Chemical and Biological Weapons:
Multilateral Regimes and China's Compliance

Monika Chansoria

In a March 2014 report, the United Nations human rights investigators confirmed that chemical weapons were indeed used in Syria in 2013, which apparently came from the stockpiles of the Syrian military, whose chemical weapons stash reportedly included mustard gas. The report confirmed that the deadly nerve agent Sarin was used in three separate incidents: the Damascus suburb of al-Ghouta in August 2013, Khan al-Assal in March 2013 and Saraqeb near the northern town of Idlib in April 2013. While the Bashar al-Assad government and the Syrian opposition indict each other of using chemical weapons, which are strictly banned as per existing international law and convention, the incidents amount to being the deadliest chemical attacks the world has witnessed in almost a quarter of a century.

The debate over usage of chemical weapons in the recent Syrian crisis has opened up a Pandora's Box concerning the larger issue surrounding the dangers of chemical and biological weapons in modern day conflict. In this article, I put forth an analysis of China's capabilities vis-à-vis waging chemical and biological warfare and its compliance with

Dr **Monika Chansoria** is a Senior Fellow and head of the China-study project at the Centre for Land Warfare Studies, New Delhi.

multilateral regimes dedicated to the non-proliferation of chemical and biological weapons. There is no denying or debating that China, in fact, possesses the ability to develop chemical and biological weapons.

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While China has enacted, at least on paper, control lists consistent with export control regimes concerning proliferation of sensitive goods and technology, concerns continue to loom large about Chinese proliferation activities surrounding Weapons of Mass Destruction (WMD)-related technologies. More importantly, there is considerable ambiguity over the Chinese ability to fully control export of sensitive dual-use materials.

Chemical Weapons Convention

The modern use of chemical weapons began with World War I, when both sides to the conflict used poisonous gas to cause significant battlefield casualties. Such weapons consisted of well known commercial chemicals put into standard munitions such as grenades and artillery shells. Chlorine, phosgene (a choking agent) and mustard gas (which inflicts painful burns on the skin) were among the chemicals used. The results were indiscriminate and often devastating with nearly 100,000 deaths. Since World War I, chemical weapons have caused more than one million casualties globally. Resultantly, there was public outrage and the Geneva Protocol, which prohibited the use of chemical weapons in warfare, was signed in 1925. Although the Geneva Protocol was a much needed and welcome step, it had a number of significant shortcomings, including that it did not prohibit the development, production or stockpiling of chemical weapons. Besides, many states that ratified the protocol reserved the right to use prohibited weapons against

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states that were not party to the protocol or as retaliation in the event of chemical weapons being used against them.[1]

Later, during the Cold War years, development, manufacture and stockpiling of chemical weapons continued and by the decades of the 1970s and 1980s, there were nearly 25 states that were reportedly developing chemical weapons capabilities. Perhaps the most public cases since the end of World War II where chemical weapons were reportedly used were by Iraq in the 1980s against Iran.

After almost 12 years of negotiations, the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction [Chemical Weapons Convention (CWC)] was adopted by the Conference on Disarmament (CD) in Geneva on September 3, 1992. Allowing for stringent verification of compliance by state parties, the CWC opened for signature in January 1993 and eventually entered into force in April 1997—180 days after deposit of the 65th instrument of ratification, with the headquarters established in The Hague, in the Netherlands. It needs to be noted that the CWC is the first disarmament agreement negotiated within a multilateral framework that provides for the elimination of an entire category of WMD under universally applied international control.[2] In order to prepare for the entry-into-force of the CWC, a Preparatory Commission of the Organisation for the Prohibition of Chemical Weapons (OPCW) was established, with the responsibility to prepare detailed operation procedures and to put into place the necessary infrastructure for the permanent implementing agency provided for in the convention.[3]

The CWC prohibits the development, production, acquisition, stockpiling, retention, transfer or use of chemical weapons by states parties, which, in turn, must take the steps necessary to enforce that prohibition in respect of persons (natural or legal) within their jurisdiction. All states parties have agreed to chemically disarm by destroying any stockpiles of chemical weapons they may hold and any facilities which produced them, as well as any chemical weapons they abandoned on the territory of other states parties in the past. A unique feature of the CWC is its incorporation of the "challenge inspection", whereby any state party in doubt about another state party's compliance can request the Director-General to send an inspection team for "anytime, anywhere" inspections with no right of refusal.

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The preamble of the CWC lays out the objective of effective progress towards general and complete disarmament under international control, including the prohibition and elimination of all types of weapons of mass destruction. It branches out from the General Assembly of the United Nations when it condemned all actions contrary to the principles and objectives of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare—the Geneva Protocol of June 1925. The CWC prohibits the use of herbicides as a method of warfare.[4]

At the Third Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention held in April 2013, 122 states parties participated and reiterated the role of the CWC in enhancing international peace and security while ensuring the universality

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of the convention. The Third Review Conference focussed on the implementation of the provisions of the CWC relating to the destruction or conversion of chemical weapons production facilities; reiterated the obligation to destroy or dispose of old chemical weapons; and verification activities of the OPCW. The Review Conference recalled that the CWC continues to be a remarkable success and an example of effective multilateralism.[5]

China's Chemical Weapons Capabilities

China acceded to the Geneva Protocol in 1929 and after being named the People's Republic of China in 1949, it reaffirmed its commitment to the Geneva Protocol in July 1952. This protocol did not, however, prohibit the production or stockpiling of chemical weapons—a ban that was achieved only many decades later under the CWC in 1993 which China signed that very year, but ratified only in 1997. Essentially, almost no details of these programmes/capabilities have appeared in the open literature and Chinese secrecy and ambiguity remain unparalleled. If Chinese writings on chemical weapons are sparse, the case of information regarding its biological weapons is even worse. Although the Chinese government has declared past chemical weapons related activity to the OPCW in The Hague, this information has not been made public and remains strictly classified.

The Standing Committee of China's National People's Congress ratified the CWC on December 30, 1996. Previous dual-use chemical-related transfers to Iran's chemical weapons programme indicate that, at a minimum, China's chemical export controls are not operating effectively enough to ensure compliance with its CWC obligations. In March 1997, Israeli authorities reported the arrest of an Israeli businessman, Nahum Manbar, for allegedly selling Chinese chemical weapon components to

Iran. Earlier, in May 1997, pursuant to the Chemical and Biological Weapons Control and Warfare Elimination Act of 1991, the US government imposed trade sanctions on five Chinese individuals, two Chinese companies, and one Hong Kong company for knowingly and materially contributing to Iran's chemical weapons programme.[6]

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Although China admitted in 1997 that it had a small offensive chemical weapons programme that has now been dismantled, it declares that it is in compliance with the CWC. But the US had alleged in 2003 that China had an "advanced chemical weapons research and development programme." However, insufficient evidence has failed to confirm China's previous or current activities. China's involvement with chemical warfare preceded the founding of the People's Republic in 1949. With the advances in the modern chemical industry and the birth of organic chemistry in the late 19th century, it was probably inevitable that chemical weapons would appear on the battlefields of World War I. During the 1920s, Chinese warlords such as Zhao Hengti, Cao Kun, Feng Yuxiang, and Zhang Zuolin expressed interest in purchasing or enlisting European firms to help manufacture Chemical Weapon (CW) agents. Zhang Zuolin reportedly contracted with the German firm Witte for the construction of a chemical weapons production facility in Shenyang, and hired Russian and German chemical engineers.[7]

Paula Adamo DeSutter, former US Assistant Secretary of State for Verification, Compliance, and Implementation, stated in 2006, "We remain disappointed in the continuing proliferant behavior of certain Chinese entities… we remain deeply concerned about the Chinese government's commitment towards its non-proliferation obligations…" Testifying before the US-China Economic Security Review Commission,

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a Congress-sanctioned panel, DeSutter went on to state that Chinese involvement in biological weapons went against international laws. De Sutter averred, "We maintain reservations about China's current research activities and dual-use capabilities, which raise the possibility that sophisticated biological weapons and chemical weapons work could be underway."

While there is little doubt that China possessed chemical weapons in the past, the types and quantities of the agents remain unknown. In all likelihood, the Chinese military sought to develop the same compounds that Japan had used during its war-time invasion of China, including blister agents, such as mustard and lewisite. In a January 2001 report titled, *Proliferation: Threat and Response,* the US Department of Defence stated:

> Beijing is believed to have an advanced chemical warfare programme including research and development, production, and weaponization capabilities…While China claims it possesses no chemical agent inventory, it is believed to possess a moderate inventory of traditional agents… Even though China has ratified the CWC, made its declaration, and subjected its declared chemical weapons facilities to inspections, we believe that Beijing has not acknowledged the full extent of its chemical weapons programme.

China has an established system of chemical weapon defence, including a cadre of chemical defence specialists supplied with decontamination equipment, modest detection capabilities, and protective suits. However, Chinese chemical weapon defence material and methods are dated, bulky and best suited to defend against an unlikely land invasion from China's western and southern borders.[8] China has taken an active interest in

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binary chemical weapons which contain two relatively harmless chemicals that react during a munition's flight to the target to yield a lethal agent. China believes that binary munitions possess characteristics that are well suited for a people's war under modern conditions. This primarily refers to greater safety in production, storage, and delivery; extended shelf life; and capacity for "surprise and deception".[9] Moreover, a Chinese military source stated, "… [d] ue to the similarities with civilian uses for chemical industrial products, one can now sufficiently develop and produce chemical weapons on the sly. Truly a new type of chemical weapon, binary weapons will gradually follow a trend towards replacing unitary chemical munitions."[10] The drawbacks of binary weapons, as far as Chinese chemical defence specialists are concerned, are that the components only achieve a limited yield of nerve agent (the US 155 mm binary shell had a 70 percent yield), and the reaction between difluor and the alcohol components usually takes about eight to ten seconds to complete.[11]

Chemical Defence Doctrine

There is an emphasis on preparedness for chemical or nuclear warfare by means of special fortifications, improvised masks, and utilising reconnaissance to detect chemical weapons usage by the adversary. *Fanghua Xuebao* [Journal of Chemical Defence] elaborates on the response to an enemy that would use chemical weapons against China by stating:

> The best way is to destroy the enemy's chemical weapons capability or at least degrade it, causing the other side to be unable to carry out their offensive plan—known as aggressive defense to ensure one's

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survival. On the battlefield, after ascertaining the placement of enemy chemical weapons, including firing lines, command and control systems, and ordnance depots, every command level officer is to quickly and decisively destroy them by use of organized artillery, air power, and other assets.[12]

Importantly, the Academy of Chemical Defence (*Fanghua Yanjiuyuan*) in Beijing is charged with chemical defence training and offers a four-year curriculum and graduates some 4,000 commissioned chemical defence officers each year. Subsequently, these cadres are responsible for chemical weapons defence training throughout the Chinese People's Liberation Army (PLA). At the level of militia training, a military high school in Qingdao has demonstrated students' knowledge of civil defence, including dispersal of gases, first aid and radiological dosimetry. In 1993, a dangerous chemical fire in Shenzhen necessitated the expertise of a special "anti-chemical warfare medicine" unit.

Biological Weapons Convention

The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction was signed at London, Moscow and Washington on April 10, 1972, and China finally acceded to the Biological Weapons Convention (BWC) in 1984.

Destruction of chemical weapons stockpiles has been achieved through the CWC and the OPCW, however, the progress chart of the BWC has been rather slow primarily due to the lack of a formal verification mechanism. More specifically, in the case of China, the BWC verification protocol has been bogged down, in part because of policy differences

between China and the United States over the issue of export controls. The 1972 BWC bans "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," and "weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict." The potential means of delivery systems could be cruise missiles, fighters, bombers, helicopters, artillery, rockets, mortars and sprayers. In the case of China, it is very difficult to assess from open sources whether China possesses the technology for delivering biological weapons agents. However, a few sources state that modern Chinese cruise missiles can theoretically deliver both chemical and biological agents.

Chinese Compliance with BWC

China has stated that it remains in compliance with its BWC obligations and that it has never had an active biological weapons programme, denouncing such weapons. The earliest efforts at biological weapons defence by the PLA were anti-plague units formed in 1952 during the involvement of the Chinese People's Volunteer Army in Korea. The US maintains that China's biological weapons activities have been extensive. More significantly, a 1993 State Department *Compliance Report* alleged that these activities continued after China joined the BWC. Moreover, a 2010 report indicates that recent dual-use activities may, in fact, have breached the BWC. China's existing infrastructure provides it with capabilities that would allow it to develop, produce and weaponise agents.

Beijing has often cited figures to claim that during Japan's invasion of China, biological warfare was carried out by Japan in more than 20 provinces and cities in China, killing more than 200,000 Chinese people as a result of germ warfare between 1933 and 1945. However, Chinese authorities have failed to provide any substantive evidence to back these claims. It was reported that a Chinese biological weapons facility existed

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in Xinjiang province, not very far from the nuclear testing site at Lop Nor. In fact, an outbreak of hemorrhagic fever in the late 1980s at this facility, which was referenced later, could possibly have been the result of Chinese offensive biological weapons research.[13] A report later in 1994 described the PLA's Anti-Biological Warfare Unit.

> At one time, the public health division of the PLA General Department circulated a notice saying that there had been an outbreak of endemic hemorrhagic fever in a certain place. Its major means of infection were rats and their fleas.[14]

The US Department of Defence, in its report, *Proliferation: Threat and Response* maintains that "China continues to maintain some elements of an offensive biological warfare programme it is believed to have started in the 1950s… China is believed to possess an offensive biological warfare capability based on technology developed prior to its accession to the [BWC] in 1984." Further, China is believed to have conducted research on potential biological weapons agents, including causative agents of tularemia, Q fever, plague, anthrax and eastern equine encephalitis. Beijing is said to possess the technology to mass produce most traditional biological weapons agents, including causative agents of anthrax, tularemia and botulism.[15]

China's biological weapons defence doctrine emphasises ridding an affected area of infected insects and vermin, on the assumption that modern Armies would employ these crude methods of delivery. The PLA's "Anti-Biological Warfare Unit," stationed in northern China was reported about in the *Ming Pao Daily* with its official name being the

"Military Medical Research Institute of the Beijing Military Region" (*Junqu Junshi Yixue Yanjiusuo*). Specialised equipment has also been fielded to counter the biological weapons threat to the troops of Chinese PLA, including aerosol samplers and biological weapons agent sampling kits in unspecified numbers.[16]

PRC's Biological Warfare Research Organisations[17]

As far as cultivation of biological weapons agents is concerned, there are biological products factories at Wuchang, Chongqing and Kunming. Biological weapons agent production facilities are located in Shenyang, Shanghai, Lanzhou and Guangzhou. Besides, there are three primary large scale biological research and production sites, namely;

1. Yan'an Bacteriological Factory at Yan'an and Xishan
   (a) Four types of bacteriological bombs:
   - Smoke-type bacteria bomb [may refer to aerosols].
   - Paper canister type, bacteriological container.
   - Malignant *shayan* bacteria grenade.
   - Tetanus bacteria bomb.
2. Dalian Biological Products Factory at Dalian
   - Tetanus/cholera mix vaccine.
   - Diphtheria vaccine.
   - Rabies virus vaccine.
   - Tetanus vaccine [toxoid].
   - Typhus vaccine.
3. Changchun Biological Products Factory at Changchun

Conclusion

Suffice it to state in conclusion that just like the ambiguity and secrecy that surround China's nuclear weapons and other aspects of military modernisation, Beijing has created a wall preventing any outflow of information regarding its biological or chemical weapons capabilities,

including production and mobilisation potential. What is declassified is a dictum of the Chinese PLA which says that using chemical weapons would "… be just like releasing the evil spirits from Pandora's Box, eventually slipping towards the abyss of nuclear war."

Notes

1. Report by the United Nations Office for Disarmament Affairs (UNODA), Information and Outreach Branch, New York, NY.
2. For related details, see Senate Executive Report on *The Chemical Weapons Convention*, Committee on Foreign Relations, 104th Congress, September 11, 1996.
3. n. 1.
4. Preamble of the Organisation for the Prohibition of Chemical Weapons (OPCW), The Hague, the Netherlands.
5. Report of the Third Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention, Third Review Conference, OPCW, April 8–19, 2013.
6. Report on *China: Chemical and Biological Weapons* by the Federation of American Scientists.
7. Eric Croddy, "China's Role in the Chemical and Biological Disarmament Regimes," *The Nonproliferation Review*, Spring 2002.
8. Ibid.
9. For more details, see Rosita Dellios, *Modern Chinese Defense Policy* (New York: St. Martin's Press, 1990), p. 69.
10. Shuiting and Zhiyuan, cited in Croddy, n. 7.
11. Ibid.
12. Ibid.
13. Ken Alibek, *Biohazard* (New York: Random House, 1999), p. 273
14. Wong Mei, "Biological Army Unit Does Research in Bacteriological Warfare, Making Profit of 1 Million Yuan Each Year," *Ming Pao*, Hong Kong Daily, December 27, 1994.
15. For more details, see Zhu Kewen, Gao Zixian and Gong Chun, eds., *Zhongguo Junshi Yixueshi* (Beijing: Renmin Junyi Chubanshe, 1996), cited in Croddy, n. 7.
16. Ibid.
17. Ibid.