the past several decades are listed below.

Unenforceable Well-Meaning Resolutions

UN Resolution 1540, adopted by the UN Security Council on 28 April 2004, recognizes the threat posed to international peace and security by nuclear, chemical, and biological weapons, as well as their means of delivery. It called for greater effort by nations to limit proliferation of such weapons.

Reliance on Monopoly

The United States from 1945 to 1949 relied on its monopoly of nuclear weapons and refused to internationalize its control of them. The Soviet Union broke that monopoly in 1949.

Reliance on Deterrence

From the 1950s to the 1990s the United States and Soviet Union relied on 'Mutually Assured Destruction' (MAD).

Reliance on Treaties

The Partial Test Ban Treaty (PTBT), Outer Space Treaty, Nuclear Non-Proliferation Treaty (NPT), Seabed Arms Control Treaty, Biological and Toxin Weapons Convention (BWC), and Chemical Weapons Convention (CWC) covered one or more of the WMD. Not all nation-states signed and ratified them and most had no provision for enforcement.

Reliance on Antiballistic Missiles (ABMs)

The United States unilaterally withdrew from the Anti-Ballistic Missile Treaty in 2001 and has been attempting, so far unsuccessfully, to construct a system to protect the United States from ballistic missiles.

Reliance on Nuclear Disarmament

Article VI of the NPT calls for nuclear and general disarmament but, despite the unanimous 1996 advisory opinion of the International Court of Justice that a 'good faith effort' was required, little progress has been made.

A Model Nuclear Weapons Convention (MNWC) has been drafted and sent to the United Nations, but there has been little progress.

The Role of Public Health

The role of public health in contributing to the control of WMD is extremely important. The World Health Assembly declared in 1981 that "the role of health workers in promoting and preserving peace is a significant factor for achieving health for all" ([World Health Assembly, 1985](#)). But this call to health workers to play a role in promoting and preserving peace is meaningless unless combined with specific actions to control the proliferation and prevent the use of WMD.

See also: Violence/Intentional Injuries – Epidemiology and Overview; Violence/Intentional Injuries – Prevention and Control.

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Relevant Website

<http://www.bt.cdc.gov/bioterrorism/> – CDC, Bioterrorism - Emergency Preparedness and Response.