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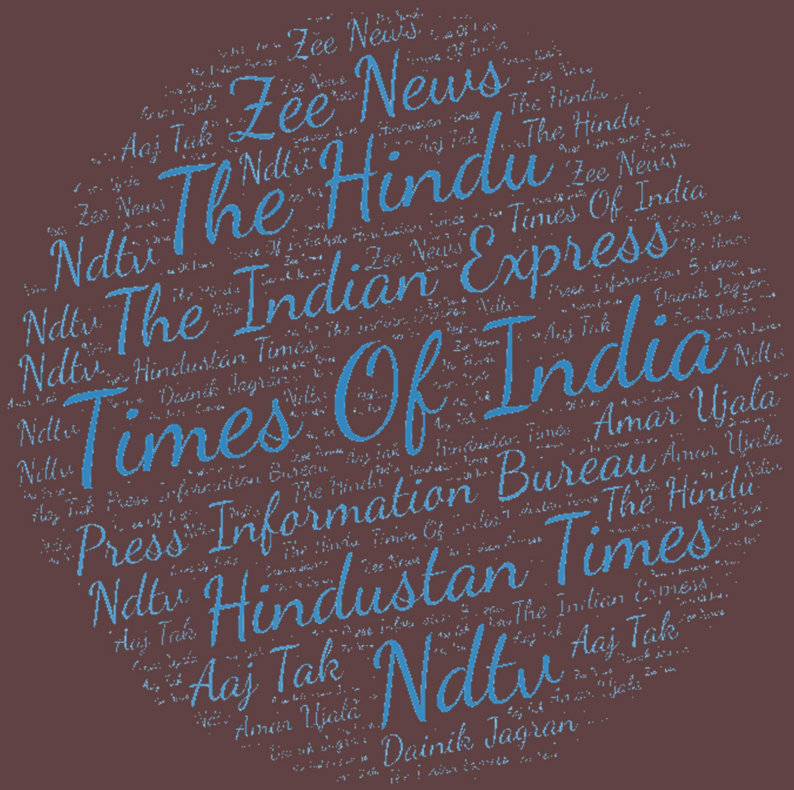

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CONTENTS

DRDO News

DRDO Technology News

THE HINDU

Tue, 19 Apr 2022

Eastern Naval Command chief visits DRDO, BDL and other organisations in Hyderabad

Vice Admiral Biswajit Dasgupta, Flag Officer, Commanding-in-Chief of Eastern Naval Command, is on his maiden official visit to Hyderabad from April 18 to 20.During his visit, he reviewed various naval projects under development/ production by DRDO, BDL and other organisations in Hyderabad.He also interacted with naval personnel and veterans. He is scheduled to call on Telangana Governor Tamilisai Soundararajan on Wednesday.

https://www.thehindu.com/news/cities/Visakhapatnam/eastern-naval-command-chief-visits-drdo-bdl-and-other-organisations-in-hyderabad/article65335833.ece?homepage=true

Defence News

Defence Strategic: National/International

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Tue, 19 Apr 2022 3:46 PM

रक्षा सचिव ने गोवा के मोरमुगाओ पत्तन पर भारतीय तटरक्षक बल के दो दिवसीय राष्ट्रीय स्तरीय प्रदूषण प्रतिक्रिया अभ्यास का उद्घाटन किया

रक्षा सचिव डॉ. अजय कुमार ने 19 अप्रैल, 2022 को दो दिवसीय राष्ट्रीय स्तरीय प्रदूषण प्रतिक्रिया अभ्यास - 'एनएटीपीओएलआरईएक्स- VIII' के 8वें संस्करण का उद्घाटन किया। इसका आयोजन

भारतीय तटरक्षक बल (आईसीजी) की ओर से गोवा के मोरमुगाओ पत्तन पर किया जा रहा है। रक्षा सचिव ने पृथ्वी विज्ञान मंत्रालय के सचिव डॉ. एम रविचंद्रन, आईसीजी के महानिदेशक श्री वीएस पठानिया, दक्षिण एशिया सहकारी पर्यावरण कार्यक्रम (एसएसीईपी) के महानिदेशक डॉ. मोहम्मद मसुमुर रहमान की उपस्थिति में इस समुद्री रिसाव की तैयारी के अभ्यास का उद्घाटन किया। इस दौरान पत्तन, पोत और जलमार्ग मंत्रालय, राष्ट्रीय आपदा मोचन बल (एनडीआरएफ), भारत मौसम विज्ञान विभाग, भारतीय नौसेना और राज्य प्रदूषण नियंत्रण बोर्ड, गोवा के कई वरिष्ठ गणमान्य अधिकारी उपस्थित थे। इस आयोजन में 50 एजेंसियों के 85 से अधिक प्रतिभागी हिस्सा ले रहे हैं। इनमें 22 मित्र देशों व अंतरराष्ट्रीय संगठनों के 29 पर्यवेक्षक और श्रीलंका व बांग्लादेश के दो तटरक्षक पोत शामिल हैं।

'एनएटीपीओएलआरईएक्स-VIII का उद्देश्य समुद्री रिसाव से निपटने में सभी हितधारकों की तैयारी और प्रतिक्रिया क्षमता को बढ़ाना है। इसके अलावा इसका लक्ष्य एसएसीईपी समझौता ज्ञापन के अधीन राष्ट्रीय और क्षेत्रीय स्तर पर राष्ट्रीय तेल रिसाव आपदा आकस्मिक योजना (एनओएसडीसीपी) में निहित प्रक्रियाओं और दिशानिर्देशों को लागू अकरना है, जिसमें भारत एक सदस्य राष्ट्र है। इस अभ्यास के दौरान एनओएसडीसीपी के विभिन्न घटकों को आकस्मिक योजनाओं की पुष्टि व सुधार करने और समुद्र में किसी भी समुद्री रिसाव आपदा से निपटने के लिए संसाधन एजेंसियों के साथ-साथ हितधारकों की तैयारियों का मूल्यांकन करने के लिए लागू किया गया।

इस अभ्यास के दौरान आईसीजी के 13 पोत व 10 विमान, भारतीय वायु सेना का एक सी-131 विमान, एसएसीईपी सदस्य राष्ट्रों- श्रीलंका व बांग्लादेश के दो पोत और ओएनजीसी का एक अपतटीय आपूर्ति पोत (ओएसवी), भारतीय नौवहन निगम की संपत्ति और मोरमुगाओ पोर्ट ट्रस्ट की खींचने वाली नौकाओं को शामिल किया गया है। इन्होंने साइड स्वीपिंग आर्म्स के माध्यम से रोकथाम सह समुद्री रिसाव रिकवरी, बूम व स्किमर्स (जल विमान) की तैनाती, एकल जहाज संचालित नियंत्रण सह रिकवरी प्रणाली की स्ट्रीमिंग, अग्निशमन अभ्यास, बचाव अभियान और सतह व वायु तेल रिसाव परिक्षेपक प्रणाली का प्रदर्शन किया।

इस अभ्यास का समन्वय आईसीजी कर रही है, जिसमें संसाधन एजेंसियों व हितधारकों यानी पत्तन, तेल परिचालन एजेंसियों, तटीय राज्यों/केंद्रशासित प्रदेशों और अन्य संसाधन एजेंसियों की संपत्ति शामिल हैं। इस अभ्यास में टेबल-टॉप व्यायाम की विशेषता वाला दो दिवसीय कार्यक्रम, समुद्री तेल और एचएनएस प्रसार पर प्रदूषण प्रतिक्रिया कार्यशाला के बाद समुद्र में अभ्यास शामिल है, जिसकी राष्ट्रीय व अंतरराष्ट्रीय पर्यवेक्षकों की उपस्थिति में एनओएसडीसीपी के अध्यक्ष ने समीक्षा की। एनएटीपीओएलआरईएक्स के अलावा आईसीजी 18-29 अप्रैल, 2022 तक चेन्नई में हिंद महासागर परिधि संघ (आईओआरए) के सदस्य राष्ट्रों सहित 18 देशों के 45 अंतरराष्ट्रीय प्रतिभागियों के लिए समुद्री तेल प्रतिक्रिया और तैयारी में एक क्षमता निर्माण पेशेवर प्रशिक्षण पाठ्यक्रम आयोजित कर रही है।

https://pib.gov.in/PressReleasePage.aspx?PRID=1818119

Press Information Bureau
Government of India

Ministry of Defence

Tue, 19 Apr 2022 3:46 PM

Defence Secretary inaugurates two-day National Level Pollution Response Exercise of Indian Coast Guard off Mormugao harbour, Goa

Defence Secretary Dr Ajay Kumar inaugurated, on April 19, 2022, the 8th edition of two-day National Level Pollution Response Exercise, 'NATPOLREX-VIII', being conducted by Indian Coast Guard (ICG) off Mormugao harbour, Goa. The marine spill preparedness exercise was inaugurated by the Defence Secretary in the presence of Secretary, Ministry of Earth Sciences Dr M Ravichandran, Director General ICG Shri VS Pathania, DG South Asia Cooperative Environment Programme (SACEP) Dr Md Masumur Rahman and various senior dignitaries from Ministry of Ports, Shipping and Waterways, National Disaster Response Force, India Meteorological Department, Indian Navy and State Pollution Control Board, Goa. The event is being attended by more than 85 participants from 50 agencies, including 29 observers from 22 friendly foreign countries & International Organisations and two Coast Guard ships from Sri Lanka and Bangladesh.

The objective of NATPOLREX-VIII is to enhance the preparedness and response capability of all the stakeholders in combating marine spills. It aims at validating the procedures and guidelines as contained in the National Oil Spill Disaster Contingency Plan (NOSDCP) at the national and regional levels under the aegis of SACEP MoU to which India is a member state. During the exercise, various components of NOSDCP were invoked to validate and improve the contingency plans and evaluate preparedness of the resource agencies as well as stakeholders to meet any marine spill disaster at sea.

During the exercise, 13 ships and 10 aircraft from ICG, one C-131 aircraft from the Indian Air Force, two ships from SACEP member states viz. Sri Lanka and Bangladesh and one Offshore Supply vessel (OSV) from ONGC, assets from Shipping Corporation of India and tugs from Mormugao Port Trust demonstrated containment cum marine spill recovery by side sweeping arms, deployment of booms and skimmers, streaming of single ship operated containment cum recovery system, firefighting drill, rescue operation, and demonstration of surface and air oil spill dispersant systems.

The exercise is being coordinated by ICG encompassing assets from resource agencies and stakeholders including Ports, Oil Handling Agencies, Coastal States/Union Territories and other resource agencies. The exercise consisted of a two-day programme featuring table-top exercise, pollution response workshop on marine Oil and HNS spill followed by exercise at sea, which was reviewed by Chairman NOSDCP in presence of National and International Observers.

Besides NATPOLREX, ICG is concurrently conducting a capacity building professional training course in Marine Oil Response and Preparedness for 45 international participants from 18

countries including member states from Indian Ocean Rim Association (IORA) at Chennai from April 18-29, 2022.

https://pib.gov.in/PressReleasePage.aspx?PRID=1818023

Business Standard

Tue, 19 Apr 2022

IAF successfully test-fires BrahMos missile from Su30-MkI fighter jet

In demonstrating its operational preparedness, the Indian Air Force (IAF) on Tuesday successfully test-fired a BrahMos supersonic cruise missile from a Sukhoi fighter jet on the Eastern seaboard.The "live firing" of the missile was carried out in close coordination with the Indian Navy, the IAF said.The missile hit the target with accuracy and precision, officials said.

"Today on the Eastern seaboard, #IAF undertook live firing of #BrahMos missile from a Su30 MkI aircraft. The missile achieved a direct hit on the target, a decommissioned #IndianNavy ship. The mission was undertaken in close coordination with @indiannavy," the IAF said in a tweet.In 2016, the government had decided to integrate the air-launched variant of the Brahmos into over 40 Sukhoi fighter jets.The project was conceived to enhance the IAF's capability to strike from large stand-off ranges on any target on sea or land.On March 5, the Indian Navy successfully test-fired an advanced version of the Brahmos supersonic cruise missile from a stealth destroyer in the Indian Ocean.

The missile was test-fired from the stealth destroyer INS Chennai.BrahMos Aerospace, an India-Russian joint venture, produces supersonic cruise missiles that can be launched from submarines, ships, aircraft, or land platforms.BrahMos missile flies at a speed of 2.8 Mach or almost three times the speed of sound.The range of the advanced version of the missile is learnt to have been extended to around 350 km from the original 290 km.

https://www.business-standard.com/article/current-affairs/iaf-successfully-test-fires-brahmos-missile-from-su30-mki-fighter-jet-122041901254_1.html#:~:text=In%20demonstrating%20its%20operational%20preparedness,Indian%20Navy%2C%20the%20IAF%20said

THE TIMES OF INDIA

Tue, 19 Apr 2022

Navy chief in Maldives to bolster defence and maritime cooperation

Navy chief Admiral R Hari Kumar has discussed measures to further strengthen bilateral defence and maritime cooperation with the top political and military leadership in Maldives, as part of the overall policy to counter China’s deep inroads into the strategically-located nation in the (IOR).

In his first foreign visit after becoming the Navy chief, which reaffirms the importance India attaches to its maritime partnership with Maldives, Admiral Kumar held talks with President Ibrahim Mohamad Solih, foreign minister Abdulla Shahid, defence minister Mariya Didi and chief of defence staff Major General Abdulla Shamaal.

The discussions focused on boosting cooperation on maritime information sharing and domain awareness as well as capacity-building initiatives between the Maldives National Defence Forces (MNDF) and the Indian Navy, officials said on Tuesday.

India has stepped up its diplomatic and military engagement with Maldives, which included assistance during the Covid pandemic, ever since the Solih-led government came to power in 2018.

Admiral Kumar also hosted a reception onboard INS Sutlej, which is currently deployed to Maldives for undertaking a joint hydrographic survey, in honour of Didi and top officers of the MNDF on Monday.

"Admiral Kumar also unveiled the first navigation chart jointly produced by India and Maldives, and handed over hydrography equipment to consolidate organic capabilities of the MNDF," an officer said.

"He also presented a consignment of engineering equipment for further sustenance of MNDF ships, thereby reaffirming India's commitment to the capacity building efforts of Maldives. India and Maldives share common perspectives on maritime security issues in the IOR," he added.

https://timesofindia.indiatimes.com/india/navy-chief-in-maldives-to-bolster-defence-and-maritime-cooperation/articleshow/90941784.cms

IDN INDIAN DEFENCE NEWS
Global Defence, Aerospace & Security

Tue, 19 Apr 2022

India should build better Communication Infrastructure along Border with China: Defence Expert

China continues to develop infrastructure along the India border - the Line of Actual Control (LAC) - with the latest reports suggesting that they have constructed at least three mobile towers at Hot Springs in eastern Ladakh.

Local councillor Konchok Stanzin said that the newly developed towers are very close to the LAC.

This comes after the Indian authorities in January this year strongly objected "illegal construction of a bridge" by China.

The construction of the bridge was on part of the Pangong Lake in Eastern Ladakh. India had said that it is monitoring the situation.

But What Does It Mean For India?

According to defence expert Major General S B Asthana (Retd), the construction of a bridge in Easter Ladakh and recent news of the towers of communication being erected is something that

indicates Chinese determination to continue with infrastructure development and be able to have better response timings in case of a situation if it so develops.

India must also improve its infrastructure development. "We need to develop the communication infrastructure also in addition to the road and other infrastructure because sound communication is the key to command and control and for effective management of the border," he said.

Why Communication Towers Are Important?

General Asthana said, "If the communication can be developed in remote areas of various parts of the country, there's no reason why it can't be developed along the LAC," he added.

General Asthana said what usually happens is that the various departments do not find it cost-effective when the customers are fewer.

"But then there's a strategic cost that has to be paid and for that even if the population density is low, we need to develop the communication infrastructure much better so that we can respond accordingly, especially when the stand-off is on and when the LAC is being managed and there is a heavier troop density along the LAC by both sides."

"So I think we need to perhaps push through our infrastructure development also at the same pace to match China and ensure we don't lack behind," he said.

http://www.indiandefensenews.in/2022/04/india-should-build-better-communication.html

ThePrint

Tue, 19 Apr 2022

Launch pads active across LoC; Pak army uses ceasefire to strengthen its defence

Srinagar, Apr 19 (PTI) The launch pads across the Line of Control (LoC) in Kashmir valley are abuzz with activities with around 60 to 80 terrorists, believed to be Afghan returnee mercenaries, receiving training with a possible push expected during summer months, officials here said.

The officials, however, feel that Pakistan will have to think several times before pushing them into the Indian side as Islamabad continues to be in the “grey list” of the Financial Action Task Force, and its sincerity could be gauged if it dismantles the terror infrastructure.

The officials said that after the 2019 pounding by the Indian army, the Pakistani side steered clear of the launch pads till early months of last year when they briefly emerged for some weeks and later disappeared again.

However, from August last year around 60-80 terrorists are present at these re-activated launch pads across the border and according to intelligence inputs and monitoring by the field units, the terrorists seem to be Afghan war returnees who are mostly Pakistani mercenaries.

The LoC has been witnessing ceasefire since last February and officials said that the Pakistani army, after facing severe reverses in 2019, has used this time for fortification of its positions along the border with around 8,000 tonnes of defence material.

The Pakistani army has also moved in around 60 heavy caliber guns besides strengthening its air defence system, artillery and mortars while taking advantage of the ceasefire which has been holding good since last year, the officials said.

They said that while the Indian Army maintains strategic advantage along the LoC, the time has also been used for further strengthening its position to ensure that designs of Pakistani army to push in terrorists during approaching summer is foiled.

The officials said that the anti-infiltration grid and surveillance along the LoC has been further beefed up to meet all kinds of challenges.

Following talks between the Directors General of Military Operations of India and Pakistan over hotline, a joint statement was issued on February 25, 2021 in which the two countries agreed to the strict observance of all agreements, understandings and ceasefire along the LoC and all other sectors with effect from the February 24-25 midnight 2021. PTI SKL ZMN ZMN

https://theprint.in/india/launch-pads-active-across-loc-pak-army-uses-ceasefire-to-strengthen-its-defence/922040/

THE ECONOMIC TIMES

Wed, 20 Apr 2022

How to survive a tactical nuclear bomb? Defence experts explain

There has been widespread discussion of Russia's threat to use tactical nuclear weapons in its war on Ukraine.

Russia is estimated to have thousands of tactical nuclear weapons – possibly the world's largest stockpile – which could be deployed at any time. The use of nuclear weapons is also embedded in Russian military doctrine. Ukrainian President Volodymyr Zelenskyy has appealed to the rest of the world to take the threat seriously.

In this article we examine what would happen during a tactical nuclear bomb explosion, including the three stages of ignition, blast and radioactive fallout – and how one might be able to survive this.

Ignition

You see a sudden flash in the sky, as bright as (or even brighter than) the sun. You quickly turn your face away and run for cover.

The brightness suddenly vanishes, but returns again a short while later and continues – the distinctive double flash caused by competition between the fireball and shock wave. It gets incredibly hot and bright, and you shield your eyes to avoid retina burns.

The intense thermal radiation also causes skin burns, possibly through your clothing. Wearing pale-coloured clothing or being indoors will help.

You've also received substantial doses of invisible nuclear radiation: gamma rays, X-rays and neutrons. You find cover to shield the worst of the heat and radiation. You've now survived the first seconds of a nuclear detonation, hopefully a “tactical” bomb smaller than that at Hiroshima (which was the equivalent of 15 kilotons of TNT).

The fact you've lived this long means you're on the periphery, not at ground ground zero. But to survive the next few seconds, there's a few things you'll need to do.

The blast wave

Next will come the blast wave. This consists of an overpressure shock wave followed by an outward blast wind, often with reverse winds returning to ground zero.

This will destroy or damage all built structures within a certain radius from the epicentre, depending on the yield and height of the burst.

For example, a 15 kiloton bomb would have a fireball radius of about 100 metres and cause complete destruction up to 1.6 kilometres around the epicentre.

A one kiloton bomb – similar to the 2020 ammonium nitrate explosion in the Lebanese capital Beirut – would have a fireball radius of about 50 metres, with severe damage to about 400 metres.

The shock wave travels faster than the speed of sound (about 343 metres per second). So if you're one kilometre away from the epicentre, you have less than three seconds to find cover. If you're five kilometres away, you have less than 15 seconds.

You'll need to shield yourself from the thermal and nuclear radiation, as you could die if exposed. However, you must find somewhere safe – you don't want to be crushed in a building destroyed by the blast wave.

Get indoors, and preferably into a reinforced bunker or basement. If you're in a brick or concrete house with no basement, find a strong part of the building. In Australia, this would be a small bathroom at ground level, or a laundry with brick walls.

The incoming shock wave will reflect off the internal walls, superimposing with the original to double the pressure. Avoid the explosion side of the building and make sure to lie down rather than stand.

If there is no reinforced room, you can lie under a sturdy table or next to (not under) a bed or sofa. You may be crushed under a bed or sofa if a concrete slab crashes down.

Keep away from doors, tall furniture and windows, as they will probably shatter. If the walls come down, you'll have a chance of surviving in a pocket in the rubble.

If you're in an apartment building, run to the fire staircase in the structural core of the building.

Avoid timber, fibre cement or prefabricated structures (which includes most modern housing in Australia) as these probably won't survive. And open your jaw as the blast comes through, so your eardrums get the pressure wave on both sides.

Radioactive fallout

The third stage is the fallout: a cloud of toxic radioactive particles from the bomb will be uplifted during the blast and deposited by the wind, contaminating everything in its path. This will continue for hours after the explosion, or possibly days.

In comparable British-Australian bomb tests at Maralinga, the fallout was clearly preserved in the desert along one kilometre-wide tracks, extending 5– 25 kilometres out from ground zero. You must protect yourself from the fallout or you'll have a short life.

If you're in a stable structure such as a basement or fire staircase, you can shelter in place for a few days, if necessary. If your building is destroyed, you'll need to move to a nearby intact structure.

Block all the doors, windows and air gaps. You can drink water from intact pipes and eat from sealed cans. For outdoor movement, any PPE available should be used – especially a P2 mask, or even a dust mask. While tactical nukes are designed to destroy personnel or infrastructure, they still allow troop movement under cover of the blast. The radiological hazard is significant, but should be survivable.

A radiological weapon, on the other hand, will deliberately increase the radiation dose to the point of it being lethal. Once you've found shelter, you'll need to decontaminate. This will require a thorough scrub of the skin, nails and hair, and a change into clean clothing. But any severe burns should be tended to first.

Hopefully by now the national authorities will have stepped in for rescue and medical treatment.

https://economictimes.indiatimes.com/news/how-to/how-to-survive-a-tactical-nuclear-bomb-defence-experts-explain/articleshow/90953687.cms

Tue, 19 Apr 2022

Indian-American Navy Veteran Shanti Sethi Appointed Kamala Harris's Defence Adviser

Trailblazing Indian-American US Navy veteran Shanti Sethi has joined Vice President Kamala Harris's office as her executive secretary and defence adviser, according to a media report.

Shanti Sethi, the first Indian-American commander of a major US Navy combat ship, recently joined Vice President Harris's office, Politico quoted Vice President's senior adviser Herbie Ziskend as saying.In her new role, Shanti Sethi coordinates National Security Adviser documentation across the Office of the Vice President, according to her LinkedIn profile.Shanti Sethi commanded the guided-missile destroyer, USS Decatur, from December 2010 to May 2012. She was also the first female commander of a US naval vessel to visit India.

When she joined the Navy in 1993, the combat exclusion law was still in effect so she was limited in what she could do. However, when she was an officer, the Exclusion Act was lifted."I was able to move on to have a career path that was much more open to me because I was going into this very male-dominated environment," Shanti Sethi told USA Today in an interview last year.Shanti Sethi's father immigrated to the US from India in the early 1960s.Kamala Harris is the first-ever person of Indian origin to be elected as the Vice President of the United States.

https://www.ndtv.com/indians-abroad/indian-american-navy-veteran-shanti-sethi-appointed-kamala-harriss-defence-adviser-2899984

THE ECONOMIC TIMES

Tue, 19 Apr 2022

Hawking Defence Services signs MoU with Australian UAV Technologies

Unmanned Systems startup Hawking Defence Services on Tuesday said it has signed a memorandum of understanding with Australian UAV Technologies, a UAV and electronics company based out of New South Wales, Australia to establish a joint venture company which would enable technology transfer, joint research and development and licensed manufacturing of unmanned systems between these two entities. "This MOU is the first step in establishing a strong and reliable unmanned systems solution provider and manufacturer for global requirements," the company said in a statement.

The Chennai-based tech startup said the venture would help the organizations to make advances in unmanned technologies and provide cost-effective solutions and services to Indian defence services both within India and abroad thereby boosting defence exports from India."Timely investments into advanced Research and Development of cutting-edge defence products through investments into critical areas such as Machine Learning, Artificial Intelligence and chip development will enable India to become an epicentre for Advanced Research thereby increasing its global share of defence exports," Vijayanarayanan Rapalli, the Managing Director of Hawking Defence Services said.

The MOU was signed at the Austrade office in the Australian Consulate in Chennai and the company claims that it is probably the first between defence industry companies since the initial initiatives of the Australia-India Free Trade Agreement came into effect. The MOU was signed by Rajeev Koundinya, CEO Hawking Defence and Ken Taylor, Managing Director of Australian UAV Technologies.

https://economictimes.indiatimes.com/tech/startups/hawking-defence-services-signs-mou-with-australian-uav-technologies/articleshow/90940479.cms

The Indian EXPRESS

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Using Agro-Waste to produce pulp for Green Furniture and Disposable Packaging

The next time you get home a carton of beer in Bengaluru, you may get it packaged in a biodegradable bag made from barley waste. Pune-based startup Craste has been working to turn farm waste into value-added products as well as to give farmers a source of additional income.

Crop waste mismanagement and stubble burning have been a major bone of contention in tackling air pollution, especially in areas surrounding the national capital, for several years now. Numerous attempts to address this issue are yet to see sustainable fruition.

Gwalior-based engineer Shubham Singh (30) got a taste of this problem first-hand during his extensive tours across India in 2017. It is from these fields that the idea of Craste (crop – waste) germinated. Using his chemical engineering knowledge, Singh decided to explore ways to put farm waste to better use.

India's forest cover, with respect to the geographical area, increased from 21.05 per cent in 2011 to 21.67 in 2019, said the State of India's Forest Report 2022 released in January this year.

So has the country's wood demand, especially with respect to the construction sector, leading to a growing import of wood and wood-based raw materials like pulp, veneer, plywood and others.

According to a 2019 report published by the International Tropical Timber Organisation, India imported 8,69,000 m3 (cubic metre) of sawnwood; veneer to the tune of 4,15,000 m3 and 1,41,000 m3 of plywood.

Malaysia and New Zealand are India's major wood suppliers. In the 2009-2019 period, India's plywood and panel import supplies came from China (56 per cent), Indonesia (13 per cent), Malaysia (8 per cent) and Myanmar (7 per cent) according to ' India's timber supply and demand – 2010 – 2030' report.

Observing such heavy imports and high costs to meet the needs of the Indian packaging and furniture industry, Singh's efforts are to cut this dependence. With the support of a BIRAC grant worth Rs 70 lakh given by the Department of Biotechnology, Craste's journey began at Pune's Venture Center in 2018.

"We fetch and buy farm residue locally. The collected waste is then shredded into equal-sized particles before being blended with a formaldehyde-free adhesive developed by our team. The mixture is then heated and pressed into engineered green boards of desired sizes," Singh said.

Local sourcing is done for two reasons, Singh said, as it cuts the high transportation costs besides helping the local economy and farmers earn a supportive income.

Currently, the Craste team is working with waste obtained from the remains of paddy fields, wheat, barley, mustard and sugarcane (bagasse) cultivation. “Rice straw is coarse due to high silica content, hence farmers feed it to the cattle. The engineered green boards made out of rice straw can be best used as false ceilings or partitions in rooms and for making furniture,” Singh said.

According to Singh, the USP of the Craste’s adhesive is that it does not contain formaldehyde, which is known to be carcinogenic (having the potential to cause cancer). “This technology has the potential to have a high social impact in terms of bringing down pollution, giving additional income to the farmers from selling the stubble waste instead of burning,” said Mugdha Lele, head, Social Innovation at Venture Center.

Using his chemical engineering knowledge, Singh decided to explore ways to put farm waste to better use. (Express Photo by Ashish Kale)

Craste has demonstrated a range of eco-friendly products such as watch covers, cutlery, envelopes and wine bottle packing bags. In recent months, there have been several enquiries from companies seeking customised packaging. This week, the startup delivered a major consignment of packaging boxes to a leading beer manufacturing company that will be formally launched in Bengaluru on Earth Day.

Barley, one of the ingredients in brewing beer, has found a value-added end-use, thanks to Craste. “We have supplied 5,000 boxed made out of barley waste. Each box can hold upto six beer bottles. These boxes are biodegradable and can even be disposed of in one’s kitchen gardens,” Singh said.

Rupa Malireddy, who is responsible for the design of the products, said: “The packaging products are moisture-resistant and can be disposed of safely after use.”

By the end of April, Craste will launch factory-scale operations from its maiden agri-fibre conversion unit from Gwalior. The unit will be able to process up to 3,000 kg of pulp per day and produce 30 boards on a pilot basis. “The pulp can be obtained at least 40 per cent cheaper than the pulp obtained from virgin tree remains in markets,” said Singh.

Craste is now in talks with Punjab Agriculture University and has plans of establishing units in Karnataka, Maharashtra, Rajasthan, Bihar, Telangana and Andhra Pradesh. The 15-member young team wants to set up 100 units capable of handling one lakh tons of crop waste annually by 2025.

https://indianexpress.com/article/cities/pune/pune-science-weekly-agro-waste-pulp-disposable-packaging-7878063/