

Chemical and Biological News

NATIONAL AND INTERNATIONAL DEVELOPMENTS

Intel notes Another front of India-Pakistan Conflict: Poisoning of ration for Indian Army Jawans

3 March 2019

In a recent report, it was noted that Intelligence Bureau has warned the Indian government that Pakistan Military Intelligence and ISI agents operating in Kashmir are planning to “mix poison” in ration stocks of security forces deployed in the Valley. According to oneindia.com, the intelligence report says that they got the information from the chatter that was floated, in which it was suggested that the ration of the Indian Army in Jammu and Kashmir will be poisoned.

Intelligence has claimed to have increased the security of the ration depots situated near LoC and they are also taking some measures to prevent it from happening. The Intelligence also stated that all the already stored ration and the new rations is being checked by a team of specialists.

<https://www.msn.com/en-in/news/newsindia/pakistans-isi-planning-to-poison-ration-stocks-of-indian-army-jawans-intel-note/ar-BBUh01p>

Military Testing at secret UK research base killed almost 50,000 animals

Sean Rayment, 27 April 2019

Sunday Mirror reported that a top secret government research base has killed approximately 50,000 animals in conducting various experiments from blowing up pigs,

infecting monkeys with biological weapons to poisoning guinea pigs with nerve gas. The animals that do not die due to the harsh experiments conducted on them are killed at the end of the test and dissected. The Army has also taken part in “live tissue” experiments in Denmark involving pigs. The beasts were shot in different parts of the body with rifles. Army medics then fought to keep them alive.

The MoD defends the practice, stating that it provides doctors with crucial hands-on experience that aid in saving the lives of British troops injured in battle. A MoD spokesman said “DSTL (Defence Science and Technology Laboratory) is responsible for developing and creating indispensable technology to protect the UK and its armed forces. This could not, currently, be achieved without the use of animals in research. DSTL is committed to reducing the number of animal experiments.”

Animal rights activists have been opposing such inhuman acts quite vocally. A report stated “to deliberately expose live animals to compounds, simulated blasts and biological pathogens which are known, and indeed developed, to cause extreme suffering and death is morally unconscionable. A civilised society, in the 21st century, should not be involved in such macabre and terrible practices.”

<https://www.mirror.co.uk/news/uk-news/almost-50000-animals-killed-during-14792198>

Australia Introduces Digital Bio Security for its Vineyards

April 2019

In a nation-leading program, a Digital Biosecurity platform will be set up to provide

real-time data on South Australian Vineyards to enhance responses to devastating diseases and pests.

Vinehealth Australia Chief Executive Officer Inca Pearce said “the development of the new platform will replace the existing Vineyard Register, providing greater ability to protect South Australia’s vineyards from pests and diseases. Increased global trade and tourism, agricultural expansion and intensification and changing consumer expectations are increasing our biosecurity exposure. By enhancing the Vineyard Register with contemporary technology, we can better support all parts of biosecurity management, including preparedness, prevention, response, surveillance and recovery.”

The new Digital Biosecurity Platform, which will utilise a number of technology platforms including cloud, geospatial data, big data analytics and remote monitoring, is expected to be in operation by 2020. The new platform will establish South Australian grape growers as global leaders in biosecurity and propel the wine and grape industries into next generation technology in this area.

South Australia is in the enviable position of being phylloxera free and this status enables us to maintain some of the oldest vines in the world. To further strengthen South Australia’s phylloxera free status, the State Government has also partnered with Vinehealth Australia to fund nine new biosecurity signs at key border locations highlighting the strict quarantine requirements associated with the entry of phylloxera risk items into the state such as vineyard machinery, equipment, soil and grapes.

Travellers or companies caught breaking the rules when crossing the border or entering the state’s wine regions face fines of up to

100,000 USD. Phylloxera presents a huge risk to our local wine industry and it’s crucial that we remain vigilant in implementing the highest quarantine measures at the border and in our vineyards.

<https://www.barossa Herald.com.au/story/6010186/vineyard-biosecurity-goes-digital/>

Fabric that Protects against Chemical Warfare Agents

D’lyn Ford, 5 April 2019

A new coating for textile fibers has potential for effectively capturing toxic industrial chemicals and chemical warfare agents under real-world conditions, including high humidity. The outcome of the research could be improvised masks and personal protective equipment for soldiers and others at risk of exposure.

Researchers at North Carolina State University and the U.S. Army’s Combat Capabilities Development Command Chemical Biological Center (CCDC CBC) developed functional textiles that neutralized a blistering agent simulant under conditions of 80 percent relative humidity. The new coating also captured ammonia gas, a commonly produced industrial chemical in the U.S.

For more than a century, there had been threats from chemical warfare agents, like chlorine and mustard gas or the recent chemical attacks against civilians in Syria. There was a need to find ways to capture and chemically break down toxic gases for practical, better-performing protective equipment.

Scientists worked with metal-organic frameworks (MOFs) – coatings that are synthesized over microfibers. There are two limitations of this, first, lies in creating MOFs

that can remain stable in the presence of moisture while holding the hazardous compounds in a thin film, a process known as adsorption/absorption. The second is achieving a coating that's effective in degrading toxic chemicals.

The team created a water-stable copper (Cu)-based MOF film. Instead of working with a powder source, researchers used a solid film deposited on the fiber, which captured three times more ammonia gas than the same MOF powder.

Electron microscope images showed MOFs in crystal formations that grew out radially from the fiber – a distinctive shape that hadn't been previously reported. The MOFs bonded strongly with the surface of the polypropylene fibers, resisting flaking when handled in the lab and when swept with a nylon brush. This alignment formed a dense coating on the fibers, with better integration and adhesion to the surface, and improved adsorptive performance for hazardous gases.

The new MOF-coated composites have potential to be used as a base film in protective textiles. The method would also be suitable for use in smart textiles that have multiple functions, such as sensors. Future plans call for testing the new materials with real chemical warfare agents, working with U.S. Army experts at the CDC.

<https://phys.org/news/2019-04-fabrics-chemical-warfare-agents.html>

DISARMAMENT

The Man who Pulled the brakes on America's Biological Weapon Program

Kelsey Piper, April 2019

Matthew Meselson is an American biologist who would be given 50,000 USD Future of

Life Award for spearheading the fight for an international ban on biological warfare. Matthew is currently 88 years and a Thomas Dudley Cabot professor of the natural sciences at Harvard. While working on arms control issues in the 1960s he learned about USA's anthrax development program. The rationale for developing biological weapons at that time was that it was considered a cheap weapon of mass destruction. However, Meselson took proactive steps to deter the American government from undertaking such initiatives and started advocating against stockpiling such weapons. He wrote to every science writer for a newspaper in America, spoke on television and radios against the use of biological weapons. He also got thousands of scientists to sign a petition against biological weapons. By 1969, his initiatives had started yielding results, President Nixon had renounced bioweapons and resubmitted the Geneva protocol to Congress for ratification. However, the Geneva protocol only banned the use of biological weapons and not the stockpiling them or research into developing them, both of which pose significant risks by themselves. Meselson and his peers pushed for a stronger agreement and in 1972 they got the Biological Weapons Convention, which is still in place.

Humanity still faces a significant risk of disaster from pathogens, either deliberately engineered or released by accident. But the Biological Weapons Convention has for the most part been adhered to, and humanity is significantly safer as a result. In granting the award to Meselson, the Future of Life Institute shines a spotlight on an existential risk that can sometimes be ignored in discussions of threats facing humanity.

<https://www.vox.com/future-perfect/2019/4/9/18301321/biological-weapons-xrisks-future-of-life-institute>

Chemical Weapons Decontamination method formulated and patented by the US

Troy Carter, 2 April 2019

US Army patented a ground breaking work on rapid decontamination. The research team at the Army's Chemical Biological Center in Maryland reduced decontamination time down to less than 30 minutes and the amount of water needed to treat large amounts of equipment coated in deadly toxins.

Gregory Peterson, Joseph Myers, George Wagner, Matthew Shue, John Davies, Jr., and Joseph Rossin were listed as the inventors on U.S. Patent 10,245,456, "Process for Decontamination and Detoxification with Zirconium Hydroxide-Based Slurry."

The experiment used sulfolane, a solvent, to divide the chemical weapons from surfaces. Zirconium hydroxide ($Zn(OH)_4$) was also added, which adsorbs the chemical weapons, and dibromo-dimethyl hydantoin (DBDMH), which is used industrially for drinking water purification and paper bleaching. The DBDMH oxidizes and destroys the chemical weapons without corroding equipment.

The sprayable slurry has a paint-like consistency, with thickening agents added to improve its adherence on all kinds of surfaces. Once prepared, it can be stored for a month, which allows chemical or biological incident response teams to prepare.

The decontamination process starts by spraying surfaces within 15 minutes of a contamination incident. Partitioning, adsorption and chemical destruction of the chemical weapons begin immediately. Unlike current decontaminants that can take hours to work, the slurry requires no application brush, scrubbing, agitation, or rinsing, and

does not significantly degrade the object sprayed. Multiple ratios of each component, at the center's Toxic Chamber Facility, was tested which confirmed that the sprayable slurry can reduce the amount of CWAs on military-relevant materials and complex surfaces by up to 1,000-fold. Testing was done on complex surfaces containing grooves, screw threads, and curved surfaces and areas such as a Humvee door. The research team noted an immediate reduction in vapor hazards after spraying, which minimizes operational risk and allows warfighters to quickly continue on their missions.

"As a result of this innovative chemistry, the Army is a big step closer to providing the warfighter the tools for rapidly responding to chemical weapon attacks, but a company to produce it for the marketplace is still needed," Elder said. "It's been prototyped and tested. So, the technology has been substantially de-risked."

Although chemical weapon decontamination is the primary focus of the current testing, future tests at the Naval Surface Warfare Center's Dahlgren Division will establish the slurry's effectiveness against biological agents, such as *Bacillus anthracis* spores.

<https://techlinkcenter.org/us-army-formulates-new-fast-acting-spray-for-chemical-weapons-decontamination/>

INTERNATIONAL COOPERATION

First Responders from Latin American and Caribbean region receive training in Chemical Emergencies Management

6 May 2019

Between 29 April-3 May, 2019, there was an advanced training course conducted for

twenty one first responders from Latin America and Caribbean, in managing chemical emergencies. It was held in Buenos Aires, Argentina. This advanced course was built on the basic course attended by the participants in Panama in March, 2019. It was organized by the National Authority of Argentina to the CWC (Chemical Weapons Convention) based at the Ministry of Foreign Affairs and Worship in cooperation with the Federal Fire-Fighter Superintendence of the Argentine Federal Police and the OPCW (Organization for the Prohibition of Chemical Weapons) Technical Secretariat. All the 16 OPCW countries including Chile, Cuba, Mexico, Argentina participated in this workshop.

Gustavo Zlauvinen, Vice-Chancellor, representative of the Ministry of Foreign Affairs and Worship of Argentina emphasized the strengthening of the partnership between Argentinian institutions and the Technical Secretariat of the OPCW. As this partnership is aimed at developing stronger regional capacities of the Latin American and Caribbean region against chemical incidents, and advancing the implementation of Article X of the CWC.

This is the eight consecutive time, this course has been conducted in the region. And the agenda of this Eight Regional Advanced Assistance and Protection Course and Exercise on Chemical Emergency Response dealt with individual protective equipment, practical exercises in containment, rescue and decontamination procedures.

Background

OPCW sees to the implementation of the Chemical Weapons Convention across its 193 member states, with the global endeavour to permanently eliminate chemical weapons. It was entered into force in 1997, and has been successful in eliminating ninety-seven

percent of all stockpiled chemical weapons. Thus, for its extensive efforts, the OPCW received the 2013 Nobel Peace Prize.

<https://www.opcw.org/media-centre/news/2019/05/latin-american-and-caribbean-first-responders-get-training-chemical>

Australia contributes € 100,000 to OPCW for identification of perpetrators of chemical weapons attacks in Syrian Arab Republic

18 March 2019

The Australian government is providing € 100,000 to the Trust Fund for Syria Missions to form a OPCW team for the purpose of identifying the perpetrators of chemical weapons in the Syrian Arab Republic. This decision is in alignment with the Fourth Special Session of the Conference of the States Parties held in June 2018. The contribution of € 100,000 was formalised on 15 March, with the signing of the arrangement by the OPCW Director-General, H.E. Mr Fernando Arias and the Government of Australia through the Department of Foreign Affairs and Trade represented by Permanent Representative of Australia to OPCW, H.E. Ambassador Matthew Neuhaus. Currently, the Technical Secretariat, OPCW is in the process of assembling a team of experts along with setting up necessary procedures.

Ambassador Neuhaus emphasized the need to strengthen global arrangements for preventing proliferation of weapons of mass destruction, as one of the national priorities of Australia. Hence, the government has welcomed OPCW's decision to boost the ability to investigate and attribute responsibility for any future use of weapons. It is part of their efforts to enhance safety and security in the nation and international community.

Background

The Conference of the States Parties to the Chemical Weapons Convention (CWC) adopted the decision to address the threat from use of chemical weapons, at its Fourth Special Session. Accordingly, the perpetrators of the use of chemical weapons in the Syrian Arab Republic should be identified. And information pertaining to the source of the chemical weapons, in cases where their use has been suspected should be reported by the OPCW Fact-Finding Mission.

<https://www.opcw.org/media-centre/news/2019/03/australia-contributes-eu100000-help-opcw-identify-perpetrators-chemical>

OPCW Issues Fact-Finding Mission Report on Chemical Weapons Use Allegation in Douma, Syria, in 2018

1 March 2018

The OPCW's Fact-Finding Mission (FFM) issued the final report with regard to its investigation of the alleged use of toxic chemicals in Douma region of Syrian Arab Republic. The FFM was engaged in on-site visits to collect environmental samples, conduct witness interviews as well as gather data. Other inputs like toxicological and ballistic analysis, environmental and biomedical samples analysis results were also examined. The evaluation of the above mentioned information has provided FFM reasonable grounds to prove the usage of chemical weapons in the region, on 7th April, 2018. This chemical weapon was composed of molecular chlorine.

The report has been shared with the States Parties to the Chemical Weapons Convention, a briefing for the same shall be conducted at OPCW headquarters in the

Hague. Simultaneously, the report has been sent to the UN Security Council.

Background

The persistent allegations of chemical weapon attacks in Syria led to the formation of OPCW Fact-Finding Mission (FFM) in 2014. It is responsible for determining the use of toxic chemicals or chemical weapons in Syria, with the information provided by Syrian Arab Republic and others. Previously, FFM was able to determine the use of chlorine, sulphur mustard as well as sarin as chemical weapons in the Syrian Arab Republic. It issued an interim report on 6 July, 2018 regarding its investigation into the allegations of chemical weapons use in Douma in April 2018.

<https://www.opcw.org/media-centre/news/2019/03/opcw-issues-fact-finding-mission-report-chemical-weapons-use-allegation>

Marshall Islands and Maldives draft legislation implementing the Chemical Weapons Convention

12 March 2019

Between 4 – 8 March, 2019, the 21st session of the Internship Programme for Legal Drafters and National Authority Representatives was conducted. During the programme, representatives of Marshall Islands and Maldives devised plans for the implementation of the Chemical Weapons Convention in their respective countries. The internship programme was conducted by OPCW for a week to extend help to both the countries with the implementation of provisions of the Chemical Weapons Convention (CWC) in their national legislations.

The programme not only helped the participants learn about the obligations

under the CWC, but also improved their legal drafting skills through various practical exercises. The two delegations formed during the workshop, prepared drafts, implemented bills as well as national action plans, through activities and indicative timelines. And these are to be employed as a reference for the Technical Secretariat to further the adoption process.

Background

The Internship Programme for Legal Drafters and National Authority Representatives was formed in 2012. Till now 45 countries have been a part of this legal workshop. Among them, Panama, Grenada, Paraguay, Uganda and others have successfully enacted national legislation, while others are at different stages of the adoption process.

<https://www.opcw.org/media-centre/news/2019/03/opcw-supports-marshall-islands-and-maldives-draft-legislation>

Japan Contributes €2.4M for developing OPCW Centre for Chemistry and Technology

27 February 2019

Japan has contributed € 2.4 million to OPCW Trust for the purpose of upgrading the current OPCW Laboratory and Equipment Store. It will result in the construction of a new facility, the OPCW Centre for Chemistry and Technology ("ChemTech Centre"). The donation was formalised today in a ceremony involving the OPCW Director-General, H.E. Mr Fernando Arias, and Japan's Permanent Representative to the OPCW, H.E. Ambassador Hiroshi Inomata, at OPCW Headquarters in The Hague.

Ambassador Inomata remarked that the OPCW Laboratory is essential in light of preventing the use and recurrence of

chemical weapons, as it ensures a fair and impartial international mechanism. A worldwide core facility for improving expertise on the analysis and verification methods with regard to cases wherein use of chemical weapons is suspected is needed. Along with Japan, more 13 states have contributed or pledged to make financial contribution to this project.

Background

ChemTech Centre, is part of the on-going project and seeks to strengthen OPCW's capabilities for addressing emerging threats of chemical weapons, at the same time, support capacity building in OPCW member states. There is a need for a new facility to meet the demands of OPCW States Parties for enhanced verification tools, improved detection capabilities and response measures, as well as increased capacity-building activities. It shall help OPCW in keeping track with the developments in science and technology as well as chemical weapons threats. Many states like Algeria, Belgium, France, UK, and others, have contributed or pledged to contribute to the project.

<https://www.opcw.org/media-centre/news/2019/02/japan-contributes-eu24m-future-opcw-centre-chemistry-and-technology>