

Chemical and Biological Weapons Proliferation at a Glance

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The fall 2001 anthrax attacks in the United States and the discovery that the al Qaeda terrorist network has pursued the development and acquisition of weapons of mass destruction have recently focused attention on chemical and biological weapons proliferation. At least 13 countries are currently pursuing biological weapons and at least 16 states have chemical weapons programs, according to Secretary of Defense Donald Rumsfeld.

Drawing on publicly available U.S. intelligence assessments (except where noted), the following chart details countries possessing or developing chemical or biological weapons and, where possible, their stockpiles and potential delivery systems. Most of

the states listed below have ballistic missile capabilities. However, ballistic missiles are only included as a potential chemical or biological weapons delivery system if U.S. intelligence reports have explicitly indicated that they could be used in such a capacity.

The chart also details whether each state has signed, ratified, or acceded to relevant international treaties: the 1972 Biological Weapons Convention (BWC), which bans offensive biological weapons development and possession; the 1993 Chemical Weapons Convention (CWC), which outlaws chemical weapons development, possession, and use; and the 1925 Geneva Protocol, which forbids the use of chemical and biological weapons in war.

COUNTRY	BIOLOGICAL WEAPONS CAPABILITIES	CHEMICAL WEAPONS CAPABILITIES	TREATY STATUS ¹
China	Possibly maintains some elements of the offensive biological weapons program it had before joining the BWC. Existing infrastructure would allow it to develop, produce, and weaponize agents. Potential delivery systems include cruise missiles, fighters, bombers, helicopters, artillery, rockets, mortars, and sprayers.	Has an advanced chemical weapons program, including a variety of agents. Researching more advanced agents. Delivery systems include artillery, rockets, mortars, landmines, aerial bombs, sprayers, and short- and medium-range ballistic missiles.	Geneva Protocol: Acceded 8/24/29. BWC: Acceded 11/15/84. CWC: Signed 1/13/93, ratified 4/25/97.
Cuba	Has at least a limited biological weapons research and development effort.	None.	Geneva Protocol: Acceded 6/24/66. BWC: Signed 4/12/72, ratified 4/21/76. CWC: Signed 1/13/93, ratified 4/29/97.
Egypt	Developed biological weapons agents by 1972, and there is no evidence suggesting it eliminated this capability.	Probably maintains a chemical weapons stockpile. ²	Geneva Protocol: Signed 6/17/25, ratified 12/6/28. BWC: Signed 4/10/72. CWC: Has not signed.
India	Has a biodefense research program. ³ Existing infrastructure suitable for researching and developing pathogens. Potential delivery systems include	Declared in June 1997 that it possessed a chemical weapons stockpile. Has begun to destroy its chemical weapons stockpile under the CWC. Its industry will retain the ability to produce agent	Geneva Protocol Signed 6/17/25, ratified 4/9/30. BWC: Signed 1/15/73,

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India <i>(continued from previous page)</i>	short-range, anti-ship cruise missiles; short-range, air-launched tactical missiles; fighter aircraft; artillery; and rockets.	precursors—chemicals that can be used in chemical weapons production. Same potential delivery systems as for biological weapons.	ratified 7/15/74. CWC: Signed 1/14/93, ratified 9/3/96.
Iran	Has probably produced and weaponized biological agents. Production and weaponization capability likely limited. Potential delivery vehicles include short-range cruise missiles; short-range, air-launched tactical missiles; fighter aircraft; artillery shells; and rockets.	Has a stockpile of chemical weapons. Previously known to have produced and stockpiled blister, blood, and choking agents and probably nerve agents. Seeking aid from Chinese and Russian entities to develop a more advanced, self-sufficient infrastructure. Delivery vehicles include artillery shells, mortars, rockets, and aerial bombs. Used chemical weapons during the Iran-Iraq War.	Geneva Protocol: Acceded 11/5/29. BWC: Signed 4/10/72, ratified 8/22/73. CWC: Signed 1/13/93, ratified 11/3/97.
Iraq	Possesses “an active and capable” biological weapons program, according to CIA Director George Tenet. Declared in 1995 that it had produced approximately 30,000 liters of bulk biological agents or filled munitions, including anthrax, botulinum toxins, and aflatoxins. Also admitted it had filled missile warheads and aerial bombs with agent and had deployed biological munitions during the Persian Gulf War. The United Nations believes Iraq had produced three to four times more agent or munitions than it declared. Iraq is also thought to have conducted research on other agents and toxins. Questions remain about the scope of Iraq’s program and what parts of the program Iraq has destroyed or currently retains. The United States strongly suspects Iraq has reconstituted its program since UN inspectors left Iraq in 1998 and is concerned that Baghdad is producing agents. Could be improving its agent research and development capabilities. Means of delivery may include short-range, anti-ship cruise missiles; short-range ballistic missiles; short-range, air-launched tactical missiles; fighter aircraft; helicopters; artillery; rockets; and unmanned aerial vehicles.	Had extensive program before the Persian Gulf War under which it produced and stockpiled mustard, tabun, sarin, and VX. Delivered chemical agents against Iranian forces during the Iran-Iraq War using aerial bombs, artillery, rocket launchers, tactical rockets, and helicopter-mounted sprayers. Also used chemical weapons against its own Kurdish population in 1988. Program was largely dismantled by United Nations weapons inspectors in the 1990s, but Iraq retains some chemical weapons and has begun reconstituting its chemical infrastructure since inspectors left the country in 1998. Could resume agent production within a few weeks or months but would need foreign assistance to completely restore its production capabilities to pre-Persian Gulf War levels. Same potential delivery systems as for biological weapons.	Geneva Protocol: Acceded 9/8/31. BWC: Signed 5/11/72, ratified 6/19/91. CWC: Has not signed.
Israel	Possibly has a biological weapons research effort. ⁴	Probably has a chemical weapons program.	Geneva Protocol: Acceded 2/20/69.

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Israel <i>(continued from previous page)</i>			BWC: Has not signed. CWC: Signed 1/13/93.
Libya	<p>Has a research and development program and may be able to produce small amounts of agent. Likely in need of foreign assistance to advance program further.</p> <p>Potential delivery vehicles include short-range, anti-ship cruise missiles; air-launched tactical missiles; fighter aircraft; bombers; artillery; helicopters; and rockets.</p>	<p>Produced mustard and nerve agent before 1990. Still has some elements of its chemical weapons program and is working to re-establish its chemical weapons capabilities, which had been limited by UN sanctions from 1992 to 1999. Is pursuing an indigenous production capability but is highly dependant on foreign suppliers.</p> <p>Attempted to use chemical weapons against Chadian troops in 1987. Same potential delivery systems as for biological weapons.</p>	<p>Geneva Protocol: Acceded 12/29/71.</p> <p>BWC: Acceded 1/19/82.</p> <p>CWC: Has not signed.</p>
North Korea	<p>Has developed and produced weaponized biological agents. May have biological weapons available for use.</p> <p>Potential means of delivery include short-range, anti-ship cruise missiles; bombers; rockets; mortars; sprayers; artillery; helicopters; and fighters.</p>	<p>Believed to possess sizable stockpile of chemical weapons, including nerve, blister, choking, and blood agents.</p> <p>Delivery vehicles include ballistic missiles, artillery, and aircraft.</p>	<p>Geneva Protocol: Acceded 1/4/89.</p> <p>BWC: Acceded 3/13/87.</p> <p>CWC: Has not signed.</p>
Pakistan	<p>Has ability to support limited biological weapons research and development effort.</p> <p>Potential delivery vehicles include short-range, anti-ship cruise missiles; short-range, air-launched tactical missiles; fighter aircraft; artillery; and rockets.</p>	<p>Has imported chemicals that it could use to make chemical weapons agent.</p> <p>Delivery vehicles could include missiles, artillery, and aerial bombs.</p>	<p>Geneva Protocol: Signed 4/15/60.</p> <p>BWC: Signed 4/10/72, ratified 9/25/74.</p> <p>CWC: Signed 1/13/93, ratified 10/28/97.</p>
Russia	<p>Despite having ratified the BWC in 1975, the Soviet Union maintained a large biological weapons effort. Russia publicly acknowledged this program in 1992 and said it had been halted.</p> <p>Agents weaponized included tularemia, typhus, Q fever, smallpox, plague, anthrax, Venezuelan equine encephalitis, glanders, brucellosis, and Marburg. Researched numerous other agents and toxins that can attack humans, plants, and livestock.⁵</p> <p>Currently has a defensive research program. Some elements of the Soviet program may remain intact and could support agent and delivery vehicle production. The United States has</p>	<p>Possesses the world's largest chemical weapons stockpile: 40,000 metric tons of chemical agent, including VX, sarin, soman, mustard, lewisite, mustard-lewisite mixtures, and phosgene.⁶</p> <p>The United States believes that Russia has not declared some of its chemical agents and weapons and notified Moscow in April 2002 that it could not certify that Russia was complying with the CWC.</p> <p>Has started destroying its chemical weapons under the CWC but is not expected to complete destruction until at least 2012.</p> <p>Reports indicate that Moscow has</p>	<p>Geneva Protocol: Acceded 4/5/28.</p> <p>BWC: Signed 4/10/72, ratified 3/26/75.</p> <p>CWC: Signed 1/13/93, ratified 11/5/97.</p>

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<p>Russia <i>(continued from previous page)</i></p>	<p>received unconfirmed reports of continued offensive activities.</p> <p>Washington has serious concerns about the status of the weapons program inherited from the Soviet Union and remaining weapons capabilities. In April 2002, the Bush administration notified Moscow that it could not certify that Russia was complying with the BWC.</p> <p>Potential delivery vehicles include fighter aircraft, artillery, rockets, helicopters, short-range ballistic missiles, and cruise missiles. The former Soviet program planned to deliver certain agents, such as smallpox, anthrax, and plague, by ICBM.</p>	<p>worked on a new generation of chemical agents called “novichoks,” which are allegedly designed to circumvent the CWC and evade Western methods to detect and protect against chemical weapons.</p> <p>Potential delivery vehicles include artillery, bombs, spray tanks, and short-range ballistic missiles.</p>	
<p>South Korea</p>	<p>None.</p>	<p>Possesses a chemical weapons stockpile and is destroying it under the CWC.</p>	<p>Geneva Protocol: Acceded 1/4/89.</p> <p>BWC: Signed 4/10/72, ratified 6/25/87.</p> <p>CWC: Signed 1/14/93, ratified 4/28/97.</p>
<p>Sudan</p>	<p>May be interested in developing a biological weapons program.</p>	<p>Is developing the ability to produce chemical weapons, possibly including VX. Has received Iraqi assistance.</p>	<p>Geneva Protocol: Acceded 12/17/80.</p> <p>BWC: Has not signed.</p> <p>CWC: Acceded 5/24/99.</p>
<p>Syria</p>	<p>Has a biological weapons program in the research and development stage and may be capable of producing a small amount of agent. No major weaponization effort is likely underway. Cannot manufacture significant numbers of weapons without major foreign assistance.</p> <p>Potential delivery vehicles include fighter aircraft; helicopters; artillery; short-range, anti-ship cruise missiles; short-range, air-launched tactical missiles; and rockets.</p>	<p>Possesses sarin, which it can deliver by aircraft or ballistic missile, and is working to develop VX. Key elements of its program rely on foreign sources.</p>	<p>Geneva Protocol: Acceded 12/17/68.</p> <p>BWC: Signed 4/14/72.</p> <p>CWC: Has not signed.</p>
<p>Taiwan</p>	<p>Has upgraded its biotechnology capabilities, but it is unclear whether it is conducting illicit activities.</p>	<p>May have some chemical weapons.³</p>	<p>Geneva Protocol: Has not acceded.</p> <p>Has pledged to adhere to the BWC and CWC.</p>

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United States	Unilaterally gave up its biological weapons program in 1969. Currently conducting research as part of its biodefense program that some say may violate the BWC.	Possesses about 31,000 tons of chemical weapons agent. Is currently destroying its stockpiles of mustard, sarin, VX, and blister agent under the CWC.	Geneva Protocol: Signed 6/17/25, ratified 4/10/75. BWC: Signed 4/10/72, ratified 3/26/75. CWC: Signed 1/13/93, ratified 4/25/97.
Federal Republic of Yugoslavia	None.	Possesses weaponized CS; suspected of having unweaponized mustard and sarin and, possibly, weaponized BZ. ⁸	Geneva Protocol: Signed 6/17/25, ratified 4/12/29. BWC: Signed 4/10/72, ratified 10/25/73. CWC: Acceded 4/20/00.

Sources: Defense Department, State Department, Central Intelligence Agency, Arms Control and Disarmament Agency, and the U.S. Army.

—Assisted by Andy Diamond and Ryan Scoville

NOTES

1. Based on data from the United Nations and the Organization for the Prohibition of Chemical Weapons.

2. Monterey Institute of International Studies, "Chemical and Biological Weapons: Possession and Programs Past and Present," <http://cns.miis.edu/research/cbw/possess.htm>.

3. Although the Biological Weapons Convention prohibits offensive biological weapons, it permits biodefense activities.

4. Monterey Institute of International Studies, "Chemical and Biological Weapons: Possession and Programs Past and Present," <http://cns.miis.edu/research/cbw/possess.htm>.

5. Ken Alibek, testimony before the Joint Economic Committee, May 20, 1998; Ken Alibek, *Biohazard*, (New York: Random House, 1999). Before defecting in 1992, Ken Alibek was first deputy director of the Biopreparat, the civilian arm of the Soviet Union's biological weapons program.

6. Russian government Resolution No. 510, July 5, 2001.

7. Monterey Institute of International Studies, "Chemical and Biological Weapons: Possession and Programs Past and Present," <http://cns.miis.edu/research/cbw/possess.htm>.

8. According to Pentagon officials cited in Judith Miller, "U.S. Officials Suspect Deadly Chemical Weapons in Yugoslav Army Arsenal," *The New York Times*, April 16, 1999, p. A11.

For more information, please see the Arms Control Association's Web site, www.armscontrol.org.