

# समाचार पत्रों से चयित अंश Newspapers Clippings

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## Low cost, high volume products being developed; DRDO Chief says Scientists rising to the occasion

*From adhesives used in submarines to special coating originally designed for high strength parachutes, India has been using spin offs from its available defence technology*

*By Manu Pubby*

New Delhi: From adhesives used in submarines to special coating originally designed for high strength parachutes, India has been using spin offs from its available defence technology to quickly develop low cost, high volume equipment desperately needed in the fight against Covid-19.

More than half a dozen essential items—ranging from high protection face masks to full body protection suits and multi patient ventilators—have been churned out at high speed over the past week as the Defence Research and Development Organisation (DRDO) has reoriented itself towards fighting the prevalent threat.

‘Missile man’ G Sateesh Reddy, who Heads DRDO, said Scientists throughout the country have been tasked with developing and sharing technologies at zero cost with the private sector to mass produce critical items identified by the government, with solutions being provided overnight and personnel working overtime to tackle stumbling blocks.

Reddy, who is also a member of the empowered working group tasked with ensuring adequate supply of medical equipment, shared with ET that more products are likely to be rolled out in the coming days in partnership with the industry as new needs arise.

“The scientific fraternity has felt the need of the hour and wants to use existing skills to create spin off technologies. We are coming out with quick solutions and products. Scientists have been working day and night to rise to the occasion,” Reddy told ET.

Even as DRDO—best known for its self-developed line of nuclear capable missiles that have given India its strategic deterrence—continues its regular work of design, analyses and review of weapon systems, several scientists and labs have been tasked to help civilian authorities on a war footing.

<https://economictimes.indiatimes.com/news/defence/local-defence-technology-helps-fight-covid-19/articleshow/74958610.cms>



## Business Standard

### DRDO provides masks, PPE to RML, AIIMS

The Defence Research and Development Organisation (DRDO) on Friday handed over 1,500 N-95 masks, 70 PPE kits and hand sanitisers to doctors and nurses at AIIMS and RML Hospital here to fight the COVID-19 pandemic.

"As the production is less, we have given a token of 1,000 masks, 20 PPE to RML Hospital and 500 masks, 50 PPE to AIIMS. We have also handed over the hand sanitisers to doctors and nurses for their personal use," Sanjeev Joshi, Technical Advisor to DRDO chairman, told ANI.

He said the DRDO has been keeping an eye on the situation since the first case was confirmed in India and the chairman has also been viewing the issue with a different perspective and how can it be contained.

"We had started making hand sanitisers in our lab in Gwalior during the end of February when critical cases started coming out in India," he said.

He further said that as the demand was more and supply was not enough, we asked all of our labs in Delhi, Puna, Hyderabad, and other places to formulate the sanitisers as per the WHO guidelines.

"As the demand for N-95 masks was there, we started testing these masks whether they are good at fighting coronavirus or not. We have also developed an N-99 mask, which is better in quality," he said.

*(This story has not been edited by Business Standard staff and is auto-generated from a syndicated feed.)*

[https://www.business-standard.com/article/news-ani/drdo-provides-masks-ppe-to-rml-aiims-120040301619\\_1.html](https://www.business-standard.com/article/news-ani/drdo-provides-masks-ppe-to-rml-aiims-120040301619_1.html)



*Sat, 04 April 2020*

## **DRDO develops portable backpack for sanitisation equipment**

New Delhi: In a quest for developing indigenous solutions to combat the coronavirus Pandemic, Defence Research and Development Organisation (DRDO) has developed portable backpack for area sanitisation equipment.

"The Centre for Fire Explosive and Environment Safety (CFEES), Delhi, has developed two configurations of sanitising equipment. These are spinoffs from technologies developed for fire suppression application," DRDO said in a statement.

The CFEES, Delhi, with the help of its industry partner has developed portable sanitisation equipment for spraying decontamination solution consisting of one per cent Hypochlorite (HYPO) solution for sanitisation of suspected area.

The portable system can be mounted as a backpack and can be carried by the operations personnel.

This system incorporates low pressure twin fluid, air and disinfectant liquid, technology to generate very fine mist.

The system is capable of disinfecting upto 300 square metre area. The application areas can include hospital reception, doctor chambers, office spaces dealing with general public, corridors, pathways, metro and railway stations and bus stations, etc.

The Centre with the help of its industry partner has also developed a higher capacity which is carried on a trolley.

The system incorporates low pressure single fluid, disinfectant liquid, technology generating very fine mist.

It is capable of disinfecting upto 3,000 square metre area.

"It has a tank capacity of 50 litres and has a lancing (throw) distance of 12-15 metres. This is useful for disinfecting hospitals, malls, airports, metro stations, isolation areas, quarantine centres and high risk residential areas," the DRDO states.

Two of these systems are being provided to Delhi Police for immediate use. These can be made available to other agencies with the help of industry partners.

<http://www.daijiworld.com/news/newsDisplay.aspx?newsID=692340>

## DRDO's food lab readying RTE meals, 'just in case'

*Rice, chapatis, curry, sweet and tea is on the menu; it will*

*By Hemanth CS*

Though at present there is no large- scale shortage of food across the country even as the Covid-19 crisis rages on, laboratories involved in food research are gearing up to ensure that ready-to-eat food is available, if a worst case scenario occurs and there is a shortage.

Mysuru- based DRDO constituent lab, Defence Food Research Laboratory (DFRL) which has been developing packaged rations for the armed forces for many decades, is ensuring that its Meals Ready to Eat (MREs) would be available if there is a shortage of fresh food.

“DRDO has been traditionally supplying food for the armed forces. The MREs are consumed by the armed forces personnel when freshly cooked food cannot be supplied in remote or far-flung areas where they are deployed. Similarly, we are working to ensure that there is supply of these MREs, if fresh food is not available due to the ongoing Covid-19 crisis,” AK Singh, director general (life sciences), DRDO told Bangalore Mirror.



*Some of the MREs produced by DFRL*

Supply of hygienic food is important in the present crisis, the ready-to-eat food developed by us adheres to this aspect. Our MREs can be served to people employed in health care and essential services sector – AK Singh, DG (life sciences), DRDO.

Singh said that the MREs can be supplied to those who are employed in the health care and essential services sector. “Supply of hygienic food is important in the present crisis, the ready to eat food developed by us adheres to this aspect. Our MREs are easy to transport and can be served to people who are employed in the health care and essential services sector,” he said.

Typically, one MRE consists of rice, chapatis, vegetarian/non-vegetarian curry, sweet, tea etc. Singh said that the ready to eat food would focus on energy and palatability.

“The ready to eat food apart from having a high source of energy should also be palatable. We will ensure that they contain all the necessary protein and carbohydrates and at the same time are tasty,” he added.

Apart from the food items listed above, DRFL also prepares energy bars, cookies, instant mixes and beverages.

<https://bangaloremirror.indiatimes.com/bangalore/others/drdo-food-lab-readying-rte-meals-just-in-case/articleshow/74975746.cms>

## डीआरडीओ हर रोज 15 हजार एन 99 मास्क बना रहा है

नई दिल्ली: सरकार ने कोरोना के इलाज में जुटे डॉक्टरों, नर्सों और पैरामेडिकल स्टाफ के लिए 1.10 करोड़ एन95 मास्क और 1.60 करोड़ लाख पर्सनल प्रोटेक्शन इक्विपमेंट (पीपीई) का ऑर्डर दिया है।

डीआरडीओ ने भी हर दिन 15 हजार एन 99 मास्क बनाना शुरू किया है। दो भारतीय कंपनियां भी हर दिन एक लाख एन95 मास्क बनाने में लगी हैं। स्वास्थ्य मंत्रालय एक वरिष्ठ अधिकारी ने यह जानकारी दी। उन्होंने बताया कि अब तक राज्य और केंद्र सरकार के अस्पतालों को 3.5 लाख पीपीई दिया जा चुका है।

15 अप्रैल तक 10 लाख और पीपीई की सप्लाई केंद्र सरकार को मिलेगी। अस्पतालों को केंद्र ने 12.5 लाख एन95 मास्क दिए हैं। जबकि 14 लाख मास्क स्टॉक में है। ये मांग के अनुसार अस्पतालों और राज्यों को दिए जाएंगे। 5 अप्रैल तक 7 लाख एन95 मास्क मिलेंगे। देश में 22 लाख डॉक्टर और नर्स हैं।

<https://www.bhaskar.com/news/drdo-is-making-15-thousand-n99-masks-everyday-073032-6969157.html>

## नवभारत टाइम्स

### कोरोना वायरस: डीआरडीओ ने विकसित की सैनेटाइज करने की तकनीक

नई दिल्ली तीन अप्रैल (भाषा): कोरोना वायरस से लड़ने की भारत की क्षमता को बढ़ाते हुए रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने विभिन्न क्षेत्रों को सैनेटाइज करने की तकनीक विकसित की है। अधिकारियों ने शुक्रवार को यह जानकारी दी। इससे पहले डीआरडीओ ने सेफ्टी सूट, वेंटिलेटर और विशेष प्रकार के मास्क का निर्माण करने में सफलता अर्जित की थी। डीआरडीओ ने एक वक्तव्य में कहा कि दिल्ली स्थित विस्फोटक एवं पर्यावरण सुरक्षा केंद्र (सीएफईईएस) ने सैनेटाइजिंग उपकरण के दो प्रकार विकसित किए हैं। आग बुझाने की तकनीकों के विकास पर काम करने के दौरान यह तकनीक विकसित हुई।

सैनेटाइजिंग उपकरण के दो प्रकार विकसित किए गए हैं- एक पीठ पर लेकर चला जा सकता है और दूसरे उपकरण को ट्रॉली का आकार दिया गया है। पीठ पर ले जा सकने वाले उपकरण को सैनेटाइज करने वाले कर्मों कहीं भी ले जा सकते हैं और इससे 300 वर्ग किलोमीटर के क्षेत्र को संक्रमण मुक्त किया जा सकता है।

इसके इस्तेमाल से अस्पताल, डॉक्टर के कक्ष, कार्यालय, गलियारे, मेट्रो, रेलवे स्टेशनों इत्यादि पर छिड़काव किया जा सकता है। डीआरडीओ ने कहा कि ट्रॉली के आकार वाले उपकरण की सहायता से 3000 वर्ग किलोमीटर के क्षेत्र को संक्रमण मुक्त किया जा सकता है। वक्तव्य में कहा गया कि इन उपकरणों को



तत्काल प्रयोग में लाने के लिए दिल्ली पुलिस को उपलब्ध कराया जा रहा है। जल्दी ही निजी क्षेत्र के सहयोग से इन्हें अन्य एजेंसियों को भी मुहैया कराया जाएगा।

(यह आर्टिकल एजेंसी फीड से ऑटो-अपलोड हुआ है। इसे नवभारतटाइम्स.कॉम की टीम ने एडिट नहीं किया है।)

<https://navbharattimes.indiatimes.com/india/corona-virus-drdo-has-developed-the-technique-of-sanitization/articleshow/74973765.cms>

THE ECONOMIC TIMES

Sat, 04 April 2020

## Building up defences: DRDO uses available technology to fight Covid

### Covid-19 outbreak: DRDO on a war-footing

As India prepares to fight the Coronavirus pandemic, DRDO has emerged as a critical force-multiplier in combating the virus. It has used its years of experience and available technology to develop essential items for frontline mitigation.

From N99 masks to multi-patient ventilators, DRDO has quietly taken upon itself to develop a range of leading products on a war-footing.

### Hand Sanitizer

Hand sanitizer being the basic instrument against spread of COVID-19 that has now been developed in-house at DRDO. By 3rd week of March, it was produced in sizable quantities and distributed to major offices and establishments within the capital. Approximately 4,000 litres of hand sanitizer has been provided to Indian Armed forces, Armed Forces Medical Corps, Defence Security Corps, 1,500 litres to Ministry of Defence, 300 litres to Parliament, and 500 litres to various security establishments and high offices to address sanitization issue at first to keep administration work without fear of contamination.

### Ventilators

Since COVID-19 affects pulmonary functions, keeping in mind the futuristic requirement, the Society for Biomedical Technology (SBMT) programme of DRDO has been modified to cater to the current situation. It has been created by using existing technologies like breath regulators, pressure/flow sensors, etc. Presently, innovation is on to create 'Multi patient ventilator' wherein several patients can be supported by a single ventilator. This innovation is expected to be available within a week. Around 5,000 ventilators will be produced in the first month and 10,000 subsequently. The DRDO has identified local alternatives to supply of critical components. Already Secretary (Pharmaceuticals) has identified nine companies for design transfer to produce and Mr Anand Mahindra for fabrication of components. Each ventilator unit will cost around Rs four lakh.

### N99 Masks

Five layer N99 masks with two layers of nano mesh are very advanced. The mask costs Rs 70 per piece.

### Bodysuits

Body suit is a critical requirement for doctors, medical staff, sanitation workers, etc so that they are not contracted by COVID-19 during their work. Earlier, DRDO had developed this body suit for medical & paramedical staff to manage & evacuate the casualties in the event of radiological emergencies, which right now is converted as a full body suit to stop contamination. Each suit costs Rs 7,000.

<https://economictimes.indiatimes.com/news/defence/building-up-defences-drdo-uses-available-technology-to-fight-covid/ventilators/slideshow/74965029.cms>

## **DRDO develops bio-suits based on sealants used in submarine applications**

*By Hemani Seth*

Mumbai: The Defence Research and Development Organisation has manufactured a bio-suit for medical professionals to combat Covid-19 using a special sealant based on the sealant used in submarine applications according to media reports

The sealant can be used as an alternative to seam sealing tape according to the DRDO, *The Hindu* reported.

The bio suits used presently are prepared using the special glue for seam sealing by an industry partner and has cleared the test at Southern India Textile Research Association (SITRA) Coimbatore, it said.

According to DRDO, this could be a game-changer that can help with the shortage of bio suits hindered due to unavailability of seam sealing tapes. Currently, it can produce up to 7,000 suits a day with its industry partner. The DRDO is in process of roping in another partner to ramp up the production of suits up to 15,000 a day, as per the report.

Currently, there is a major shortage of personal protective equipment (PPE) for frontline workers, especially medical professionals in the country.

According to a recent report by *Reuters*, healthcare workers in India are resorting to using raincoats and helmets as protective gears owing to shortages of protective health gear amid the coronavirus pandemic.

For instance, junior doctors at a major coronavirus treatment facility in Kolkata were given plastic raincoats last week to examine patients.

The Union Health Ministry on Monday had said that they would be importing personal protective equipment (PPE) in bulk from countries including China, Singapore and South Korea apart from manufacturing it domestically as well.

Furthermore, the World Bank on Friday also announced \$1 billion funds in support of India's Covid-19 emergency response and health systems preparedness project which will include maximizing the supply of PPEs for professionals.

<https://www.thehindubusinessline.com/news/science/drdo-develops-bio-suits-based-on-sealants-used-in-submarine-applications/article31246509.ece>

## **Coronavirus update: DRDO develops bio-suit to protect doctors form COVID-19**

*To ensure these front line workers have a strong line of defence against the contagious virus, Defence Research and Development Organisation (DRDO) has developed a bio-suit to keep them safe*

*By Sonal Khetarpal*

New Delhi: As doctors, paramedic staff, nurse and other healthcare workers work relentlessly to cure patients of the COVID-19 pandemic that has gripped the world, they put their own life at risk.

To ensure these front line workers have a strong line of defence against the contagious virus, Defence Research and Development Organisation (DRDO) has developed a bio-suit to keep them safe.

Scientists at various DRDO laboratories have applied their technical know-how and expertise in textile, coating and nanotechnology to develop the Personal Protective Equipment (PPE) having a specific type of fabric with coating.

The suit has been prepared with the help of the industry and subjected to testing for textile parameters as well as protection against synthetic blood (a substitute that can fulfil some functions of the body's blood). The protection against synthetic blood exceeds the criteria defined for body suits by Ministry of Health and Family Welfare (MoHFW).

DRDO has partners the firm Kusumgarh Industries to produce the raw material and coating material. Another vendor is being brought in with the experience in garment technology and efforts are on to ramp up the capacity to 15,000 suits per day.

The current production capacity is 7,000 suits per day.

However, the statement by DRDO says, the bio-suit production is being hampered due to non-availability of seam sealing tapes. But, it is not a deterrent. DRDO has prepared a sealant drawing inspiration from sealant used in submarine applications as an alternative.

Presently, bio suits prepared using this glue for seam sealing by an industry partner has cleared test at Southern India Textile Research Association (SITRA) Coimbatore. This can be a game-changer for the textile industry. The DRDO can mass produce this glue through the industry to support the seam sealing activity by suit manufacturers.

<https://www.businesstoday.in/current/corporate/coronavirus-update-drdo-develops-bio-suit-to-protect-doctors/story/400118.html>

## Business Standard

Sat, 04 April 2020

### As India steps up 'war' against Covid-19, Military to deploy more resources

*Testing facilities, 15,000 beds, military schools to  
made available if needed, says defence ministry*

*By Ajai Shukla*

New Delhi: With the national effort against the coronavirus disease (Covid-19) pandemic being increasingly enunciated in the rhetoric of a “war”, the Ministry of Defence (MoD) announced on Friday the deployment of additional military medical and logistics resources to aid government health authorities.

The MoD said that, in addition to six quarantine facilities the armed forces have already established at Mumbai, Jaisalmer, Jodhpur, Hindon, Manesar and Chennai, the military will make available “high dependency unit” and “intensive care unit” beds in 51 armed forces hospitals across the country. “Some of these facilities are located at Kolkata, Visakhapatnam, Kochi, Dundigal near Hyderabad, Bengaluru, Kanpur, Jaisalmer, Jorhat and Gorakhpur,” said a MoD release on Friday.

In addition, 15 other facilities are being kept





ready as standby for use, if required,” stated the defence ministry on Friday. Together, these have beds for about 15,000 Covid-19 patients. Army chief, General M M Naravane, has offered more than 8,500 doctors and support staff to assist the anti-Covid-19 effort.

As Coronavirus testing picks up momentum, five viral testing labs at armed forces hospitals, which are equipped to carry out Covid-19 testing, have been made part of the national grid. “These include Army Hospital (Research & Referral), Delhi Cantt; Air Force Command Hospital, Bangalore; Armed Forces Medical College, Pune; Command Hospital, Lucknow and Command Hospital, Udhampur. Six more hospitals are being equipped shortly with the resources to begin Covid-19 testing,” stated the ministry.

The armed forces have already handled 1,737 patients at the quarantine centres already functioning. Of these, 403 have been released, while three positive Covid-19 cases – two from Hindan and one from Manesar – were referred to Safdarjung Hospital in New Delhi for further treatment.

Besides the military’s primary function to safeguard India’s territorial integrity, it also has a secondary role “in aid to the civil authority.” Besides restoring law and order and civilian control in flashpoints like Jammu & Kashmir, this requires the military to assist in controlling natural disasters and pandemics, when called upon by the government.

The military is totally prepared to stand up to the demands made by government and the people,” stated Chief of Defence Staff, General Bipin Rawat, to the media.

Rawat has also offered to allow the use of military school premises – currently closed due to the lockdown, and subsequently the summer vacation – as quarantine centres for persons who have been exposed to the virus. The Indian Air Force (IAF) has mobilised its aircraft fleet for transporting essential supplies, medicines and medical equipment.

“So far, approximately 60 tonnes of stores have been airlifted to various parts of the country. 28 fixed wing aircraft and 21 helicopters are on standby at various locations across the country,” said the defence ministry.

Meanwhile, special IAF flights have evacuated Indian citizens and transported over 25 tonnes of medical supplies. “A C-17 Globemaster III comprising of crew, medical team and support staff has carried 15 tonnes of medical supplies to China and airlifted 125 persons, comprising Indian nationals and few citizens from friendly countries on its return,” said the ministry.

An IAF C-17 Globemaster III has also flown to Iran and brought back 58 stranded Indians, along with 529 samples for Covid-19 testing.

Continuing India’s tradition of assisting small Indian Ocean countries, a C-130J Super Hercules aircraft flew to the Maldives with 6.2 tonnes of medicines.

“An Army Medical Corps team consisted of five doctors, two nursing officers and seven paramedics was deployed in Maldives for capacity building measures and assistance and in setting up their own testing, treatment and quarantine facilities between March 13-21,” said the defence ministry.

The Navy has readied six warships for assisting littoral neighbours. In addition, five naval medical teams are on standby for deployment in Maldives, Sri Lanka, Bangladesh, Nepal, Bhutan and Afghanistan.

Meanwhile, the Defence R&D Organisation (DRDO) has developed a five-layered nanotechnology face mask (called N99) and is ramping up per day production to 20,000 masks. DRDO is also engaged in modifying ventilators so that one machine

Can support four patients at the same time.

[https://www.business-standard.com/article/current-affairs/as-india-steps-up-war-against-covid-19-military-to-deploy-more-resources-120040300820\\_1.html](https://www.business-standard.com/article/current-affairs/as-india-steps-up-war-against-covid-19-military-to-deploy-more-resources-120040300820_1.html)

## In a first, Army deploys medical team at civil coronavirus quarantine camp in Delhi

*The Indian Army has so far only been operating out of quarantine camps set up by the armed service for coronavirus patients*

*By Snehesh Alex Philip*

New Delhi: A medical team from the Army was deployed at the Narela quarantine camp in Delhi Friday where some of the coronavirus-infected patients from the Tablighi Jamaat event are being kept. This is the first time the armed service has been deployed at a civil centre set up to handle the coronavirus cases.

So far, the Army's doctors and specialists have only been operating out of the quarantine centres set up by the force.

Defence sources said none of the quarantined people misbehaved with the Army medical team after reports emerged that some Tablighi Jamaat members refused to cooperate and even harassed civil medical teams.



“This deployment consists of two doctors and two nurses. They are accompanied by a protective unit as per standard operating procedure,” said an Army source.

### **Health ministry requests for Army team**

Another source said that the deployment was made at the request of the health ministry after the Delhi government appealed for it since there was a lot of pressure on the civil medical teams.

The armed forces have already been directed to augment medical resources for civil health set-ups too.

Currently, there are six quarantine facilities being run by the Army — Mumbai, Jaisalmer, Jodhpur, Hindon, Manesar and Chennai — at which 1,737 people have been treated. Of these cases, 403 patients have been released.

The Army is also preparing dedicated Covid-19 facilities, including high-dependency units and intensive care unit beds, at 51 Army hospitals. Some of these facilities are located at Kolkata, Visakhapatnam, Kochi, Dundigal (near Hyderabad), Bengaluru, Kanpur, Jaisalmer, Jorhat and Gorakhpur.

<https://theprint.in/india/in-a-first-army-deploys-medical-team-at-civil-coronavirus-quarantine-camp-in-delhi/394749/>

## 51 military hospitals preparing coronavirus facilities including ICU

*Military officials said five viral testing laboratories of the services, capable of carrying out COVID-19 tests, are preparing dedicated coronavirus facilities including intensive care units for tackling the outbreak. Besides medical, the armed forces are also providing logistics support to the civilian authorities*

*By Shaurya Karanbir Gurung*

New Delhi:: Fifty-one military hospitals across India are preparing dedicated coronavirus facilities including intensive care units for tackling the outbreak, the defence ministry said on Friday.

Some of these facilities are located at Kolkata, Vishakhapatnam, Kochi, Dundigal near Hyderabad, Bengaluru, Kanpur, Jaisalmer, Jorhat and Gorakhpur.

Besides medical, the armed forces are also providing logistics support to the civilian authorities, coming at a time when the lockdown has affected road and rail networks. The transport fleet of the Indian Air Force has supplied 60 tons of essential supplies, medicines and medical equipment across the country. Twenty eight fixed wing and 21 helicopters are on standby at various locations across the country.

Six naval ships are ready at Vizagapatam, Kochi and Mumbai to transport important supplies and medical equipment to neighbouring countries. These ships are likely to transport important supplies and medical equipment. Five medical teams are also on standby for deployment in Maldives, Sri Lanka, Bangladesh, Nepal, Bhutan and Afghanistan.

“Dedicated COVID-19 facilities including High Dependency Units, Intensive Care Unit beds are being prepared in 51 hospitals of the armed forces across the country. Some of these facilities are located at Kolkata, Visakhapatnam, Kochi, Dundigal near Hyderabad, Bengaluru, Kanpur, Jaisalmer, Jorhat and Gorakhpur,” the ministry said.

Earlier this week, the Chief of Defence Staff had informed Defence Minister Rajnath Singh, during a review meeting of the defence ministry’s efforts towards tackling coronavirus, that 9,000 hospital beds in military hospitals have been made available to the government. These beds are in 28 hospitals of the army, air force and navy earmarked for treating coronavirus patients.

Five viral testing labs at armed forces hospitals, which can carry out COVID-19 testing, have been made part of the national grid. These include Army Hospital (Research & Referral), Delhi Cantt; Air Force Command Hospital, Bangalore and Armed Forces Medical College, Pune; Command Hospital (Central Command), Lucknow and Command Hospital (Northern Command), Udhampur. Six more hospitals are being equipped shortly with the resources to begin COVID-19 testing.

“Transport fleet of the IAF is being used to assist in transportation of essential supplies, medicines and medical equipment. So far, approximately 60 tonnes of stores have been airlifted to various parts of the country. Twenty eight fixed wing and 21 helicopters are on standby at various locations across the country,” the ministry said.

The IAF had earlier said that 25 tons of medical supplies, including Personal Protective Equipment (PPE), hand sanitisers, surgical gloves, besides medical personnel, were airlifted from Delhi, Surat and Chandigarh to Manipur, Nagaland and the union territories of J&K and Ladakh during March end.

The IAF’s C-17 Globemaster III was also sent to Iran and brought back 58 stranded Indians and 529 samples for COVID-19 investigation. The C-130J Super HerculesNSE 0.78 % aircraft has also ferried around 6.2 tonnes of medicines to Maldives

An Army Medical Corps team consisting of five doctors, two nursing officers and seven paramedics was deployed in Maldives for capacity building measures and assisted in setting up their own testing, treatment and quarantine facilities between March 13-21.

About 1,737 have been kept at six armed forces quarantine facilities at Mumbai, Jaisalmer, Jodhpur, Hindon, Manesar and Chennai. Out of 1,737, 403 have been released. "Fifteen other facilities are being kept ready as standby for use, if required," the ministry said.

The 15 locations are Army (Babina, Jhansi, Barmer, Bhopal, Kolkata and Binnaguri), IAF (Bhatinda, Hyderabad, Deolali, Kanpur, Gorakhpur and Agra) and Navy (Vishakhapatnam, Kochi and Chilka).

<https://economictimes.indiatimes.com/news/defence/armed-forces-readying-51-hospitals-for-treating-coronavirus-affected-people/articleshow/74972087.cms>



Sat, 04 April 2020

## Army steps up fight against coronavirus

*The Army created several quarantine and isolation facilities in Telangana along with other South Indian States. The Southern Command was also creating additional ad hoc isolation facilities*

Hyderabad: The Southern Command, the largest command of the Indian Army, has undertaken OP NAMASTE — an initiative aimed at mitigating the spread of Covid-19 in the Southern States, which are emerging as the 'hotspots' of the outbreak in the country.

The Army created several quarantine and isolation facilities in Telangana along with other South Indian States. The Southern Command was also creating additional ad hoc isolation facilities. Both the quarantine as well as isolation facilities have been provided with dedicated medical and administrative staff to take care of patients and quarantined persons, according to a statement released by the defence wing of Telangana on Friday.

'Army Corona Warriors', comprising doctors, nurses and other support staff, have been at the forefront in this atypical battle at these locations. Meanwhile, paramedical personnel were being prepared to assist the civil administration of various States to contribute to patient care.

<https://www.newindianexpress.com/cities/hyderabad/2020/apr/04/army-steps-up-fight-against-coronavirus-2125563.html>



Sat, 04 April 2020

## Armed forces step up preparations to help India, neighbours fight COVID-19

*The Ministry of Defence said the Indian Air Force has kept 28 transport aircraft and 21 helicopters on standby at various locations across the country*

*By Mayank Singh*

New Delhi: The Indian Armed Forces have stepped up their preparations against COVID-19 to meet any future requirements arising within the country and in the neighbourhood. Fifty aircraft are on standby only for internal requirements. All the services -- Army, Navy and Air Force -- are part of the preparations.

The Ministry of Defence said it is ready to assist countries sharing land or maritime borders with India under the Neighbourhood First Policy. "Six Naval ships loaded with HADR bricks are kept



on standby for assistance at Vishakhapatam, Kochi and Mumbai to respond any requests from littoral neighbouring countries like Maldives, Sri Lanka and Bangladesh,” it said. Also, five medical teams are on standby for deployment in Maldives, Sri Lanka, Bangladesh, Nepal, Bhutan & Afghanistan, added the MoD.



On Thursday, a C-130J Super Hercules aircraft ferried around 6.2 tonnes of medicines and hospital consumables to Maldives. An Army Medical Corps team consisting of five doctors, two nursing officers and seven paramedics was deployed in Maldives to assist in setting up their own testing, treatment and quarantine facilities from March 13-21.

Major additional resources have been dedicated and capability is being added for requirements within the country. The Ministry said the Indian Air Force has kept 28 transport aircraft and 21 helicopters on standby at various locations across the country. The transport fleet of the Air Force is functioning as a bulwark, assisting in transportation of essential supplies, medicines and medical equipment. So far, approximately 60 tonnes of stores have been airlifted to various parts of the country.

The Armed Forces are running six quarantine facilities at Mumbai, Jaisalmer, Jodhpur, Hindon, Manesar and Chennai which till now have handled 1737 persons, of which 403 have been discharged so far. In addition, 15 other facilities are being kept ready as standby for use, if required.

51 hospitals of the Armed Forces across the country are getting prepared for dedicated COVID-19 facilities including High Dependency Units and Intensive Care Unit beds. Five viral testing labs at Armed Forces hospitals which can carry out COVID-19 tests have been made part of the national grid. These are at Delhi, Bangalore, Pune, Lucknow and Udampur. Six more hospitals are being equipped shortly with the resources to begin COVID-19 testing.

Armed Forces Medical Services (AFMS) has deployed its resources to aid the civilian authorities at this crucial time.

<https://www.newindianexpress.com/nation/2020/apr/03/armed-forces-step-up-preparations-to-help-india-neighbours-fight-covid-19-2125350.html>

**BW BUSINESSWORLD**

*Sat, 04 April 2020*

## **Defence: The invisible enemy**

*India's armed forces are lending their might in the country's battle against the Covid-19 outbreak*

*By Manish Kumar Jha*

The Indian armed forces are at war with Covid -19, the invisible enemy that has left a trail of death across major parts of the world, and now threatens to unleash its quiet fury on the Indian subcontinent. And leading this fight is the Armed Forces Medical Services (AFMS).

However, this fight is not so much about protecting its own ranks, which so far has seen just one case of Covid -19 infestation. A 34-year-old soldier has contracted the coronavirus from his father who had travelled to Iran in February on a pilgrimage and tested positive a few days after his return. Although another case has been reported from the IAF facility in Hindon but the infested person is not from the forces.



The Indian Army is waging a real battle to keep the virus from entering in big numbers. It responded to the threat by establishing a quarantine facility in Manesar near Gurugram, and followed it up by establishing and operating medical facilities at Jaisalmer and Jodhpur for evacuees from Iran, Italy and Malaysia.

According to the defence ministry, evacuees from Wuhan and Japan have already been discharged after observing full protocol. It is to the credit of the Indian Army that so far, only one case of COVID-19 has been reported from these facilities which have dealt with more than 1,200 evacuees, medical staff and air crew.

### **Evacuating Indians from Hotspots**

On the first day of the 21-day lockdown, the Army facility in Jodhpur received 277 evacuees from Iran including 273 pilgrims. The evacuees, which included 149 women and six children, were transferred from Delhi to Jodhpur on Indian Airlines flights and screened on arrival at Jodhpur airport. They were then taken to the Army facility which has been designed not just for isolation but also for providing mental and physical wellness through a regimented routine that includes sports and recreational activities.

Indian Air Force's C 17 Globemaster aircraft has been flying to different parts of the world to evacuate Indian citizens. A massive rescue operation was undertaken by the IAF to evacuate Indians from Tehran. It evacuated 58 Indian pilgrims who were stranded in Iran as commercial air services between the India and Iran were suspended in the wake of the coronavirus outbreak in the West Asian nation.

The forces have been contributing in the fight against the pandemic in other ways as well. On 25 March, Indian Navy personnel from INS Hansa flew a team of four doctors from the Goa State Health department to Pune. The medical team led by Dr Savio Rodrigues, Head of Microbiology, Goa Medical College, will undergo training to set up a COVID test facility at Goa. Responding to a request from the state government for air transport, the Flag Officer Commanding of Goa area immediately initiated necessary procedures to fly the medical team to Pune. A few samples of COVID-19 suspects were also carried by the medical team for testing.

At the Army Headquarters in Delhi, officials except those involved in essential duties were told to stay at home to minimise exposure. The global lockdown has significantly reduced the office work be it international cooperation, training events, postings, courses, etc. The Army ordered that all courses due on 25 March or afterwards be postponed and classes involving more than 50 persons at one place be dismissed.

Besides, advisory has been issued by the Armed Forces on social distancing measures for prevention and containment of Covid-19 and guidelines have been sent across the country. As per these, unit functions such as bara-khanas, family welfare meets, large sports events, and parade at Sarva-dharm-sthal should be cancelled; facilities recording high foot fall and long queues such as hospitals, CSDs, grocery/ vegetable shops should have a dedicated team of service personnel; all non-essential travel and temporary duties to be curtailed unless absolutely necessary. Moreover, all three services have been directed to halt all foreign assignments/ courses/ UN missions till 15 April 2020.

### **Medical Facilities on Standby**

Also, Army medical facilities at Jhansi, Binnaguri and Gaya with a total capacity of 1,600 beds have been kept on standby. More facilities are being readied to respond at short notice. This does not include the additional capacity created and kept ready by the sister services, the Navy and the Air Force.

With the number of coronavirus cases increasing significantly every day, the central government has appealed to retired medical officers from AFMS to come forward and join the fight against the deadlyvirus.

The move came after discussions with the officials of Indian Army, who assured that the Army is prepared to deal with the present and future challenges with all its might and will continue to support the national effort.

<http://www.businessworld.in/article/Defence-The-Invisible-Enemy/03-04-2020-188188/>

## **COVID-19: Naval dockyard makes PPE to support health care workers**

*Mumbai's Naval Dockyard created a short video after they designed public protective equipment to help doctors and medical staff combat the COVID-19 pandemic*

*By Kunal Gaurav*

Mumbai: Mumbai's Naval Dockyard created a short video after they designed public protective equipment to help doctors and medical staff combat the pandemic. Indian Navy said that the video has been made to show support towards frontline medical professionals fighting against the coronavirus pandemic. In the video posted by ANI, a person can be seen wearing a PPE to minimise the exposure to coronavirus.

The Naval Dockyard has also designed and developed its own Infra-red based temperature sensor for screening personnel entering the premise. They used in-house resources to develop the instrument at a manufacturing cost of less than a thousand rupees, very low cost compared to the Temperature Guns available in the market.

The non-contact thermometer has an infrared sensor and an LED display integrated with a microcontroller which runs on a 9V battery. The Dockyard of the Western Naval Command (WNC) has an average influx of around 20,000 personnel every day which created a huge demand for PPEs.

### **Call for Low-cost Methods**

The government of India has called upon scientists, startups, and other public and private organisations across the country to come together and develop low-cost and improved methods to help combat the virus. ISRO's rocket producing wing - the Vikram Sarabhai Space Centre (VSSC) - is actively contributing to the nation's fight against the deadly coronavirus. According to reports, the VSSC is preparing to produce ventilators, oxygen canisters, hand sanitizers and masks for COVID-19 patients.

A group of young engineers working for a Pune-based startup, which makes water-less solar plant cleaning robots, are also building a low-cost ventilator which will cost Rs 50,000, almost one-third the price of current ventilators made by other Indian companies. Meanwhile, women researchers at the Banaras Hindu University (BHU) have reportedly developed a new testing method that would give the results with hours.

<https://www.republicworld.com/world-news/rest-of-the-world-news/covid-19-mumbais-naval-dockyard-creates-short-video-to-support.html>



**DEFENCE AVIATION POST**  
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## **Six navy ships, medical teams on standby to assist neighbouring countries**

*The six naval ships with medical teams and Humanitarian Assistance and Disaster Relief kits onboard are on standby for assistance at Visakhapatnam, Kochi and Mumbai, a defence official said*

As part of India's measures to assist neighbouring countries in dealing with the COVID-19 pandemic, six Navy ships have been kept ready and five medical teams are on standby for

deployment to the Maldives, Sri Lanka, Bangladesh, Nepal, Bhutan and Afghanistan when required, the Defence Ministry said on April 3.

“Twenty eight fixed wing aircraft and 21 helicopters of the Indian Air Force (IAF) are on standby at various locations across the country for transporting essential supplies,” the Ministry said in a statement. The IAF’s transport fleet is being used to assist in transportation of essential supplies, medicines and medical equipment and so far, about 60 tonnes of stores have been airlifted to various parts of the country.

The six naval ships with medical teams and Humanitarian Assistance and Disaster Relief (HADR) kits onboard are on standby for assistance at Visakhapatnam, Kochi and Mumbai, a defence official said.

An IAF C-130J Super Hercules aircraft airlifted 6.2 tonnes of medicines to the Maldives on Thursday. Earlier, between March 13-21 an Army Medical Corps team consisting of five doctors, two nursing officers and seven paramedics was deployed to the Indian Ocean nation for “capacity building measures and to assist in setting up their own testing, treatment and quarantine facilities”.

Five viral testing labs at armed forces hospitals, which can carry out the COVID-19 test, have been made part of the national grid, the ministry said. These include Army Hospital (Research & Referral), Delhi; Air Force Command Hospital, Bengaluru; Armed Forces Medical College, Pune; Command Hospital, Lucknow and Command Hospital, Udampur. “Six more hospitals are being equipped shortly with the resources to begin COVID-19 testing,” it added.

<https://www.defenceaviationpost.com/2020/04/six-navy-ships-medical-teams-on-standby-to-assist-neighbouring-countries/>



*Sat, 04 April 2020*

## **Throwback: from Russia’s S-400 to Israel’s Barak-8 missiles: How India is fortifying its defence**

Israel Aerospace Industries (IAI) announced that it has been awarded an additional \$777-million mega contract for supply of Barak-8 missile defence system – known in India as LRSAM – for seven ships of the Indian Navy. The contract was entered with state-owned company Bharat Electronics Limited (BEL), which serves as the main contractor in the project.

Barak-8 is a long-range surface to air missile jointly developed by India’s DRDO and Israel Aerospace Industries (which subcontracted the work to Israel’s Elta Systems and Rafael Advanced Defence Systems; the latter has a JV with Indian private firm Kalyani). It is a safe carry and launch missile for ships and can be launched vertically.

Barak-8 could be crucial to the Indian Navy as China has been increasing its presence in and around the Indian Ocean.



But Indian forces are no stranger to Barak-8. In 2017, India and Israel had signed a \$2 billion deal for the land version of the missile system, called MRSAM, for the Indian Army and LRSAM for the Navy. IAI then said it was the largest single contract between India and Israel. The LRSAM was to be installed on INS Vikrant and Kolkata-class destroyers of the Navy.

Israel is emerging as one of India's biggest suppliers of weapons, alongside the United States and long-term partner Russia. Last year, IAI struck a deal worth almost \$2 billion to supply India's Army and Navy with missile defence systems.

The Barak-8 deal follows the pact with Russia for five S-400 missile shields, which can protect India from hostile jets, bombers, drones and missiles. India is expected to deploy them along the borders with Pakistan and China, giving the Army a boost in its defence against Chinese missiles.

<https://www.defenceaviationpost.com/2020/04/throwback-from-russias-s-400-to-israels-barak-8-missiles-how-india-is-fortifying-its-defence/>

# The Tribune

Sat, 04 April 2020

## Planes, warships ready

New Delhi: Some 100 pilots, about 60 planes and copters, five medical teams and six warships are on standby to tackle the needs arising out of the Covid pandemic. The Army deployed a unit of doctors in aid of the Delhi Administration on Friday.

From the Indian Air Force, 28 fixed wing planes, some of them capable of lifting 70 tonnes or some 300 men in one sortie, and 21 helicopters are on standby at various locations. Some of these copters can fly up to 19,000 feet to drop supplies or pick up patients in the Himalayas. Also, the Navy has committed its fixed wing asset and copters.

Six naval warships are kept ready for assistance to neighbouring countries. Five medical teams of the forces are also on standby for deployment in Maldives, Sri Lanka, Bangladesh, Nepal, Bhutan and Afghanistan.

Some 1,300 persons are lodged in six quarantine facilities, officials said.

<https://www.tribuneindia.com/news/nation/planes-warships-ready-65257>



**DEFENCE AVIATION POST**  
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Sat, 04 April 2020

## India set to deliver Myanmar's first submarine

New Delhi is preparing to deliver a Kilo-class diesel-electric submarine that was in service with the Indian Navy as INS Sindhuvir to the Myanmar Navy.

The transfer will also include operational and maintenance training to the Myanmar Navy, which will be operating a submarine for the first time. However, it is unclear if this represents a lease or a permanent transfer.

Sindhuvir was commissioned into the Indian Navy in 1988 and was in service as part of the 11th submarine squadron, which is based at Vishakhapatnam. The boat completed a refit at the state-owned Hindustan Shipyard Ltd. from August 2017 to February 2020.

<https://www.defenceaviationpost.com/2020/04/india-set-to-deliver-myanmars-first-submarine/>

## China begins work to build two advanced Naval frigates for Pakistan

By KJM Varma

Beijing, Apr 3 (PTI): China has begun construction of two advanced naval ships for Pakistan as its defence industry resumed production after over two months following the disruption caused by the coronavirus outbreak which brought the country to a standstill.

The keel-laying ceremony for the second Type 054A/P missile frigate for the Pakistani Navy was held recently at the Hudong– Zhonghua Shipyard in China's Shanghai city, Pakistan's state-run APP news agency reported on Friday.

The Type 054A multi-purpose guided-missile frigate is the mainstay of the Chinese People's Liberation Army (PLA) Navy, with 30 vessels in commission.

Pakistan signed the first contract of two Type 054A/P frigates, an export version of the Type 054A, in 2017 and purchased two more ships in June 2018, the report said.

The steel cutting ceremony for the final two ships took place last November. All four frigates will be manufactured in China and delivered to the Pakistan Navy in 2021.

A senior official of Pakistan Navy who attended the keel-laying ceremony said that despite the challenges, posed by COVID-19, the expertise of Hudong–Zhonghua Shipyard and Chinese contractors ensured the timely completion of this important milestone programme, it said.

The Pakistan Navy said that the 054A/P frigates are equipped with a modern surface, underwater and anti-aircraft weapons and sensors.

Once built, these warships will become the most technologically advanced platforms of the Pakistani Navy, which will enhance its combat capability to meet future challenges and maintain peace, stability, and balance of power in the Indian Ocean, the report added. PTI KJV NSA

*(Disclaimer: This story has not been edited by Outlook staff and is auto-generated from news agency feeds. Source: PTI)*

<https://www.outlookindia.com/newscroll/china-begins-work-to-build-two-advanced-naval-frigates-for-pakistan/1790408>

## कोरोना के संक्रमण से बचाने में मदद करेगा सरकारी एप 'आरोग्य सेतु'

नई दिल्ली : सरकार ने एक मोबाइल एप लॉन्च किया है। इस एप नाम 'आरोग्य सेतु' (Arogya Setu app) है। इस एप की मदद से लोगों को कोरोना वायरस संक्रमण के खतरे और जोखिम का आकलन करने में मदद मिल सकेगी। यह एप लोगों को वायरस से संक्रमित व्यक्ति के नजदीक जाने पर सतर्क करेगा।

मंत्रालय के एक अधिकारी के अनुसार, एप केवल ताजा मामलों का पता लगाएगा और केवल उन्हीं लोगों को सतर्क करेगा जो संक्रमित व्यक्ति के आस-पास रहे हैं। एक सरकारी बयान में कहा गया है। 'यह एप आवाज के जरिये इस्तेमाल में आने यह एप आवाज के जरिये इस्तेमाल में आने वाली तकनीक से संक्रमितों का पता लगाने में मदद करेगा। इसमें अति आधुनिक ब्लूटूथ टेक्नोलॉजी, एल्गोरिदम और



आर्टिफिशियल इंटेलिजेंस का उपयोग शामिल है। यह एप 11 भाषाओं में उपलब्ध है। इसे एंड्रॉयड और ioS दोनों प्लेटफार्म पर लॉन्च किया गया है।

आईटी मंत्रालय के एक अधिकारी ने बताया कि यदि कोई व्यक्ति चिकित्सा परीक्षण के दौरान कोरोना वायरस से संक्रमित पाया जाता है तो संक्रमित व्यक्ति का मोबाइल नंबर स्वास्थ्य मंत्रालय द्वारा बनाए गए रजिस्टर में शामिल होगा और एप पर भी इस सूचना को अपडेट किया जा जायेगा। अब तक, देश में कुल 2,116 लोगों में कोरोना वायरस संक्रमण का पता चला है, जिनमें से 150 ठीक हो गए हैं। दुनियाभर में करीब 50 हजार लोगों की इस महामारी के कारण मौत हो चुकी है। भारत में 50 लोगों की अब तक कोरोना वायरस से मौत हुई है।

बयान में कहा गया है, "इस एप से कोविड -19 संक्रमण के जोखिम का आकलन करने और आवश्यक होने पर संबंधित व्यक्ति अथवा क्षेत्र को दूसरे लोगों अलग करने (क्वारेन्टाइन ) करने के लिए सरकार को समय पर कदम उठाने में मदद मिलेगी।" सरकार ने कहा कि एप में उपयोगकर्ताओं की जानकारी किसी से साझा नहीं की जाएगी और प्राइवेसी का पूरा ख्याल रखा जाएगा।

<https://economictimes.indiatimes.com/hindi/news/corona-virus-govt-launch-aarogya-setu-aap/articleshow/74960844.cms>