

CBW

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One of the most prominent developments in the last one year has been of Syria joining the Chemical Weapons Convention (CWC). The other important event has been the beginning of the process for verification and destruction of the chemical weapons possessed by Syria.

In this issue of the magazine H. R. Naidu Gade discusses the accomplishments of the OPCW-UN in undertaking timely verification and elimination of chemical weapons in Syria. Anshu Joshi in her article highlights the role which media can play during any possible terrorist attack. Shyam Hari portrays the limits which the healthcare sector faces when faced by the 'Ebola Virus Disease' especially in Africa.

The Country Profile section by Saurabh Mishra discusses the ongoing efforts surrounding the destruction of chemical weapons in Syria and also the fear of undisclosed chemical as well as biological weapons present in Syria.

This issue also comprises other regular features like the Chemical and Biological News and Book Review.

With our readers' feedback, we wish to publish issues in the future that focus on a subject of particular concern. We would like to inform our readers that the CBW Magazine is now a bi-annual publication.

Contributions and feedback are welcome and can be addressed to: editorcbw@gmail.com

Preparing civil defence against chemical and biological weapon attacks: The imperative role of media

Dr. Anshu Joshi

The author is a doctorate from Jawaharlal Nehru University and worked on preparing comprehensive defence against chemical and biological weapons. The author worked as Editor and Faculty with Tata Consultancy Services, Hyderabad.

Summary

Creating a comprehensive civil defence against chemical and biological weapon attacks is one of the most significant challenges today, and media is an imperative contributor to it. Redefining the role of media in this area can add to an efficient and potential civil defence.

In the new world of advanced science and technology, the nature of terrorism has assumed its worst manifestation. The 2008 Mumbai attack proved that terrorists aim at creating havoc and panic using unconventional means. Under such circumstances, probability of chemical or biological attack against innocent civilians can not be ignored by defence planners.

It needs to be understood in this context that the usage of chemical or biological weapons in warfare is not new. However, what makes its possibly an attractive weapon of mass destruction against masses are the astounding advancements in technology that have made them more lethal, easier to produce, store and deliver than ever before. Secondly, in the world of internet, it is easy to get or exchange technical information related to chemical and biological weapons. Most of all, the shock such kind of attacks create is what the terrorist organizations probably intent to. Although it is believed generally that these weapons would not be used on ethical grounds, usage of chemical and biological weapons in recent times point towards an increasing interest of terrorist organizations using unconventional weapons against civilians.

Soon after 9/11 attacks in the United States, Anthrax laced letters were found in the mailboxes of several media offices and two US senators. Five Americans were killed and 17 were infected in the worst biological attacks in U.S. history.¹ Earlier, on 20 March 1995, members of the Aum Shinrikyo cult released Sarin, a lethal nerve agent in the Tokyo subway system. By the end of that day, 15 subway stations in the world's busiest subway system had been affected. The number of people infected in the attacks was nearly 3,800. This attack was a wake-up call

regarding the prospects of weapons of mass destruction and terrorism. Chemical weapons were not, however, the only option explored by this cult group. AumShinrikyo also developed a laboratory for toxin production by 1990 and was subsequently replaced with two new laboratories, one at Kamakuishiki and the other in Tokyo. The cult experimented with different biological agents like botulin toxin, anthrax, cholera, and Q fever and also attempted several apparently unsuccessful acts of biological terrorism in Japan between 1990 and 1995.²

Recently in Syria, alleged usage of chemical agent Sarin by the Syrian government killed more than 1400 civilians including nearly 425 children. The U.S. intelligence analysts explained that the preparations continued during 18-21 August 2013, when the projectiles were loaded into rocket launchers behind the government's defensive lines. And then half-dozen densely populated neighborhoods were jolted awake by a series of explosions, followed by an oozing blanket of suffocating gas.³ Usage of chemical weapons in Syrian conflict indicates that these weapons can also be used by state or state sponsored groups.

All these incidents clearly point towards an increasing threat of use of chemical and biological weapons against innocent civilians. Hence, developing a comprehensive civil defence system against chemical and biological weapons is the need of the hour. It involves strengthening existing norms against chemical and biological weapons, usage of latest technology, enhanced immunization, efficient public and community health facilities from local to global level and most of all, creating general awareness about these weapons across common man. Media plays a critical role in connecting with people to create general awareness about the basics of such weapons.

Also, the way it responds to such attacks contributes to a holistic civil defence against usage of chemical and biological weapons.

How media can significantly impact the extent and outcome of a terrorist attack can be understood by the role Indian media played during Mumbai terror attack. On November 26 2008, the financial capital of India, Mumbai faced the most shocking terror attacks. However, the role that media played during the entire incident needs further scrutiny. Critics describe it as 'TV terror' for showing gory scenes, being too aggressive, and often reporting incorrect information as fact. "They don't need to apologize as much as they need to introspect, figure out how to operate in a time of crisis," said Dipankar Gupta, sociology professor at Jawaharlal Nehru University in New Delhi.⁴

While confirming the death sentence to the only captured Pakistani terrorist Ajmal Kasab, the Supreme Court pulled the media for its role and called for self regulation in covering such incidents. From the transcripts, especially those from Taj Hotel and Nariman House, it was evident that the terrorists and their collaborators across the border were watching the full show on TV. The court further went on to say that it is not possible to find out whether the security forces actually suffered any casualty or injuries on account of the way their operations were being displayed on the TV screen. However, it is beyond doubt that the way their operations were freely shown made the task of the security forces not only exceedingly difficult but also dangerous and risky.⁵ In an overexcitement to show the live coverage, various reporters from electronic media not only created a security challenge and disturbance for the security forces combating against the terrorists, but also shared the information that was used by the terrorists. Also, the news soon took over the

social media and this all created nothing but a state of panic. The way in which the terrorist attack on Mumbai was covered, the Indian TV channels did not serve any national interest or social cause. On the contrary they acted in their own commercial interests putting the national security in jeopardy.⁶

Contrary to the uncontrolled media that complicated the situation in case of Mumbai terror attack, in another terror attack at Westgate shopping mall in Nairobi on 21 September, 2013, completely controlled media complicated the situation. During the attack, except the initial stage, the media was kept out of direct visual contact of the mall. However, this was not followed up with official updates and social media played a major role in the dissemination of news originating from various government agencies, NGOs, journalists, citizens and even the terrorists, both inside and outside the mall. It created unverified information from unreliable sources which further spread through social media network. The Al-Shabaab terrorists used social media to infuse their version of the events and to enhance the shock effect by circulation of morphed photographs of the attack and the victims inside the mall. It also affected the credibility of the media.⁷

Media has a capability of evading the situation of panic by positively informing people. However in both situations, totally controlled and uncontrolled, media added to the state of fear and terror, which further complicated the situation. Although both examples are related to terrorist attacks in which no chemical and biological weapons were used, it is clear that the role of media during such incidents is crucial. It is not difficult to imagine the media response in case India was to face a chemical or biological weapon attack.

Thus, it is very important to pay attention to media's contribution in combating chemical and biological weapon use. First of all, a self regulatory in media is required as wrong or uncontrolled information can not only create a panic, it can also help the terrorists in accomplishing their goals. Second, to combat possible chemical and biological attacks, media and government have to go hand in hand. Government can take media's help in running various general awareness programmes in educating people. Creating general awareness is significant to establish a potential civil defence against chemical and biological threats. Various forms of media can be used in sharing basic knowledge about these unconventional weapons. They can also help in establishing a potential civil defence by educating people about how to identify an attack, understanding delivery models of such weapons, response mechanisms and emergency contacts in case of an attack. Media's role in creating civic awareness and education is critical to minimize loss of human life. Creating a comprehensive civil defence against chemical and biological threats is one of the most significant challenges and media can play an important role in this respect.

Endnotes:

1. Amerithrax or Anthrax Investigation, The FBI Website, <http://www.fbi.gov/about-us/history/famous-cases/anthrax-amerithrax/amerithrax-investigation> accessed on 11 April 2014)
2. Aum Shinrikyo: Once and Future Threat by Kyle B. Olson, EID Journal, Volume 5, Number 4, August 1999, http://wwwnc.cdc.gov/eid/article/5/4/99-0409_article.htm accessed on 15 April 2014
3. More than 1,400 killed in Syrian chemical weapons attack, U.S. says by Joby Warrick, The Washington Post, August 30, 2013, <http://www.washingtonpost.com/world/national-security/nearly-1500-killed-in-syrian-chemical-weapons-attack-us-says/2013/08/30/b2864662-1196-11e3-85b6->

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4. Indians condemn media coverage of Mumbai attacks by Daniel Pepper, December 23, 2008, The McClatchy DC website, <http://www.mcclatchydc.com/2008/12/23/58383/indians-condemn-media-coverage.html>, accessed on 18 April 2014
5. 26/11 attack: Media pulled by Supreme Court for its role by S. Ahmed Ali, The Times of India, 31 August 2012, <http://timesofindia.indiatimes.com/city/mumbai/26/11-attack-Media-pulled-by-Supreme-Court-for-its-role/articleshow/16054201.cms>, accessed on 18 April 2014
6. Ibid
7. Mumbai 26/11: Five years later, some media lessons by Monish Gulati, South Asia Monitor, 24 November 2013, <http://southasiamonitor.org/detail.php?type=sl&nid=6598>, accessed on 23 April 2014

Syrian Chemical Weapons Crisis - The Challenges

Colonel (Retd.) H. R. Naidu
Gade

The author has four decades of experience in CBRNe and Counter IEDs, was the Chief CW Inspector with the OPCW for nearly a decade and led numerous verification missions to CW Facilities around the globe and monitored destruction of CW.

Summary

In October 2013 Syria joined the CWC and became the 190th State Party. Syria was coerced to join the regime and after this the OPCW-UN Joint Mission in Syria has established a verification and elimination process of the chemical weapons in Syria.

Alleged Use of CW - Joint Investigation

The incidents of alleged Chemical Weapons (CW) attack which killed more than 1400 innocent civilians in Syria in August, 2013 has raised the concerns of the international community. Following this, the United Nations (UN) Secretary-General requested the Organisation for the Prohibition of Chemical Weapons (OPCW), the watchdog body for the Chemical Weapons Convention (CWC) to assist in the conduct of an investigation. For the first time in the history of the CWC, which entered into force in April 1997, the OPCW faced such an unprecedented situation to investigate the alleged use of CW in a country that is not even party to the Convention.

The request is consistent with the Relationship Agreement between the OPCW and the UN, which provides for the cases involving a State Not Party to the Convention, wherein the OPCW shall closely cooperate with the Secretary General of the UN. Subsequently, a joint UN, OPCW and World Health Organisation (WHO) Verification Mission was launched in August, 2013. The investigation team concluded in its report that “chemical weapons have been used in the ongoing conflict between the parties, also against civilians on a relatively large scale”. However, the report could not pinpoint the perpetrators of the CW attack.

Syria Joins the CWC

On 14 September 2013, a framework for elimination of Syrian CW was agreed upon by the United States and the Russian Federation. Syria was coerced to join the Convention against the background of extraordinary circumstances. On 14 October 2013, the CWC entered into force for Syria,

making it the 190th State Party to the Convention. Consequently, the OPCW-UN Joint Mission in Syria was established in order to achieve the timely verification and elimination of the Syrian CW programme in the safest and most secure manner possible.

Syria established the CWC mandated National Authority, headed by Deputy Foreign Minister Faisal Mekdad and submitted to the OPCW its formal initial declaration covering its CW programme. Such declarations provide the basis for planning systematic, total and verified destruction of declared CW and CW production facilities. Syria has submitted to the OPCW, its inventories of Chemical Weapons Storage Facilities (CWSFs), that include munitions, chemical agents and precursors; information regarding components of binary weapons; site diagrams for CWSFs, including buildings and their current condition; site diagrams and process flow diagrams for certain Chemical Weapons Production Facilities (CWPFs); information on the nature of activities conducted and current status of CWPF buildings and equipment, including fixed and mobile mixing and filling facilities; information about the nature of activities at research and development facilities; and information about the test and evaluation sites.¹

Syrian CW Declarations

Syria declared 41 CW facilities at 23 sites. The declared installations thus comprise 18 CWPFs (including fixed filling facilities), 12 CWSFs, 8 mobile filling units, and 3 CW-related facilities. According to the OPCW report, Syria declared just under 1,300 metric tonnes of chemical warfare agents: approximately 1,000 metric tonnes of Category 1 CW (largely binary chemical weapon precursors) agents and precursors listed in Schedule 1 of the CWC;

approximately 290 metric tonnes of Category 2 CW, which refers to all warfare agents other than the ones listed in Schedule 1; and approximately 1,230 unfilled chemical munitions, i.e., Category 3 CW.²

CW Verification Joint OPCW - UN Mission

The Joint OPCW-UN Mission has inspected 21 of the 23 sites declared by Syria, and 39 of the 41 facilities located at those sites. The Joint Mission also verified the functional destruction of critical equipment for all of its declared CW production facilities and mixing and filling plants, rendering them inoperable.³ The Syrian CW programme is based primarily on binary systems which means two toxic substances have to be brought together to create a highly toxic chemical warfare agent. The chemicals are stored in bulk containers and drums; they are not contained within bombs, shells or warheads and there are no explosives associated with them. A quantity of mustard agent ready-to-use chemical warfare agent is also stored in bulk containers and drums, not in munitions.⁴

Transportation and Destruction of CW

Normally, destruction of CW in accordance with CWC would entail setting up of CW destruction facility in Syria. That would take a very long time. Therefore, to meet the destruction timeline set for 30 June 2014, for the reasons of safety, security and on Syria's request, it was decided to transport the CW out of Syria and destroy them on the sea in international waters. The transportation and subsequent destruction poses a great challenge to the international community.

The Syrian CW bulk containers and drums are all being securely packed and loaded into

standard shipping containers. The containers are then transported to Latakia port for loading on to the Danish and Norwegian cargo ships (MV Ark Futura and MV Taiko, respectively). Such toxic chemicals are routinely transported around the world and there are specific laws and regulations in place regarding their safe transportation. The cargo ships have additional capacity to deal with chemical spills or emergencies and a special chemical response team is available, along with expert chemical response personnel from Finland.⁵

Once all of the containers have been collected from Latakia and stored aboard the MV Taiko and MV Ark Futura, one of these ships will sail to the Italian port of Gioia Tauro. At the port, those shipping containers holding certain Priority 1 chemicals will be transloaded to a US ship, the MV Cape Ray. The remaining chemicals will be transported to commercial facilities in Finland, the UK, and the USA for destruction. The facilities in Finland and the USA were selected through a solicitation process conducted by the OPCW.

CW Destruction Process

Some Priority 1 chemicals will be destroyed through a two-step process. The first step, hydrolysis, will occur at sea on board the MV Cape Ray. The chemicals will not be dumped or buried in the sea at any stage, and therefore no chemicals will be released into the environment. The US Department of Defense has installed two Field Deployable Hydrolysis Systems (FDHS) on board the MV Cape Ray, which have been designed on the basis of technology used over the past four decades in the US chemical weapons destruction programme to hydrolyse chemical warfare agents. The FDHS uses water, sodium hydroxide (NaOH), sodium hypochlorite (NaOCl) and heat to hydrolyse the chemicals with 99.9 percent effectiveness.

All of the effluent resulting from the hydrolysis process will be safely stored on board the MV Cape Ray.⁶

The remaining chemicals removed from Syria, and the effluent produced by the hydrolysis process on board the MV Cape Ray, will be destroyed at commercial facilities. For this purpose, the OPCW published a Call for Proposals for Transport, Treatment and Disposal of Hazardous and Non-Hazardous Organic and Inorganic Chemicals, Effluents and Related Materials. Following technical and commercial evaluation of the bids, the preferred bidders were announced and contracts have been signed with two companies – Ekokem Oy Ab from Finland and Veolia Environmental Services Technical Solutions from the USA. Two Priority 1 chemicals will be transported to the UK for destruction in a commercial facility at Ellesmere Port. The effluent created by the hydrolysis of one of the Priority 1 chemicals aboard the MV Cape Ray, will be destroyed at a government facility in Germany.⁷

Security during Transportation

Security poses a great challenge while transporting the CW in Syria and on the seas. Naval vessels from Denmark, Norway, and the UK are providing continuous security to the cargo ships until the chemicals are off-loaded. Naval vessels from the People's Republic of China and the Russian Federation are providing security to the cargo ships while in Syrian territorial waters.

Progress on Transportation & Destruction of CW

The OPCW-UN Joint Mission has confirmed that as on 25 April 2014, the overall portion of chemicals removed from Syria to 86.5% of the total, including 88.7% of the Priority 1 chemicals and 84.3% Priority 2 chemicals.

The Joint Mission has also confirmed that approximately 87% of Syria's chemical weapons material has been removed or destroyed in-country. This development will contribute to meeting the 30 June 2014 target set by the OPCW Executive Council for the completion of Syria's entire chemical weapon programme.

⁵ Ibid.

⁶ Ibid

⁷ Ibid

Conclusion

The Syrian CW crisis has thrown many challenges to the international community: investigation of alleged use of CW by a non-party state; investigation team operating in the proximity of fighting zones; verification of CW stockpile; destruction of production facilities; transportation of CW securely by road to Latakia port and then onwards to the ships at sea; destruction of CW in international waters aboard a ship; and the short time lines set right by the international community to achieve the total destruction of Syrian CW.

Note: Information Sourced from
www.opcw.org and the web

Endnotes:

¹ Zanders, Jean Pascal (2013), "Syria's CW Declaration: One third larger than assumed", 31 October 2013, Available online at <http://www.the-trench.org/syrias-cw-declaration-one-third-larger-than-assumed/>

² Ibid.

³ OPCW (2013), "Syria completes Destruction Activities to render inoperable Chemical Weapons Production Facilities and Mixing/Filling Plants", 31 October 2013, Available online at <http://www.opcw.org/news/article/syria-completes-destruction-activities-to-render-inoperable-chemical-weapons-production-facilities-a/>

⁴ OPCW (2013), "Frequently Asked Questions: Syria", Available online at <http://www.opcw.org/special-sections/syria-and-the-opcw/frequently-asked-questions/>

The Fear of Syrian Chemical and Biological Weapons

Mr. Saurabh Mishra

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Summary

Reports of a Chlorine gas attack in Syria amid the ongoing UN-OPCW inspection and destruction of chemical weapons in the country shows the impunity of some sections of the parties fighting in Syria and their willingness to use "unconventional" weapons. The destruction exercise is quite useful in the sense that it will reduce the number of chemical weapons in Syria and eliminate the chances of these forces acquiring more such weapons. However, there are fears about undisclosed chemical as well as biological weapons; and Syria's capabilities about the latter remain more elusive. Suspicions that the rebels might have got, or may get, access to some of these weapons adds to the anxiety of the international community. And, overall, the biggest question is if the whole exercise is going to cease the incessant deaths that are no less horrible than inflicted by "unconventional" weapons.

The protracted sectarian conflict in Syria has brought focus on its chemical and biological weapons capability. The West contemplated that the Bashar al-Assad regime in Syria might use chemical weapons to gain an upper hand on the rebels in case the conventional strength was weakened. Under the pressure of the rhetoric of an intervention by a Western coalition or UN forces, the Syrian Foreign Ministry spokesman Jihad Makdissi had assured the international community that no "unconventional weapons" in the Syrian stockpile would be used in any circumstances in Syria, but only in the case of an "external aggression".¹ It was an indirect but fist ever acceptance by Syria of its possession of "unconventional" weapons. As the West had not been able to intervene in Syria due to several reasons ranging from reluctance of the United States (US) to the opposition in the United Nations Security Council (UNSC) by Russia and China, the issue of chemical weapons was used by the US President Barak Obama as a face saving "red line" for the use of force against the Syrian Government. He had warned Syria, on August 20, 2012 that the use of chemical weapons by the Assad regime was the "red line" that would change his "calculus" regarding intervention. Reports of an impending use of chemical weapons by Syria in late 2012 compelled President Obama to reiterate his commitment to the "red line".

The first major chemical attack took place at Khan al-Assal village near Aleppo on March 19, 2013 killing at least 26 and injuring more than a hundred.² The Assad regime did not immediately allow the UN investigation team to enter Syria for the verification of the attack. However, the West claimed on the basis of intelligence that Sarin was used in the attack. Later, Russian

inspection team collected samples from the site and confirmed the use of chemical weapons and blamed a section of the rebel Free Syrian Army for the incident. However, the perpetrators of this attack could not be identified beyond doubt due to suspicions about the chain of custody of samples for forensic examination. In the wake of the high certainty of the use of chemical weapons in the March 2013 incidence, the Obama administration announced military help to the opposition in the form of protective equipment, medical aid and training.

Amid the criticism of the UNSC and the US led west for their reluctance to intervene despite nearly hundred thousand deaths and millions of refugees in the neighbouring countries, another chemical weapon attack took place in Ghouta near Damascus on August 21, 2013, resulting in nearly 1400 deaths. This attack took place even as a UN inspection team was in Syria to find out the truth about the origin of the earlier reported use of chemical weapons.³

The attack resulted in a huge international outcry and the Obama administration was compelled to step up the interventionist rhetoric to honour the red line. While the US congress was to vote on a proposal for the approval of intervention in Syria in form of targeted airstrikes, realising the grim situation for its ally Syria, Russia came up with a diplomatic plan to prevent the imminent strike. Russia proposed for the destruction of Syria's chemical weapons under the supervision of the international community. In order to avoid an external intervention, Syria agreed immediately and signed the Chemical Weapons Convention (CWC) on 14 September 2013, the day the US and Russia agreed on a framework for the elimination of the chemical weapons in Syria in soonest and safest manner. The Convention entered into force for the Syrian Arab Republic on October 14, 2013. The

UNSC Resolution 2118 adopted on 27 September 2014, decided and provided a plan for the destruction of the declared and surrendered Syrian chemical weapons. Syria had provided two lists of material, weapons and sites within the time period stipulated in the Resolution. Although sections of the US establishment suspect veracity of the disclosure, they accepted that the lists provided by Syria were quite comprehensive than they had expected. The resolution set the deadline of 30 June 2014 for complete destruction of the Syrian chemical weapons stockpile.

The Syrian chemical weapons stockpile was huge; as it contained 1000 metric tons of Category I weapons, 290 tons of Category II chemicals and 1230 unfilled delivery systems such as rockets.⁴ It includes several hundred tons of Sulphur Mustard and Sarin and tens of tons of nerve agent VX. A United Nations (UN) & Organisation for Prohibition of Chemical Weapons (OPCW) Joint Mission comprising experts is entrusted with the process of inspection and destruction of chemical weapons as well as production facilities. Despite adverse security conditions, the team has been able to complete verification activities in 21 out of the 23 declared sites. Items from the remaining unvisited sites have been removed and verified against the Syrian disclosure. Phase-I of the destruction programme has already been completed as all the facilities of production and mixing capabilities had been "rendered inoperable"⁵ by 31 October 2013.⁶ According to an update report to the OPCW, 92.5 per cent of the disclosed chemical materials have been removed and destroyed.⁷ These weapons and materials are to be destroyed outside Syria. Therefore, the whole process is moving slowly due to adverse security conditions in Syria as well as denial by several countries to provide their facilities for the destruction of the weapons. Syria has

also failed to meet a couple of deadlines for handing over its stockpile. Although the OPCW feels that the deadline is still achievable, experts have already started talking about the extension of the deadline to the end of 2014.

Amid the reports of a recent chemical attack in the rebel-held Syrian village Kfar Zeita on 11 April 2014, the whole exercise of the ongoing inspection and destruction of the Syrian chemical weapons under the supervision of the UN-OPCW team comes under question. It is suspected whether the Joint Mission would be able to achieve its objectives in its entirety. The truth about who used the gas would come out only after the OPCW Fact-Finding Mission submits its report.⁸ However, the rebel Syrian National Coalition claimed that the government forces used poisonous gas against people while the Syrian television, run by the government, blamed the Al-Nusra Front for using Chlorine in the attack killing 2 and injuring more than hundred people.⁹ At the same time, the television did not clarify how it ascertained that the used gas was indeed Chlorine, banned under the Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed in Geneva in 1925, to which Syria also became a party in December 1968. If the reports of the attack are true, they suggest undisclosed possession of chemical weapons by one or both of the conflicting parties, most likely the government forces.

The recent attack has raised fears about the undisclosed chemical weapons and facilities, and the willingness to use them.¹⁰ However, the US administration has not responded to the recent attack as strongly as it had responded to the

earlier attacks. Meanwhile, a section of experts are now pointing towards the biological weapons capabilities of Syria which had signed the Biological Weapons Convention (BWC) in April 1972 but has not ratified it yet. The willingness to use chemical weapons in the ongoing Syrian conflict has also increased the fear about biological weapons that are outside the ambit of current inspection and eliminations programme underway in Syria primarily because biological weapons are more lethal than chemical weapons and also difficult to be detected and verified.

Syria is suspected of having developed a biological warfare programme since 1970s. Even then the assessment about the programme has been highly variable. Some experts assume it highly developed with efficient delivery systems while others find the capabilities as borrowed and rudimentary. However, the US Intelligence Chief James Clapper warned the US Senate intelligence committee in January 2014 that Syria might have made significant strides in biological warfare. Although he noted that the country still is not able to successfully produce an efficient biological agent delivery system, he warned that the conventional weapons in possession of Syria could be modified for the purpose.¹¹ Based on the duration of their suspected longstanding programme, Syria might be capable of limited agent production. According to Dany Shoham, by 2002 Syria was reportedly concentrating on two bacterial agents, anthrax and cholera and two toxins including botulinum and ricin.¹² It is also suspected of retaining strains of smallpox from its last natural outbreak in 1972.¹³ It is also suspected to have cooperated with the erstwhile Soviet Union, North Korea, Iraq and Iran. Suspicions about the country's capabilities to produce harmful biological agents for the purposes of war correspond with the development of the Syrian

pharmaceutical industry as most of the biological warfare research and development facilities cannot be distinguished from a normal medical research unit because of the dual-use nature of the agents and equipments. However, the new research and development capability of the Syrian pharmaceutical sector is doubted by scientists as the sector is based on generic medicines.¹⁴

The debate about the external intervention in Syria has been focused on the chemical weapons so far, although the rationale is questionable given the number of deaths in the country. Approximately 150,000 people have already died in the civil strife in Syria which warrants a more serious form of intervention.¹⁵ Both conventional and unconventional weapons are made to kill. The number of death by conventional weapons and the alleged use of poisonous gases despite the ongoing chemical weapons destruction make the issue of intervention in Syrian more complicated. It shows the impunity of certain sections of parties involved in the conflict that are not ready to follow any restriction regarding the nature of weapons. This heightens the fear of the use of biological weapons as well.

The situation in Syria and the involvement of terrorist elements like Al-Qaeda in large number in the fight against the Assad regime make the chemical and biological agents in Syria vulnerable to falling in hands of the terrorists. Nobody knows if there are additional undisclosed chemical weapons stockpiles. One can only hope that the Syrian government has disclosed its entire stockpile as well as facilities in order to avoid external involvement. Even then, the biological weapons, howsoever developed they are, remain elusive. The international community needs to find some way out to avoid any biological weapons use in Syria. The issues of chemical and biological weapons in Syria

are complicated and addressing them will be a larger political game involving the issues of intervention, sovereignty and medical self-reliance. The biggest question remains whether the incidents of use cease after the UN-OPCW Joint Mission is over and if not, what would be the next alternative for the international community.

Endnotes:

- ¹ It was stated in the Syrian Foreign Ministry Spokesman Jihad Makdissi's press conference on July 23, 2012.
- ² The numbers differ according to various reports. The number of deaths may be higher and the number of injured may be even much higher.
- ³ "Syrian activists accuse government of deadly chemical attack near Damascus", by By Loveday Morris and Karen DeYoung, *Washington Post*, August 21, 2013, at http://www.washingtonpost.com/world/syrian-activists-accuse-government-of-deadly-chemical-attack-near-damascus/2013/08/21/aeaa157e6-0a50-11e3-89fe-abb4a5067014_story.html
- ⁴ "Syria: inspectors find 1,300 tons of chemical weapons", by By Richard Spencer, *The Telegraph*, October 29, 2014, at <http://www.telegraph.co.uk/news/worldnews/middleeast/syria/10411375/Syria-inspectors-find-1300-tons-of-chemical-weapons.html>
- ⁵ "Update on Syrian chemical weapons destruction and the fact-finding mission into alleged Chlorine gas attacks", *OPCW*, May 22, 2014, at <http://www.opcw.org/news/article/update-on-syrian-chemical-weapons-destruction-and-the-fact-finding-mission-into-alleged-chlorine-gas/>
- ⁶ "Director-General updates the executive council on the work of the OPCW-UN Joint Mission", *OPCW*, November 5, 2013, at <http://www.opcw.org/news/article/director-general-updates-the-executive-council-on-the-work-of-the-opcw-un-joint-mission/>
- ⁷ "OPCW-UN Joint Mission: Total chemical material removed and destroyed raised to 92.5%", *OPCW*, April 24, 2014, at <http://www.opcw.org/news/article/opcw-un-joint-mission-total-chemical-material-removed-and-destroyed-raised-to-925/>

- ⁸ “OPCW to undertake fact-finding mission in Syria on alleged Chlorine gas attacks”, *OPCW*, April 29, 2014, at <http://www.opcw.org/news/article/opcw-to-undertake-fact-finding-mission-in-syria-on-alleged-chlorine-gas-attacks/>
- ⁹ “Obama administration: ‘Indications’ chemical weapons used, again, in Syria”, *Fox News*, April 21, 2014, at <http://www.foxnews.com/politics/2014/04/21/state-department-indications-chemical-weapons-used-again-in-syria/>
- ¹⁰ Syria’s case is similar to Iraq where the chemical programme was much larger than estimated and where the investigation teams were similarly misled. It had taken nearly eight years to eliminate the entire weapons stockpile from Iraq. For more see Bruce Riedel, “The challenges of UN inspections in Syria”, by Bruce Riedel, *Brookings*, September 11, 2013, at <http://www.brookings.edu/research/opinions/2013/09/11-challenges-un-inspections-syria-riedel>
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- ¹² “Assad’s suspected biological weapons more lethal than his chemical arsenal”, by Patrick Goodenough, *cnsnews.com*, September 10, 2013, at <http://www.cnsnews.com/news/article/patrick-goodenough/assad-s-suspected-biological-weapons-more-lethal-his-chemical>
- ¹³ “Syria’s bio-warfare threat: An interview with Dr. Jill Dekker”, by Jerry Gordon, *New English Review*, December, 2007, at http://www.newenglishreview.org/Jerry_Gordon/Syria%27s_Bio-Warfare_Threat:_an_interview_with_Dr._Jill_Dekker/
- ¹⁴ “Country Profile-Syria: Biological”, *NTI*, last updated in February 2013, at <http://www.nti.org/country-profiles/syria/biological/>
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Ebolavirus: A Brief Introduction

Mr. Shyam Hari

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Summary

This paper gives a short brief on Ebolavirus, which is becoming a point of concern for many around the globe. It recounts the advent of the disease, the timeline of attacks till 2014, areas affected, human fatality percentage and concludes by emphasizing on the need to eradicate the disease from the face of earth.

2^{1st} century scientific advancement in the healthcare sector seems to be helpless in front of a viral disease that is spreading terror in Africa and in the minds of global community. The terror factor is none other than the 'Ebola Virus Disease' which was once known as the 'Ebola haemorrhagic fever'.¹It was discovered in 1976 during two coinciding outbreaks, in Democratic Republic of Congo and in Sudan.²'Ebola Virus' got its name from Ebola, the headstream of Mongala River (tributary of former Zaire River, Presently Congo River) in Zaire (Presently Democratic Republic of Congo).³The new viruses which were similar to Ebola also inherited the name which was initially used to describe the virus discovered in Zaire. Sometime in the early 2000 the name 'Ebola Virus' got contracted and became a genus by the name Ebolavirus.⁴This name contraction did create confusion as the name 'Ebolavirus' refers to a genus in the Filoviridae family and 'Ebola Virus' is a species within the genus which is popularly known as 'Zaire Ebolavirus'.⁵

Virus Categories:

Ebolavirus is among the only three known viruses in the 'Filoviridae' virus family, the other two being the Marburgvirus and Cuevavirus.⁶The virus is categorized into 5 distinct species based on their endemic nature, gene overlaps and genomic sequences.⁷Below is the categorisation of the virus along with the region in which they are active.⁸

1. Bundibugyo Ebolavirus: Endemic to Republic of Uganda
2. Reston Ebolavirus: Endemic to Republic of the Philippines

3. Sudan Ebolavirus: Endemic to the Republic of Sudan and the Republic of Uganda
4. Taï Forest Ebolavirus: Endemic to Republic of Côte d'Ivoire/Ivory Coast
5. Zaire Ebolavirus or Ebola Virus: Endemic to Democratic Republic of the Congo, Gabonese Republic, and Republic of the Congo.⁹

Characteristics:

The virus is notorious for its contagious nature, fatality rate and for the absence of a cure vaccine.¹⁰ Ebolavirus causes severe immunosuppression and haemorrhagic fever; the body's blood vessels are damaged leading to multiple organ failure during the

infection.¹¹ Although several species of fruit bats are suspected to be the main intermediary host, the exact host of the virus is not known but majority of the cases are of infection of humans from primates and human to human transfers.¹² Aerosolized organisms in short doses are sufficient to cause human infection. The general incubation period of the virus is 4-9 days. It can survive in dry or liquid materials for a long time, which is also a cause for worry. The virus's infectious property can be preserved by freeze-drying or lyophilisation.¹³

Figure 1 highlights Sudan, Ebola and Reston species of the virus can be noted to have attacked the same location more than once. The 5 locations which reported the attack

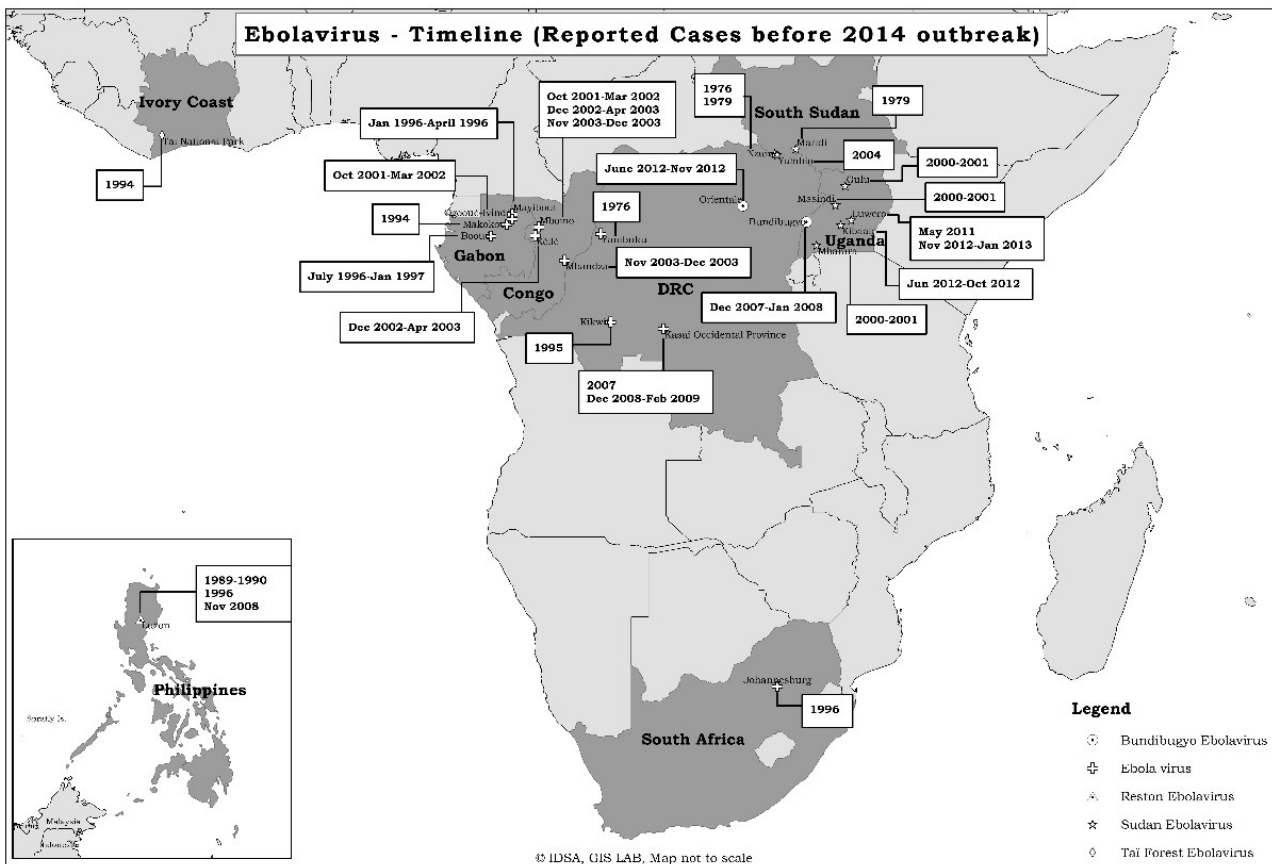


Figure 1: Timeline of the reported attacks of the distinct species of Ebolavirus before the 2014 outbreak¹⁴

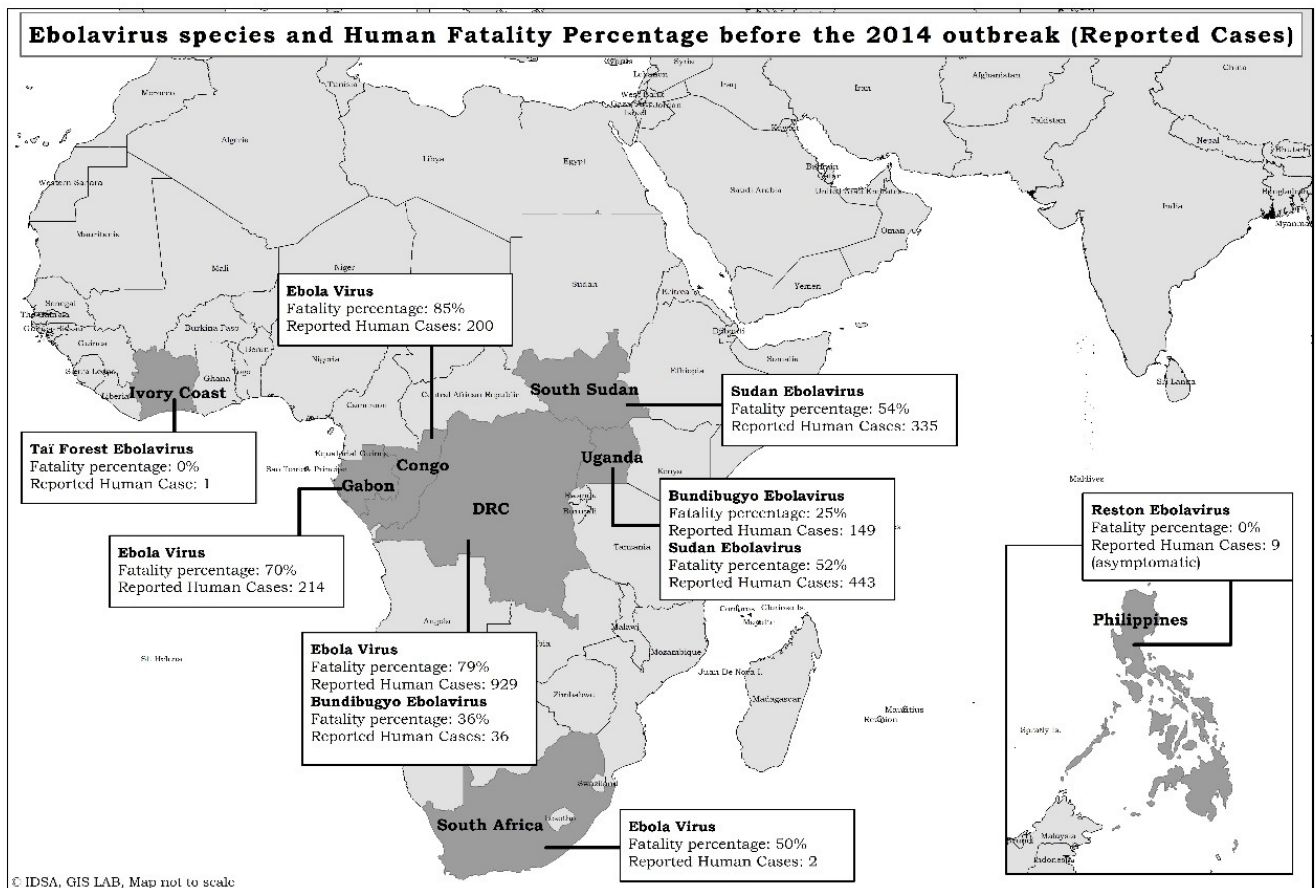


Figure 2: Human fatality percentage of the distinct species of Ebolavirus.

by the same species of virus although in different time periods are 'Kasai Occidental Province' in Democratic Republic of Congo, Mbomo in Republic of Congo, Luwero in Uganda, Nzara in South Sudan and Luzon in Philippines. It can also be seen that the same species of virus have attacked more than one location in the same time period. For example, Gulu, Masindi and Mbarara were affected during the 2000-2001 epidemics of Sudan Ebolavirus. with some other examples, but, it is thought-provoking to observe that different species of Ebolavirus attacks were reported in Orientale (DRC) and Kibaale(Uganda) during the same time period and so was the case in Tai National Park (Ivory Coast) and Makokou (Gabon).

The 2014 outbreak occurred in Guinea and Liberia where there was no prior history of

Ebola attacks. Ivory Coast, a neighbouring state of both Guinea and Liberia had an attack of Tai Forest Ebolavirus in 1994, but the recent attacks in Guinea and Liberia are by 'Ebola Virus' which is a different species from 'Tai Forest Ebolavirus'. This also does not leave a solid pattern to understand the spread of the virus.

It can be observed from figure 2 that 'Ebola Virus' had the maximum fatality percentage of 85% in Republic of Congo. Based on the reported cases, the average fatality percentage of Ebola Virus is 78%, Sudan Ebolavirus has an average fatality percentage of 53% and Bundibugyo Ebolavirus has a comparatively low fatality percentage of 27%. Reston and Tai Forest Ebolavirus have no human deaths out of the total 10 reported cases, in which some are

asymptomatic. The main culprit behind the deaths in 2014 outbreak in Guinea and Liberia is the ‘Ebola Virus’. The virus suppression had faced issues in Guinea because of mob attacks on virus containment centres due to anxiety and misinformation among people.¹⁵

Various studies explain how Ebola virus being a member of the ‘Filoviridae’ virus family is a “Category A” biological weapon.¹⁶ There are also some references that Aum Shinrikyo, the Japanese cult infamous for the 1995 chemical attack in Tokyo subway had sent their representatives to collect Ebolavirus samples in 1993.¹⁷ All the reasons mentioned so far cements the theory that Ebolavirus is a true fear factor. It may or may not be used as biological weapon but exercising caution would be a wise decision. The virus needs to be eradicated from the face of the biosphere as early as possible. Awareness, joint effort and cooperation among states and non-state bodies will be crucial to achieve this objective.

Endnotes:

- 1 World Health Organization. “Ebola virus disease.” Accessed April 21, 2014. <http://www.who.int/mediacentre/factsheets/fs103/en/>.
- 2 Ibid
- 3 Mentioned under ‘Zaire Ebola Virus’ in article by Kuhn, Jens H., Stephan Becker, Peter B. Jahrling, Et al. “Proposal for a revised taxonomy of the family Filoviridae: classification, names of taxa and viruses, and virus abbreviations.” National Center for Biotechnology Information. Accessed April 22, 2014. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3074192/>.
- 4 Racaniello, Vincent. “Is it Ebolavirus or Ebola virus?” Virology blog. Accessed April 22, 2014. <http://www.virology.ws/2012/08/07/is-it-ebolavirus-or-ebola-virus/>.
- 5 Ibid

- 6 International Committee on Taxonomy of Viruses (ICTV). “Virus Taxonomy 2011, Taxa Name Search: Ebola.” Accessed April 22, 2014. <http://ictvonline.org/virusTaxonomy.asp?version=2011>.
- 7 Kuhn, Jens H., Stephan Becker, Peter B. Jahrling, and Et al. “Proposal for a revised taxonomy of the family Filoviridae: classification, names of taxa and viruses, and virus abbreviations.” National Center for Biotechnology Information. Accessed April 22, 2014. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3074192/>. Ibid
- 8 Ibid
- 9 The name Ebola originated from Zaire as explained in the introduction paragraph. An official proposal from the US National Centre for Biotechnology Information aims to revise the taxonomy of the ‘Filoviridae’ family, whereby the name ‘Zaire Ebolavirus’ is to be reverted back to ‘Ebola Virus’.
- 10 Public Health Agency of Canada (PHAC). “Ebola virus - Pathogen Safety Data Sheets.” Accessed April 25, 2014. <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/ebola-eng.php>.
- 11 Ibid
- 12 Refer the situation in the table, Centers for Disease Control and Prevention. “Outbreak Table, Ebola Hemorrhagic Fever.” Accessed April 22, 2014. <http://www.cdc.gov/vhf/ebola/resources/outbreak-table.html#eleven>.
- 13 Public Health Agency of Canada (PHAC). “Ebola virus - Pathogen Safety Data Sheets.” Accessed April 25, 2014. <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/ebola-eng.php>.
- 14 Figure 1 and 2 are prepared using the detailed chronology of Ebolavirus attacks listed in the official website of the United States ‘Centers for Disease Control and Prevention’. The figures are prepared excluding the events post January 2014 and the 8 events reported at controlled laboratories/quarantine facilities, where the infection was either a clerical accident or was a contamination by ‘Reston Ebolavirus’ having its source traced back to Luzon, Philippines, from where the infected primates and pigs were imported has been marked in both the figures.

- ¹⁵ TIME. "Crowd Attacks Ebola Treatment Center in Guinea." Accessed April 26, 2014. <http://time.com/50628/crowd-attacks-ebola-treatment-center-in-guinea/>.
- ¹⁶ Bray, Mike. "Defense against filoviruses used as biological weapons." *Antiviral Research* 57 (2003) 53-60 <http://courses.washington.edu/eh451/articles/filoviruses.pdf>.
- ¹⁷ Fletcher, Holly. "Backgrounder: AumShinrikyo." Council on Foreign Relations. Accessed May 1, 2014. www.cfr.org/japan/aum-shinrikyo/p9238.

Chemical and Biological News

ARMS CONTROL

US, South Korean health experts team up to contain North Korean pandemic risk

14 May 2014

By Loren Grush, FoxNews.com

North Korea's inflammatory rhetoric and atomic weapons testing aren't the only concerns for U.S. officials, as an even bigger threat than nuclear Armageddon may be lurking within the communist nation's borders: The threat of deadly disease.

In 2010, a report from Amnesty International painted a grim picture of North Korea's crumbling health care system, with witnesses and health care workers recounting barely-functioning hospitals, multiple medication shortages and epidemics caused by malnutrition. These findings fell in line with the World Health Organization's estimates from 2006, which revealed that North Korea spends less on health care than any other country in the world – less than \$1 per person.

Given the country's extreme medical deficiencies, U.S. military officials soon grew concerned over the possibility of a lethal pathogen originating within North Korea, as the nation's health care officials would be nearly powerless to stop the spread of infection. And if such an illness were to continue to expand, a global pandemic would likely occur.

In order to prevent such a catastrophic event, the U.S. Army launched in October the Joint United States Forces Korea Portal and Integrated Threat Recognition program – also known as JUPITR. A collaboration

between American and South Korean doctors, JUPITR utilizes advanced technologies to monitor the border between North and South Korea for potential disease agents that could become serious health hazards.

“North Korea being right up against South Korea, it's an area we're concerned about,” Peter Emanuel, the JUPITR ATD Lead and division chief of the Edgewood Chemical Biological Center BioSciences, told FoxNews.com. “A disease doesn't pay attention to a line drawn on a map. They move in their own set of rules. [For them,] the world is 'flat,' and diseases recognize they can move wherever they want.”

JUPITR acts as one big red flag, alerting officials stationed in South Korea of emerging bio-threats in the area. Emanuel noted that the program is broad in focus, with the ability to identify both naturally occurring diseases – such as avian flu and Middle East respiratory syndrome coronavirus (MERS-CoV) – as well as state sponsored biological warfare, such as anthrax or plague.

To do this, the program has four main legs that all work together in disease-detecting harmony. The first of which is the biosurveillance portal – web-based technologies that attempt to expose a disease pandemic at its earliest stages before it becomes a global issue. JUPITR's biosurveillance programs track all sorts of information that may be related to public health, including everything from the migratory patterns of birds to emerging health trends on social media.

“These surveillance programs might put two and two together and see something that might be coming,” Emanuel said. “They look at the number of times people say the word

‘vomit’ on Facebook, to outbreaks being reported in certain regions, to the number of bottles of Pepto Bismol being sold at Wal-Mart. [It helps provide] a more informed, common operating picture – an attempt to bring everything together in a way you can digest and make a decision about it.”

The program’s second leg is biological identification capability sets (BICS), or in other words, on-site laboratory testing. Currently, if doctors believe army personnel have been exposed to a disease agent, bio-samples must be shipped to labs thousands of miles away for analysis. BICS aims to bring high quality laboratory capabilities to the field, closer to where forces are stationed, so that doctors can get answers in as little as four hours and respond quickly if necessary.

The third and fourth legs of JUPITR revolve around advanced environmental sensor technology, such as radar and antibody-based technology that can detect biological agents in the atmosphere. In the coming months, program officials will test 10 different environmental field sensors to see which ones are best at sensing and identifying potential health risks; those that perform the best will be transported to Korea and integrated into various perimeter defense systems.

“The outcome we hope to get – the best case outcome – is a combination of technologies that gives [us] vigilance, that gives [us] the ability in a cost effective manner to analyze survey and inform commanders of any impending threats,” Emanuel said.

JUPITR’s technologies are currently located in four bases in South Korea, but Emanuel said they hope to expand the program within the Korean peninsula – and eventually to other countries around the world. Emanuel noted that JUPITR is meant to serve as a pilot program for biosurveillance

technologies in general, as the military hopes to start similar projects in U.S.-occupied nations such as Vietnam, Cambodia and Thailand, whose neighbors may pose similar pandemic threats.

“The medical capacity of a country is of great interest. If you have healthy countries that have the ability to respond to situations, they make good neighbors. But if a disease springs up and gains a foothold in a neighboring country, then it will quickly move over into your country,” Emanuel said. “... So the earlier you can apply counter measures...you minimize casualties and minimize loss.”

<http://www.foxnews.com/health/2014/05/14/us-seoul-health-experts-team-up-to-contain-north-korean-pandemic-risk/>

DISARMAMENT

Removal of Syrian Chemicals Passes 86% of Total

22 April 2014

The Director-General of the OPCW welcomed delivery of a further consignment of chemicals to the port of Latakia by the Syrian government today. The chemicals were immediately boarded onto cargo ships upon arrival at the port and removed from the country.

This raises the overall portion of chemicals removed from Syria to 86.5% of the total, including 88.7 % of all Priority 1 chemicals. Today’s consignment was the 17th to date and the sixth consignment since 4 April, marking a significant acceleration in the pace of deliveries to Latakia this month.

“This latest consignment is encouraging,” the Director-General said. “We hope that the remaining two or three consignments are delivered quickly to permit destruction operations to get underway in time to meet

the mid-year deadline for destroying Syria's chemical weapons.”

<http://www.opcw.org/news/article/removal-of-syrian-chemicals-passes-86-of-total/>

Director-General Meets Senior Government Officials in Argentina, Opens 1st Regional Meeting on Education in Dual-Use Chemicals

09 April 2014

The OPCW Director-General, Ambassador Ahmet Üzümcü, visited Buenos Aires on 7 and 8 April 2014 where he had meetings with the Minister of Defense, Mr Agustin Rossi; with the Under Secretary for Political Affairs, Ambassador Carolina Perez Colman; and with the Secretary for University Affairs, Dr Aldo Caballero. He also delivered an opening statement to a first-ever regional meeting on Education in the Responsible Application of Knowledge of Dual-Use Chemicals [PDF - 10 KB], which Argentina co-organised with the OPCW.

In their meetings, the Director-General updated the Minister and Under Secretary on the global implementation of the Chemical Weapons Convention (CWC), including the mission to destroy Syria's chemical weapons programme, and on the OPCW's ongoing efforts to achieve universality of the CWC. He commended Argentina for its commitment to the Convention and support for the work of the OPCW, and for its initiative in organising the regional meeting. The officials assured him of Argentina's continued commitment and support.

In his opening statement [PDF - 37 KB] to the regional meeting, the Director-General said education and outreach are opening “a new front” in the OPCW's efforts to guard against chemical weapons, a front that “must

bring together a well-integrated community of scientists and researchers working proactively for chemistry that benefits, and never harms, humankind.”

“I also wish to acknowledge the leading role Argentina has played through its national project on education and outreach, involving national governments, regional organisations, academics and industry representatives,” he continued. “This event could not be timelier - we are meeting almost one year to the day since States Parties, at the Third Review Conference in The Hague, for the first time called for action on education and outreach.”

Ambassador Perez Colman addressed the opening ceremony as well, in the presence of the Secretary for University Affairs, Dr Caballero.

While in Buenos Aires the Director-General addressed a conference at the Argentine Diplomatic Academy (Ministry of Foreign Affairs) and received a *Honoris Causae* degree from the University of Buenos Aires Law School. He also visited the Federal Police Officers Academy for a demonstration of equipment and preparedness against chemical incidents.

<http://www.opcw.org/news/article/director-general-meets-senior-government-officials-in-argentina-opens-1st-regional-meeting-on-educ/>

China Hosts Seminar on the CWC and Chemical Safety and Security Management for OPCW Member States in ASEAN and SAARC

06 May 2014

The OPCW and the Government of the People's Republic of China jointly organised a seminar on the Chemical Weapons

Convention (CWC) and Chemical Safety and Security Management from 23 to 25 April 2014 in Beijing.

The seminar was attended by 51 participants from 17 States Parties in the ASEAN and SAARC regions*, and from Myanmar, a Signatory State. Participants included representatives from National Authorities, chemical industries, industry associations, and chemical industry regulators.

The seminar was opened by Mr Wang Qun, Director-General of China's Department of Arms Control and Disarmament, and by H.E. Mr Alexander Horin, Chairperson of the OPCW Executive Council. Director-General Wang noted the importance of chemical safety and security programmes and the OPCW's support in this area for the ASEAN and SAARC regions. Ambassador Horin underlined the strong cooperation between the OPCW and Government of China in promoting the goals of disarmament, non-proliferation, the peaceful uses of chemistry, and full implementation of Article XI of the Convention.

The participants considered new approaches that can be adopted in relation to chemical safety and security management, and shared their experiences in ensuring the safe and secure handling of chemicals. The seminar helped identify the needs of States Parties in the ASEAN and SAARC regions and concrete measures for the OPCW to consider.

Speakers from the USA were invited to make presentations, and the representative from Myanmar reiterated his government's intention to ratify the CWC.

* Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Maldives, Nepal, Pakistan, Philippines,

Singapore, Sri Lanka, Thailand, USA, and Vietnam

<http://www.opcw.org/news/article/china-hosts-seminar-on-the-cwc-and-chemical-safety-and-security-management-for-opcw-member-states-in/>

NATIONAL AND INTERNATIONAL DEVELOPMENTS

OPCW to Undertake Fact-Finding Mission in Syria on Alleged Chlorine Gas Attacks

29 April 2014

At a meeting of the OPCW Executive Council held today, the Director-General announced the creation of an OPCW mission to establish facts surrounding allegations of use of chlorine in Syria.

The Syrian government, which has agreed to accept this mission, has undertaken to provide security in areas under its control. The mission will carry out its work in the most challenging circumstances.

Delegations speaking at today's Executive Council meeting expressed their full support for this mission. The UN Secretary-General Mr. Ban Ki-moon has also expressed his support and assured the assistance of the United Nations in meeting the significant security and logistical demands of this mission.

The team is expected to depart for Syria soon.

<http://www.opcw.org/news/article/opcw-to-undertake-fact-finding-mission-in-syria-on-alleged-chlorine-gas-attacks/>

Taliban's Polio Vaccine Intransigence Causes Travel Issues

15 May 2014

By Central Asia Online By Ashfaq Yusufzai

The Tehreek-e-Taliban (TTP)'s opposition to polio vaccinations has caused World Health Organisation (WHO) officials to safeguard the international community.

WHO officials May 5 issued a statement recommending restrictions on Pakistanis travelling abroad to prevent the polio virus from reaching countries long declared free of the crippling disease.

"Everyone flying outside Pakistan will now be required to get a certificate of vaccination stating that he or she had received oral polio vaccine," Minister of State for National Health Services, Regulations and Co-ordination Saira Afzal Tarar said.

Travellers, regardless of age, who do not have a certificate are supposed to receive a vaccination at the airport before leaving the country.

Those preferring to plan ahead can obtain a certificate of vaccination within 40 days before their trip abroad by going to district headquarters and teaching hospitals. The certificate will be good for a year.

A heavy cost to the state

"We want to safeguard children in other parts of the world," WHO senior co-ordinator for Pakistan Dr. Elias Durray told Central Asia Online, noting that the Taliban have thwarted global polio eradication efforts. "Now Pakistan will be paying an additional amount for purchasing vaccines to ensure that all the people receive it prior to boarding their flights."

The government will be required to set up polio counters in 11 airports and administer vaccines to about 40,000 passengers flying outside the country yearly, Tarar said. "The additional vaccines will also cost about Rs. 1 billion [US \$10m]."

Bacha Khan International Airport will have to spend an additional US \$1m (Rs. 98.5m) every month, KP Health Minister Sharam Khan said. "We already had a polio counter at the airport that vaccinated children under age 5, but now we have to immunise approximately 20,000 people flying every day from Peshawar."

The responsibility squarely lies with Taliban militants, Tarar said. "It is due to increasing militancy that we are failing to eradicate the polio virus."

Pakistan's crippled children

The country, especially its children, has paid a heavy price since the TTP took its stance against vaccines, making unfounded accusations about the vaccine and killing vaccination workers.

So far this year, Pakistan has recorded 59 cases of the virus-borne disease, 45 of which occurred in the Federally Administered Tribal Areas (FATA). In North and South Waziristan, 300,000 children remain unvaccinated.

Polio crippled 65 children under 5 years of age in FATA in 2013. The entire country last year totalled 93 polio cases.

"Not only FATA children but children in adjacent KP also risk contracting the disease because of the frequent movement of children from there," Dr. Janbaz Afridi, head of KP's vaccination programme, told Central Asia Online.

The TTP, whom authorities and medics previously blamed for virus circulation in Pakistan, will be guilty of allowing its break-out to other countries, Khan said.

The government April 18 included the army in its efforts to vaccinate about 900,000 children under strict security. Taliban militants have killed 50 people and injured 31 others in polio-related campaigns in the country since December 2012.

<http://www.eurasiareview.com/15052014-talibans-polio-vaccine-intransigence-causes-travel-issues/>

Nazi scientists planned to use mosquitoes as biological weapon

14 February 2014

Philip Oltermann in Berlin, theguardian.com,

Himmler ordered secret research into how malaria-infected insects could be sent behind enemy lines, research reveals.

The Nazis considered using mosquitoes as biological weapons during the second world war, research has revealed.

Towards the end of the war, scientists at an institute in Dachau conducted research into how malaria-infected insects could be kept alive for long enough to be released into enemy territory.

In January 1942, the leader of the SS, Heinrich Himmler, ordered the creation of the Dachau entomological institute. Its official mission was to find new remedies against diseases transmitted by lice and other insects: German troops were often plagued by typhoid, and there were concerns about a developing typhoid epidemic at the Neuengamme concentration camp.

But in an article for the science journal Endeavour, Klaus Reinhardt says protocols kept by the head of the institute allow no other conclusion than that the institute also pursued research into biological warfare.

In 1944, scientists examined different types of mosquitoes for their life spans in order to establish whether they could be kept alive long enough to be transported from a breeding lab to a drop-off point. At the end of the trials, the director of the institute recommended a particular type of anopheles mosquito, a genus well-known for its capacity to transmit malaria to humans.

With Germany having signed up to the 1925 Geneva protocol, Adolf Hitler had officially ruled out the use of biological and chemical weapons during the second world war, as had allied forces. Research into the mosquito project had to be carried out in secret.

In the end, the research proved of little value. Behind the project was “a bizarre mix of Himmler’s smattering of scientific knowledge, personal paranoia, an esoteric world view, and genuine concerns about his SS troops”, Reinhardt told Süddeutsche Zeitung. In comparison with the biological research of the allied forces, he said, Nazi research had been “risible”.

Animals were frequently employed for military operations during the first and second world war, though mainly for transport and communication. In 2004, the British government unveiled a memorial dedicated to the animals including horses, dogs and pigeons who served and died alongside British and allied troops.

During the first world war, glow worms were often kept by British soldiers to help them read maps at night. American researchers also worked on a plan to use bats to carry incendiary bombs, but the programme was shelved.

<http://www.theguardian.com/world/2014/feb/14/nazi-scientists-mosquitoes-biological-weapon>

Russia Rejects Bioweapons Talk in U.S. Congress as ‘Propaganda’

13 May 2014

By Global Security Newswire Staff,

Russia accused U.S. lawmakers of hosting “a propaganda event” last week to examine its biological-weapons potential, Interfax reports.

The Russian foreign ministry dismissed assertions in May 7 congressional testimony that Moscow may continue to oversee a biological-arms program. The ministry blamed the United States for the absence of a monitoring system under the Biological Weapons Convention, which prohibits member nations from developing, manufacturing or possessing biological materials for use in combat.

“Russia supports consistently enhancing [the treaty] by drafting and passing an additional legally binding protocol stipulating, among other things, nondiscriminatory and efficient verification measures,” the ministry argued in prepared comments.

The United States unilaterally cut short a decade of “significant work” by treaty signatories to establish verification procedures, and since that time has remained steadfast in its opposition to a monitoring regime, the Russian office stated.

Russia issued the remarks in reaction to a hearing of the House Foreign Affairs Subcommittee on Europe, where University of Maryland senior scholar Milton Leitenberg said the existence of a Russian biological-arms program cannot be ruled out because

Moscow does not permit outside access to key facilities of concern.

According to the ministry, “It is surprising that certain representatives of the U.S. establishment continue demanding unilateral access to the Russian biological facilities amid the U.S. refusal from such a fair and clear [verification] mechanism. Such demands are inappropriate and unacceptable.”

The foreign office added that participants in the congressional hearing misinterpreted a 2012 article in which Russian President Vladimir Putin said “genetic” technologies could pave the way for more sophisticated biological arms.

The leader suggested that such techniques “could be used abroad,” but the “thought was turned upside down at the hearing in the Congress,” the Russian ministry said.

<http://www.nationaljournal.com/global-security-newswire/russia-rejects-bioweapons-talk-in-u-s-congress-as-propaganda-20140513>

WWI weapon reappears in Syria

28 April 2014

Joshua Keating, Bloomberg News

Ninety percent of Syria’s declared chemical weapons have now been shipped out of the country, but in recent days disturbing reports have emerged of at least nine attacks using chlorine gas. Rebel forces and the government have traded blame for the attacks, the worst of which killed two and sickened more than 100 in the rebel-held village of Kafr Zita on April 11, though the method of dispersal — barrels dropped from a helicopter — certainly fits with the tactics used by Bashar Assad’s forces.

Chlorine is a widely available chemical with many perfectly legitimate industrial uses —

water purification being the most well known — and wasn't included in Syria's declaration of its chemical arsenal. It's almost never used as a weapon today and its appearance in Syria harks back to the earliest days of chemical warfare.

Though chemicals including tear gas and sneezing powder were used in the early days of World War I, the first mass gas attack in history was carried out by German forces at the Battle of Ypres, in Western Belgium, on April 22, 1915 — and chlorine was the weapon of choice. Chlorine inflames the lung tissues, allowing fluid to enter the lungs from the bloodstream. In the worst cases, victims drown on the fluid building up in their lungs, though it takes extremely high doses to kill. Chlorine is about three thousand times less toxic than sarin gas that killed hundreds in a chemical attack in Syria in August.

At Ypres, the Germans launched a massive and concentrated attack, manually releasing the gas from hundreds of cylinders and allowing prevailing winds to blow a cloud of gas over the French and French colonial lines. Edward Spiers, a professor of strategic studies at the University of Leeds and author of "A History of Chemical and Biological Weapons," described the effect in an interview with Slate this week.

"Because it was the first time ... French forces weren't prepared at all and started to run," he said. "The worst thing you can do in a chemical cloud is run because then you breathe more deeply. They were inhaling more and more chlorine and the casualties were quite high and the Germans gained a considerable amount of ground."

The number of French soldiers killed in the gas attack may have been as high as 6,000. The Germans would use chlorine several

more times, and the British employed it at the Battle of Loos, but its effectiveness diminished as soldiers became better prepared for it. Early countermeasures were as simple as breathing through handkerchiefs soaked in urine, but eventually proper respirators were developed for the battlefield. Then chlorine fell out of favor compared with deadlier chemicals.

Use of chlorine by armies has been almost unheard of since the Great War. In the international Chemical Weapons Convention, drafted in the 1990s, its use as a weapon is prohibited but as a chemical, it is not banned outright due to its civilian uses. "The old lung agents like chlorine and phosgene were put on the back burner because nobody thought they'd be used," says Spiers.

It has reappeared as a weapon at least once since WWI. In Iraq in 2007, insurgents experimented several times with using chlorine-packed tanker trucks in suicide bombings. This wasn't a particularly brilliant idea. Explosives actually make chlorine less effective — they simply burn the gas up — and the casualties weren't any greater than normal truck bombs. The reports of poison gas were certainly unnerving to the population though.

Aside from its easy availability, Spiers says chlorine has one major advantage: Unlike nerve agents such as sarin, you can instantly see and smell the cloud.

"Gas warfare has always been as much a psychological weapon as a weapon that kills and injures," he says.

The Syrian regime has often favored weapons that seem tactically crude but are extremely effective at terrorizing civilians.

If it does turn out that the regime is behind the latest attacks, it would definitely seem to fit a pattern.

<http://www.mysanantonio.com/opinion/commentary/article/WWI-weapon-reappears-in-Syria-5436041.php>

NEW DEVELOPMENTS IN SCIENCE AND TECHNOLOGY

Why We Should Never Completely Destroy Smallpox

My grandfather used to keep all sorts of things in the trunk of his car: Fishing gear, duct tape, aluminum foil, a large chain, a defused WWII hand grenade. When we asked why he squirreled away such a random assortment of items, he would shrug and say, “Just in case.”

That, in a nutshell, is why we should never destroy the smallpox virus. Just in case we need it someday.

This month, the World Health Assembly (WHA) will once again debate the future of smallpox virus. Currently, there are two locations with smallpox stockpiles approved by the World Health Organization (WHO). One is located at the Centers for Disease Control and Prevention in Atlanta and the other at the State Research Centre of Virology and Biotechnology in Koltsovo, Russia. Since the 1980s, WHO-approved smallpox research has been conducted in only these two laboratories.

But, that may be coming to an end. According to an op-ed written in *PLoS Pathogens*, decision makers are leaning toward destroying the stockpiles and ending research.

This is a terrible idea, for at least four reasons.

First, the world would have to trust Russia to destroy all of its smallpox. Russia is, to put it diplomatically, not a trustworthy partner. The former Soviet Union signed a 1972 treaty, called the Biological Weapons Convention, that banned biological weapons. After signing it, the Soviets *increased* production of those weapons. It wasn't until 1992, under Russian President Boris Yeltsin, that the program actually came to an end. (Or, so they say.)

Considering that Russia sells weapons to murderous tyrants like Syria's Bashar al-Assad, maintains friendly relations with North Korea, and invades smaller, defenseless neighbors like Ukraine (while simultaneously denying that they are conducting an invasion), the notion that Russia might be lying about biological weapons research is not terribly far-fetched.

Second, the fate of the Soviet biological weapons is unknown. It is entirely possible that weapons, vials of smallpox, or unemployed scientists ended up in places like Iran.

Third, every once in a while, there is a smallpox scare from historical samples. What was thought to be a 135-year-old smallpox scab turned up in a museum in 2011. It ended up not being smallpox (but possibly a related virus known as *Vaccinia*). Still, the possibility of smallpox viruses surviving in old human tissue samples is a real enough threat. In an e-mail interview with *RealClearScience*, Dr. Inger Damon, the lead author of the *PLoS Pathogens* article, wrote, “The virus is highly stable when frozen; periodically the question of viable virus existing in corpses buried in the northern permafrost is posed, but remains unanswered.”

Fourth, as the op-ed authors indicate, there is still much basic research to be done. For instance, it is unknown why smallpox only infects humans. Comparing smallpox to other related viruses will help enhance our understanding of virology. Additionally, further research will improve smallpox diagnostics and vaccines, in the event that something unthinkable occurs.

For these reasons, *smallpox stockpiles should not be destroyed for the foreseeable future.*

Conservative Seattle radio host David Boze agrees. He even suggested a radical solution: Put smallpox on the endangered species list. Sure, smallpox isn't as cute as a polar bear, but it's several times more deadly. Maybe we should keep it around — you know, just in case.

<http://www.forbes.com/sites/alexberozow/2014/05/12/why-we-should-never-completely-destroy-smallpox/>

Science, Technology and Warfare

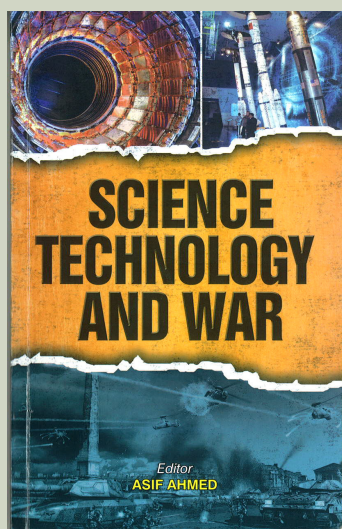
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Summary

A section of the book discusses and highlights the technological perspectives on the WMD debates.



Based on the idea that "technology shapes warfare, not war", Science, Technology and Warfare is a comprehensive collection of essays that highlight the various aspects of science and technology in shaping the modern warfare. History has witness numerous wars and battles that have also been great stimulants to science and to the development of inventions. The book under review is a collection of 15 essays highlighting issues involving energy security, environment protection, health care, nuclear, missile laser, biotechnology, biometric, ocean and space technology; the issues that have relevance to government policy on national security.

The essay on biotechnology in particular is of relevance to the readers of the CBW Magazine. The essay titled "Biotechnology in India and role of Biotechnology in Defence" has been written by Mohammad Anwar and Asif Ahmed. It goes beyond bioweapons by underlining the potential of biotechnology industry in India. The authors note that with 2.4% of total global surface area, India has immense biodiversity to conduct varied field research. They also bring out arguments for its vast potential use in fields like agriculture, forestry, horticulture, medicine, food industry, chemical industry, pollution control and defence. Emphasizing the use of biotechnology in defence, the authors go a step further from conventional understanding on bioweapons to developing R&D for its future utility. They argue that biotechnology can help develop practical utilities like bio-engineered tracking agents in form of tablets for soldiers, illuminating paints for camouflage, biosensors for germ, flexible armour skins and self-healing materials can be developed by raising the bar for R&D in field of biotechnology.

Breaking down the misconception that bioweapons are "a poor man's atomic bomb"intended to deter unconventionally armed neighbours and "cheap force multipliers" to compensate shortcoming in conventional arsenal, the authors advocate that it is possible to development such agents, which may alter the biological features of human body in generations to come. However, they also underline the fact that biotechnology, if used prudently, can play a significant role in countering threats by way of helping develop and produce a"bio-armoury" comprising antibiotics, antinodes and bio-sensors for rapid detection, identification and neutralization of biological warfare agents.

Discussing the advantages and disadvantages of biotechnology, the authors deliberate on the hurdles in way of biotechnology growth in India. According to them funding at initial stages and public acceptance are the two major obstacles for development of bio-industry in India. Beside its focus on biotechnology, the book is a comprehensive illustration of wide range of topics including cyber-security, space and ocean security. The book is highly readable for both experts and interested readers and is a significant addition to the knowledge and understanding of contribution of science and technology in shaping modern warfare.

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