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CBRN THREATS: A GLOBAL PERSPECTIVE



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Chemical Biological, Radiological and Nuclear (CBRN) weapons are weapons of mass destruction. During the cold war, the arms race between the then bipolar world comprising US and then Soviet Union has been identified as the main reason for increase of CBRN threats. The countries have built their stock pile of the weapons of mass destruction to balance and deter each other from using these weapons. Although this resulted in somewhat bipolar stability but, still there always remained a risk of use of the weapons of mass destruction. The super powers prepared detailed plans to fight and win the nuclear war. What came in the fore was the nuclear weapons but, unabated developments continued secretly in other weapons too. It is also during the cold war several bilateral/multilateral agreements/treaties were concluded which gave a semblance of stability but, needless to say that CBRN threats have not decreased nay, have in fact, increased with emergence of the multi-polar world. Today, a greater number of the nations have the capacity to use the CBRN weapons than before and more nations are aspiring to join this group to ensure their safety by following the bygone years Mutual Assured Destruction (MAD) philosophy. This only proves the limitations of the treaties and agreements

which have been negotiated over the years to check CBRN proliferation and minimise their threats.

CBRN RISK ASSESSMENT

Today, the CBRN threats emanate from intentional and unintentional sources, i.e. an intentional use by an adversarial state or a terror group and from an unintentional CBRN mishap. The 1986 Chernobyl and 2011 Fukushima Daiichi nuclear power plants mishaps are the recent examples of unintentional CBRN mishaps. Further, the unchecked North Korean nuclear and missile programme, emergence of several aspirational nuclear states, modernisation of the nuclear arsenal by the nuclear weapon states, development of the low yield nuclear weapons by U.S., Russia and China and lack of verification and implementation of the Bio and Chemical weapon conventions by the states are the major CBRN threat indicators.

Chemical Weapons

In the First World War (1914-1918), the Chemical Weapons have affected more than one million and caused nearly 90000 casualties.¹ In the Second World War, although the Chemical Weapons were not used in the European battle fields but, poison gases were used in NAZI concentration camps. In Iran and Iraq war (1980-1988) and in the Syrian uprising the Chemical Weapons have been employed several times by the government as well as the rebels.² The Soviet too used Chemical Weapons, such as mustard and incapacitating agents against the Mujahideen rebels during their intervention in Afghanistan (1978–92). Americans forces during the Iraqi invasion in 2003 discovered that despite Iraq being the signatory to the Chemical Weapons Convention (CWC), Saddam Hussein had built a large stock pile of the Chemical Weapons which was eventually destroyed.

Considering the horrific effects of Chemical Weapons, the CWC was convened in 1993 which came in force in 1997. It bars development, production, acquisition, stockpiling, retention, transfer or use of Chemical Weapons by the states. In fact, it was made incumbent on the States to

¹<https://www.britannica.com/technology/chemical-weapon>

²Reassessing CBRN threats in changing global environment: A report by SIPRI assessed at www.Sipri.org/publications

chemically disarm by destroying any stockpiles of Chemical Weapons they may hold and any facilities which produced them. The unique feature of the convention was that any state party could ask for surprise inspection if in doubt about the other state.³ In all, 193 states of the world community have committed to the provisions of CWC. It was thus expected to eliminate the Chemical Weapons but, still we have several instances of use of Chemical Weapons both against individual and groups even after the convention. In fact, the intelligence reports indicate that even now at least 20 states are reportedly working on the Chemical Weapons as against five in sixties.⁴ There are several reasons why regimes seek to acquire them. First, use of lethal weapons will allow them a “level the playing field” against a stronger adversary. Second, deter the adversary with a threat to use the Chemical Weapon. Third, use these as terror weapons to lower the morale of the adversary to fight. Fourth, use against the unprotected rebellious groups to subdue them.⁵ For example, Saddam Hussein in Iraq and Bashar al Assad in Syria allegedly used the Chemical Weapons against the Kurds and against the Syrian rebels respectively.

There are also several instances of targeted killing of the individuals with chemical agents. In 1918, Russia allegedly targeted a double agent Sergei Skripala a former Russian Intelligence officer and his daughter. In a recent case, there is another alleged attempt by Russian leadership to assassinate Alexi Navalny a Russian politician. He was targeted by the nerve agent in Germany, but fortunately he has survived. The North Korean leader Kim-Jong-Un is also alleged to have killed his step brother in Kuala Lumpur airport in 2017 by employing a nerve agent through a proxy.⁶ These instances of Chemical Weapon use show that their development has continued and even more virulent forms of Chemical Weapons are coming to fore.

The Chemical Weapons are also sought by the non- state actors and other groups. In Mar 1995, a religious AUM Shinrikyo sect in Japan, used Sarin nerve agent to kill 12 people and injured more than 1,000 in a Chemical Weapons attack inside the Tokyo subway system. Most dangerous group, AL Qaeda is also known to have shown interest in Chemical Weapons. Before Sep 11 attack on the WTC, it had tested Hydrogen Cyanide on the

³<https://www.opcw.org/chemical-weapons-convention>

⁴<https://www.britannica.com/technology/chemical-weapon/Banning-chemical-weapons>

⁵ibid

⁶<https://www.bbc.com/news/world-asia-43312052>

animals. It is also well known that Al Qaeda in Iraq had openly invited Chemists' Biologists and Physicists to support their cause.⁷ What purpose these qualified people could have served in Al Qaeda other than engaging them for production of Chemical Weapons.

From the preceding, it is clear that despite the CWC 1997, the threat from the Chemical Weapons have remained a potent possibility not only from the state actors but, also from the non-state actors.

Biological Weapons

Biological Weapons are the emerging threats of the 21st century. The extent of their impact these can be understood from the on-going global pandemic caused by the novel coronavirus, COVID-19. The world widespread of the disease has shaken confidence of most governments' in their capacity to respond to the threat. Already WHO is trying to investigate and find whether this pandemic is intentional/accidental or has a natural origin. This suspicion has given to rise due to all round display of the Chinese aggressiveness who may have used it as Geo-political tool to dominate the world order.⁸

Unlike Nuclear or Chemical Weapons, the detection of the Biological Weapons held or manufactured by the state or non state actor is exceedingly difficult to detect by the satellites or intelligence services. So much so, even a malign actor can weaponize a pathogen in very low-technology way.⁹ As far as states are concerned, their production and storage probably continue under the garb for defensive purposes i.e., to prepare antidotes should their armed forces are attacked by an adversary with a biological weapon.

Biological weapons are not particularly useful on the battlefield, as when one member of a (military, etc.) unit falls victim, others may still be incubating the disease. To increase lethality, these however, may be used in combination with other types of potent weapons. The Biological Weapons have potential to cause mass destruction even before these are detected.¹⁰ Since Bio-Weapons are developed in great secrecy, these do not really work as traditional deterrents but, still these remain an effective tool of

⁷<https://www.britannica.com/technology/chemical-weapon/Chemical-weapons-and-terrorism>

⁸<https://journals.sagepub.com/doi/full/10.1177/0976399620959771>

⁹<https://www.euractiv.com/section/politics/opinion/after-the-pandemic-covid-19-exposes-threat-of-biological-warfare/>

¹⁰<https://www.sciencedirect.com/topics/medicine-and-dentistry/biological-warfare>

intimidation and are useful in asymmetric warfare by a smaller, weaker party which can inflict damage and distress on an enemy which holds a greater conventional warfighting capability.¹¹

After witnessing the horrors of the world first war, Geneva protocol was signed in 1925 which along with, asphyxiating, poisonous and other gases also forbade the use of Biological Weapons. The protocol however, did not forbid their development and storage.¹² Accordingly, despite the protocol, several countries viz; America, Japan, Germany and UK developed the Biological Weapons. In Fact, during the Second World War, Japanese are known to have tested the efficacy of their Biological Weapons on the Chinese prisoners. After the 2nd world war, United States and former Soviet Union launched a full-scale Bio-weapon programme. The process may had halted in 1969, when Richard Nixon took the initiative and unilaterally, issued an executive order to abandon the Biological Weapons. Later, a legally binding multilateral biological convention was negotiated and signed in 1975 under the aegis of UN which banned the development, production and stock piling of the Biological Weapons.¹³ In all, 183 states have signed and ratified the convention but, still there are 10 states which have neither signed nor ratified the convention.¹⁴

There are presumably still nations carrying out research on pathogens in their laboratories such as one at Wuhan, China. The convention has failed to deter the nations as article VI of the convention only confers the right to request the UN Security Council to investigate the alleged breaches of the BWC and seek an undertaking from the violating nation to cooperate¹⁵. This also means the truth revelation depends on the cooperation of the violating nations who could refuse to cooperate or may obfuscate the matter. In fact, it is assessed that. Iraq also had violated the 1975 Bio-weapons convention by mass-producing weapons-grade anthrax which came to light only after 1991 gulf war.¹⁶

The outbreak and spread of Ebola and Corona virus point at the extent of danger these present if weaponised. Even the unintentional accidental

¹¹<https://www.euractiv.com/section/politics/opinion/after-the-pandemic-covid-19-exposes-threat-of-biological-warfare/>

¹²https://unoda-web.s3-accelerate.amazonaws.com/wp-content/uploads/assets/WMD/Bio/pdf/Status_Protocol.pdf

¹³<https://news.stanford.edu/pr/01/bioterror117.html>

¹⁴<https://www.un.org/disarmament/the-biological-weapons-convention/>

¹⁵ Ibid

¹⁶<https://news.stanford.edu/pr/01/bioterror117.html>

release is hazardous and unsafe. It can be gauged from the unfortunate incident in Russian city of Sverdlovsk where in 1979, 100 people and countless live stocks died following the accidental release of anthrax spores from a Bio-weapons plant. The current pandemic which is under investigation by WHO may also be a case of the accidental/intentional case of the spread of the disease. The suspicion has aroused as China is not very co-operative in finding the origin of the disease.

Finally, due to the debilitating effects caused on the victims, the Bio-weapons could also hold attraction for the terror groups who will not hesitate to use these if somehow, they acquire these.¹⁷ Recognising this threat, after 9/11, UN has passed a resolution 1540 seeking international co-operations in an attempt to assess and manage the new threat of terrorists or other malign non-state actors seeking access to biological agents (or other mass-effect weapons).¹⁸

Nuclear Weapons

We are generally aware of the holocaust caused in an only case of use of Nuclear Weapons on Japanese cities of Hiroshima and Nagasaki by America in Aug 1945 who used these to force Japan to surrender in the Second World War. After the war, the conclusion of several bilateral strategic arms limitation agreements between America and Former Soviet Union/Russia and multilateral agreement like Nuclear Non-Proliferation Treaty (NPT) of 1970 seem to have helped to bring a semblance of strategic stability and reduce the proliferation of nuclear weapons.

In 2011, United States and Russia signed the Strategic Arms Reduction Treaty (New START) for reduction of the strategic offensive arms for ten years which has now been extended for another 5 years (till 05 Feb 2026). Former US President Trump had insisted for inclusion of China in the Treaty which has nuclear weapons covering all ranges, China however, was not willing hence, the New START has been extended without China's participation which is not desirable. This thus remains a drawback. Yet another multilateral treaty, NPT was meant to stop proliferation of the nuclear weapons however, it is under criticism as it does not lead to a

¹⁷<https://news.stanford.edu/pr/01/bioterror117.html>

¹⁸<https://www.euractiv.com/section/politics/opinion/after-the-pandemic-covid-19-exposes-threat-of-biological-warfare/>

nuclear free world rather it allows the nuclear weapon states to continue holding their nuclear arsenal.¹⁹

On 22 Jan 21 another Treaty on the Prohibition of Nuclear Weapons (TPNW) has come in to force. The treaty sets out comprehensive set of prohibitions for any nuclear activity and covers development, testing, production, acquisition, possession, stockpiling, use or threaten to use nuclear weapons. How will it ever achieve the nuclear free world is a question? Firstly, 69 states including the nuclear weapon states did not vote. Secondly, it is legally binding only for the participating nations which have signed and ratified the treaty. There is no mechanism for discarding the nuclear weapons which already exist with the countries. Hence, the treaty indirectly, perpetuates the right of the nuclear weapon states to continue with their nuclear arsenal while non nuclear states that have ratified the treaty will now be barred. In this respect, it takes forward the agenda of P5 nuclear states to maintain their superiority with their nuclear weapons over non nuclear states more or less similar to the Non-Proliferation treaty of 1970.²⁰

In addition to the nuclear treaties, some informal multilateral groups such as Nuclear Supplier Group (NSG) and Australia Group avoid trade and transfer of dual use technology to the non members with the same objective. But these groups too instead of being guided by the non-proliferation track record of the nations give primacy to other considerations for induction in the groups. Then there are nuclear free zones wherein states within the zone commit to avoid manufacture, acquire, test, or possess nuclear weapons. Further in these zones, nuclear weapon states guarantee (essentially P5 states) to abide by their non-nuclear status.²¹

Despite the spate of treaties, informal groups and existence of Nuclear free zones, still a huge arsenal of nearly 16,000 nuclear weapons is held by nine countries-China, India, Israel, France, North Korea, Russia, the United Kingdom and the United States. Hopefully, with strategic stability brought in by the nuclear agreements, there is now less likelihood of deliberate nuclear war breaking out between former cold war competitors. But, considering

¹⁹<https://www.armscontrol.org/treaties>

²⁰<https://www.un.org/disarmament/wmd/nuclear/tpnw/>

²¹<https://www.armscontrol.org/factsheets/nwzfz>.

that weapons are kept in high alert, unintentional nuclear launch due to an accident, miscalculation or even cyber attacks still remain possible. At the same time, North Korea which has illicitly acquired nuclear weapons, and other countries, including Iran, who are suspected of covertly pursuing nuclear weapons capabilities are the real threats.²² The threat from nuclear weapons could abate only if we achieve the nuclear free state which still remains a piped dream since no country is prepared to forsake the nuclear weapons in which case, the lead must be taken by the P5 nations but, its exclusion will bring them at par with non nuclear state and end of their domination.

Another worrying development is emergence of Low Yield Nuclear Weapons. The Nuclear weapons which were hitherto seen as strategic weapons which will never be used but, with emergence of Low Yield Nuclear Weapons this is set to change. Former US President Trump for supposedly ending the Russian and Chinese domination in Low Yield Nuclear Weapons, in the US Strategic Nuclear Review of Feb 2018, sought development Low Yield Nuclear Weapons by the United States. The problem is that unlike the strategic weapons their control and use could be delegated at the field level, Secondly, in a conventional war, a field commander may well use these along with conventional weapons which could later escalate to full scale nuclear war.^{23, 24}

Radiological Weapons. Although the Radiological weapons too are categorised as the weapons of mass destruction however, these hardly qualify for this category since these do not cause mass destruction but more than casualties, these cause confusion and chaos in the public.²⁵

Nuclear Threat Initiative (NTI), an independent body has assessed that terrorists seek Nuclear weapons. As per their estimate, nearly 1,800 metric of weapons-usable nuclear materials (highly enriched uranium (HEU) and plutonium) are presently stored in hundreds of sites across 25 countries and some of it is poorly secured and can be pilfered and stolen by inimical

²²<https://www.nti.org/learn/nuclear/>

²³<https://thebulletin.org/2020/01/the-low-yield-nuclear-warhead-a-dangerous-weapon-based-on-bad-strategic-thinking/>

²⁴<https://www.clingendael.org/pub/2019/strategic-monitor-2019-2020/cbrn-weapons/>

²⁵ Ibid

elements.²⁶ Apart from that radioactive materials are used every day in laboratories, medical centers, food irradiation plants, and for industrial uses if stolen these can be used as in Radiological devices. It is a challenge for the governments to secure these in the entire lifecycle of the products from falling in hands of unauthorised persons. The terrorists more often may opt for more easily available conventional means or at best due to lack of technical knowhow, a terrorist organisation/group may use a less sophisticated dirty bomb which spreads the radioactive material using the conventional explosive rather than more advanced fissile material. In the past, some groups have shown interests in the CBRN materials and for ideological or religious reasons these groups could use these.

India & Global CBRN. India fully abides by UN and multilateral agreements on CBRN. We are signatories to the universal Chemical and Biological conventions. To give effect to the provisions of Chemical Weapons Convention 1973, the Indian Parliament has enacted Chemical Weapon Convention Act 2000 and established National Authority of Chemical Weapon Convention.²⁷ At the same time, India seeks strict compliance of the Biological Weapon Convention (BWC) especially in view of the global impact of the Coronavirus (COVID-19) 1975 and reiterated this resolve last year on the occasion of 45th anniversary of the Biological Weapon Convention.²⁸

India's commitment to the nuclear free world can be gauged from the fact that we are pioneer in seeking a nuclear weapon free world. In fact, PM Rajiv Gandhi even presented a time bound action plan in 1988 during a special session on Nuclear Disarmament in the United Nation. The action plan had sought complete disarmament by year 2010.²⁹ However, it did not receive due attention as P5 nations were reluctant to forego their nuclear capability which gave them clout and dominant position among the comity of nations by flaunting their power. India is against Nuclear Non proliferation treaty 1970 and a recently concluded Treaty on Prohibition of Nuclear Weapons (TPNW) since both these prohibit acquisition of the nuclear

²⁶<https://www.clingendael.org/pub/2019/strategic-monitor-2019-2020/cbrn-weapons/>

²⁷<https://nacwc.gov.in/index.php>

²⁸<https://economictimes.indiatimes.com/news/defence/ensure-strict-compliance-of-treaty-on-banning-biological-weapons-india/articleshow/74852870.cms?from=mdr>

²⁹<https://www.jstor.org/stable/42761829?seq=1>

weapons only by the non nuclear states which by implication perpetuates the nuclear weapons and hegemony of the Nuclear Weapons states.

India fully subscribes to the idea of outlawing the radiological weapons. Unfortunately, the definition of the terrorist is still to find a consensus amongst the world community since a terrorist for one country is freedom fighter for the other nation. We favour universal action on the terrorists through the aegis of the United Nation and do not ascribe to the Proliferation Security Initiative (PSI) a multilateral agreement of 2003, which in disregard to the international laws on sea and sovereignty of the nations, allows boarding and inspection of the foreign ships with an aim to check the illegal transit of weapons of mass destruction by a state or a terrorist body. India prefers that such provisions must have approval of the United Nation.³⁰

Conclusion

Today, with conclusion of bilateral and multi-lateral treaties on Nuclear, Biological and Chemical weapons one could think that CBRN threats are diminishing, but actually, it is far from being true. In the nuclear regime, the emergence of Low Yield Nuclear Weapons now presents a mutated nuclear problem. In CBRN domain, a major problem one encounter is in detection of violations particularly in the chemical and biological weapon regimes wherein, verification and surveillance are a challenge without co-operation of the suspected country. Excluding the nuclear regime, the technological surveillance is extremely difficult to detect in case of Chemical and Biological weapons. Even in cases where such detection is possible, it is difficult to take collective action without the co-operation of the violating country. Informal multilateral effort is also attempted by employing the export control on dual use technologies and materials to check the proliferation of CBRN capabilities but, it has given limited success.

The CBRN materials are also attractive to the terrorists because these provoke terror and panic among the civilians. Communication technologies and growing e-commerce have facilitated the proliferation of information to cause higher damage at lower costs. To check these, legally binding provisions have also been enacted by the relevant UN bodies as well as by IAEA to control the transit and access to the CBRN materials by the non

³⁰<https://mea.gov.in/articles-in-indian-media.htm?dtl/13131/India+and+proliferation+security>

state actors. India conforms to the treaties and agreements on weapons of mass destruction and where ever needed, has even enacted domestic laws to give effect to these.

CERTIFICATE

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