

## **DRDO pools in all partners to manufacture equipment to battle pandemic**

Hyderabad: With the country fighting the coronavirus pandemic, the Defence Research and Development Organisation (DRDO) has now joined the battle. The ordnance manufacturer has developed equipment medical professionals and others would require in the field. The production is being carried out with the help of industry partners in various parts of the country.

For instance, a personnel sanitisation enclosure (PSE) has been developed by the Vehicle Research Development Establishment (VRDE) in Maharashtra's Ahmednagar. On entering the PSE chamber, an electrically operated pump creates a disinfectant mist of hypo-sodium chloride for disinfecting. According to the DRDO, the mist spray is calibrated for an operation of 25 seconds and stops automatically indicating completion of operation.

Meanwhile, a full face mask (FFM) has been developed at the Research Centre Imarat (RCI) in Hyderabad and the Terminal Ballistics Research Laboratory (TBRL) in Chandigarh. "Its lightweight construction makes it convenient for comfortable wear for long duration," the DRDO said.

As many as 1,000 face shields are being produced daily at the TBRL and provided to Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh. Similarly, 100 masks are produced by RCI and handed over to Employees' State Insurance Corporation (ESIC), Hyderabad. According to DRDO, a demand of 10,000 shields has been received from PGIMER and ESIC based on successful user trials.

The Centre for Fire Explosive & Environment Safety (CFEES) in Delhi has developed two configurations of sanitising equipment. The portable system can be mounted as a backpack and can be carried by operations personnel. Meanwhile, another trolley mounted large area Sanitisation equipment can be used to disinfect an area of 3,000 square meter. Two of these systems have been provided to the Delhi Police for immediate use and will be made available to others.

DRDO has also developed a bio-suit to keep medical, paramedical and other personnel engaged in dealing with COVID-19 cases safe from the virus. The current production capacity is 7,000 suits per day. Another vendor, with experience in garment technology, is being brought in and efforts are on to ramp up the capacity to 15,000 suits per day.

As bio-suit production by DRDO industry partners and other industries was being hampered due to non-availability of seam sealing tapes, the ordnance body has prepared a special sealant as an alternative to seam sealing tape based on the sealant used in submarine applications. It has also developed a number of products and technologies for defence against Chemical, Biological, Radiological and Nuclear (CBRN) agents.

The Defence Research and Development Establishment (DRDE) Gwalior, a laboratory of DRDO, has developed Chemical, Biological, Radiological and Nuclear (CBRN) Permeable Suit Mk V with 53,000 suits already supplied to Army and National Disaster Response Force (NDRF) teams. For first responders attending to radiological emergencies, a reusable suit has been developed by Institute of Nuclear Medicine & Allied Sciences (INMAS) Delhi. Meanwhile, the Aerial Delivery Research and Development Establishment (ADRDE) Agra has developed various types of parachutes with fabrics similar to protective technical textiles.

<https://timesofindia.indiatimes.com/city/hyderabad/drdo-pools-in-all-partners-to-manufacture-equipment-to-battle-pandemic/articleshow/75018149.cms>

## Covid-19 outbreak: DRDO nod to made in Punjab N99 and N95 masks

*By Mohit Behl*

Ludhiana: In a major breakthrough by Punjab's industry, two firms, Oxiclear Private Limited of Ludhiana and Surgeine Safety Products, Hoshiarpur have got approval from India's elite Defence Research and Development Establishment (DRDE) Gwalior for manufacturing N99 and N95 masks which currently are the most sought after masks around the world, particularly in the wake of outbreak of Covid-19. Both these manufacturers are now eligible for supply of these masks to any government or private concern. In another big development, owners of these firms claim that they will be able to supply these masks at almost 40 per cent cheaper rates than the existing masks available in the market.

According to Gagandeep Singh, owner of Oxiclear said, "We are happy that N99 masks being made by our company has been approved by DRDE which is a big achievement for us, it could not have been possible without the support from Punjab government. With this development now it has been certified that our masks meet all the requirements to combat the Covid-19. Since we are now eligible to supply these masks to government departments and hospitals we are going to scale up production and bring the costs down to such a level that



without any compromise on the quality, our products will be priced at almost 40 percent less than the presently available products of big brands. We are hopeful that together with the support of all stakeholders we will be able to contribute extensively in the battle against Covid-19"

Notably ever since the lockdown began, a team comprising of additional chief secretary Vini Mahajan , director of industries and commerce Sibin C and all the general managers (GM) of district industries centres, particularly Mahesh Khanna GM of Ludhiana is working round the clock to ensure development of various medical kinds of medical equipment including Personal Protective Equipment (PPE), Hazmat Suits, special fabrics, low cost ventilators and masks etc within Punjab in order to meet the high demand of these crucial items within India to battle Covid-19.

Meanwhile giving more information, IAS Sibin C, said, "This is a big breakthrough for Punjab's industry as both N99 and N95 masks which play a very crucial role in combating Covid-19 but are in very short supply around the globe. Today's development comes as another boost to Punjab government's initiative to cope up the shortage of personal protective equipment in the country and make Punjab as the new hub of medical and life saving equipment. Apart from N99 and N95 large scale production of three ply and normal masks is also going on on a huge scale in Punjab and we are confident that factory owners of our state will fulfil the shortage of the masks throughout the country. Punjab government is already doing its best to help them be it airlifting the samples for testing or requirement of permissions of any sort or even financing"

Meanwhile giving more information about the test reports, Mahesh Khanna GM of DIC Ludhiana said, "Few days ago the samples of N99 and N95 masks manufactured by both these companies were sent to Defence Research and Development Organisation's (DRDO) for testing at its DRDE facility located at Gwalior. The samples of both the companies have been approved for mass production after they passed extensive testing including filtration efficiency. Now the decks have been cleared for both the firms to supply these masks in bulk to any government or private concern."

According to GB Singh, Proprietor of Surgeine Safety Products, Hoshiarpur, "I am running my small Industrial unit in Hoshiarpur from last 6 years. We are manufacturers of ISI approved Industrial safety respirators. Punjab government gave us huge motivation and support to make N95 which we successfully did. Along with all state government officials we got huge support from Ministry of Textiles regarding arrangement of our samples to Delhi and further they sent to testing facility at DRDO, Gwalior. We will further start our production shortly and we have manufacturing capacity of N95 mask is about 4000-5000 masks per day."

<https://timesofindia.indiatimes.com/city/ludhiana/covid-19-outbreak-drdo-nod-to-made-in-punjab-n99-and-n95-masks/articleshow/75012624.cms>



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## कोरोनावायरस से संक्रमितों का इलाज कर रहे डॉक्टरों के लिए DRDO ने बनाया बायो सूट

**भारत के प्रमुख रक्षा अनुसंधान संस्थान DRDO की अलग-अलग प्रयोगशालाओं में कार्यरत वैज्ञानिकों ने मिलकर इस बायो सूट को विकसित किया है जो कोरोनावायरस से संक्रमितों का इलाज कर रहे डॉक्टर और मेडिकल स्टाफ के लिए PPE (पर्सनल प्रोटेक्टिव इक्विपमेंट) की तरह काम करेगा।**

भारत के प्रमुख रक्षा अनुसंधान संस्थान DRDO (डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गनाइजेशन) ने कोरोनावायरस से संक्रमितों का इलाज कर रहे डॉक्टरों सहित चिकित्सा पेशेवरों की सुरक्षा के लिए "बायो सूट" विकसित किया है। डीआरडीओ की अलग-अलग प्रयोगशालाओं में कार्यरत वैज्ञानिकों ने मिलकर इस बायो सूट को विकसित किया है जो चिकित्सा पेशेवरों के लिए PPE (पर्सनल प्रोटेक्टिव इक्विपमेंट) की तरह काम करेगा।

कोरोनावायरस के संक्रमण फैलने के बाद पूरे देश में पीपीई की बढ़ती मांग को देखते हुए प्रतिदिन कम से कम 15,000 बायो सूट का उत्पादन करने का लक्ष्य रखा गया है। भारत कोरोना वायरस संक्रमितों का करने वाले डॉक्टरों और पैरामेडिक कर्मियों के लिए पीपीई की कमी का सामना कर रहा है। सरकार वैश्विक बाजार से पीपीई, वेंटिलेटर और एन-95 मास्क खरीदने पर भी विचार कर रही है।

रक्षा मंत्रालय ने बयान जारी कर बताया कि डीआरडीओ की विभिन्न प्रयोगशालाओं में कार्यरत वैज्ञानिकों ने वस्त्र, परत और नैनोटेक्नोलॉजी में अपनी विशेषज्ञता का इस्तेमाल कर पीपीई विकसित किया है जिसमें विशेष परत के साथ खास तरह के रेशों का इस्तेमाल किया गया है। मंत्रालय ने यह भी बताया कि इस बायो सूट को वस्त्र उद्योग की मदद से विभिन्न कसौटियों पर परखने के बाद तैयार किया गया है और इससे साथ ही कृत्रिम खून से रक्षा का परीक्षण भी किया गया है।

रक्षा मंत्रालय ने अपने बयान में कहा है कि डीआरडीओ बड़े पैमाने पर इसका उत्पादन शुरू करने की कोशिश कर रहा है ताकि कोरोना वायरस के संक्रमितों का इलाज कर रहे डॉक्टरों और पैरामेडिक कर्मियों की पीपीई के लिए भारी मांग के अनुपात में इसकी आपूर्ति की जा सके। मौजूदा समय में एक दिन में सात हजार बायो सूट बनाने की क्षमता है।

रक्षा मंत्रालय के अधिकारी ने बताया कि डीआरडीओ और अन्य उद्योगों की साझेदारी में बायो सूट बनाने का काम 'सीम सीलिंग टेप' (जो आद्र कण को अंदर आने से रोकने के लिए लगाया जाता है) की अनुपलब्धता की वजह से रुका हुआ है। इसके बाद डीआरडीओ ने पनडुब्बी को जलरोधी बनाने में इस्तेमाल होने वाले द्रव का इस्तेमाल इस बायो सूट में किया है।

इसके साथ ही डीआरडीओ में पांच परत वाले मास्क एन-99 नैनो टेक्नोलॉजी के आधार बनाये जा रहे हैं और युद्धस्तर पर इसका उत्पादन किया जा रहा है। 10 हजार मास्क पहले ही बनाये जा चुके हैं और जल्द ही रोजाना 20

हजार ऐसे मास्क का उत्पादन किया जाएगा। उन्होंने बताया कि डीआरडीओ प्रयोगशाला ने दिल्ली पुलिस को 40 हजार मास्क की आपूर्ति की है। इसके साथ ही अधिकारी ने बताया कि डीआरडीओ वेंटिलेटर में मामूली बदलाव कर रहा है ताकि एक ही वेंटिलेटर से एक बार में चार मरीजों के जीवन की रक्षा की जा सके।

<https://www.bgr.in/hi/news/drdo-develop-bio-suite-for-doctors-and-medical-staff-treating-coronavirus-infected-people-884434/>

WWW.ECONOMICTIMES.COM  
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## **Northern Railways' PPE samples clear DRDO test; 100 units a day to be produced soon**

*The Northern Railways said on Sunday the test at the Defence Research and Development Organisation's Gwalior lab was conducted to check the resistance of the bio-protective covering material (fabric/garment) to penetration of blood or body fluid*

New Delhi: Two samples of Personal Protective Equipment (PPE) made at a Northern Railways workshop have been cleared by the DRDO for their ability to block blood or body fluid, paving the way for its production at railway units.

The Northern Railways said on Sunday the test at the Defence Research and Development Organisation's Gwalior lab was conducted to check the resistance of the bio-protective covering material (fabric/garment) to penetration of blood or body fluid.

“Now these coveralls will be manufactured by Indian Railways and will be worn by doctors in railway hospitals while treating COVID-19 patients,” the Northern Railways said.

Its General Manager Rajiv Chaudhary said, “This is a huge achievement for Northern Railways as well as for the Indian Railways. We will continue to supplement the efforts of the government in the fight against coronavirus.”

There is an acute shortage of PPEs for medical professionals in the country who are treating coronavirus patients.

Technical specifications of these PPEs are now ready, and material suppliers are in place, the Northern Railways said.

We are now making 20 per day, but in a week's time we will be able to make 100 per day,” a Northern Railways spokesperson said.

The Railway Board has issued necessary instructions to Zonal Railways for production of the PPEs.

The Northern Railways' Jagadhari Workshop which developed these sample will share the technical details including specifications of the approved samples and quantities of materials required with other zonal workshops and production units of the Railways, it said.

The Indian Railway Stores Department has been designated to procure the material for the production of the PPEs.

This internal effort of the Railways is over and above a centralised request projected to the government and also indicated to HLL through Indent, the railways said.

According to the Health Ministry, the number of confirmed novel coronavirus cases in the country climbed to 3,374 on Sunday while the death toll rose to 77.

Of them, the number of active COVID-19 cases stood at 3,030 and as many as 266 people have been either cured of the disease and discharged, and one had migrated, it said.

<https://economictimes.indiatimes.com/news/defence/northern-railways-ppe-samples-clear-drdo-test-100-units-a-day-to-be-produced-soon/articleshow/75004596.cms>



## Haryana railway unit too gets nod for PPE kits

By Jaskaran Singh

Yamunanagar: The Jagadhri workshop of the Northern Railways got approval to manufacture personnel protection equipment (PPE) kits after three of its samples were found to be compliant with required specifications. Deputy Chief personnel officer of the workshop, Rajiv Bajaj said their samples met the ISO 16603:2004 Class 3 or above requirements.

"Up till Sunday, our workshop manufactured around 200 PPEs. It has now started to prepare more for frontline medical and para-medical staff working tirelessly to fight the Covid-19 pandemic," Rajiv said.

He said the Jagadhri workshop prepared three samples of PPE kits for frontline medical staff, which were sent to Defence Research and Development Establishment (DRDE) and Defence Research and Development Organization (DRDO) through the headquarters of Northern Railways for testing PPEs to be used by doctors in hospitals and Indian Railways.

Bajaj said the workshop started manufacturing the PPE kits but were waiting for approval from DRDE and DRDO.

<https://timesofindia.indiatimes.com/city/gurgaon/haryana-railway-unit-too-gets-nod-for-ppe-kits/articleshow/75018536.cms>



## DRDO to mass produce bio suits for medical professionals fighting Coronavirus

*The bio suits produced by DRDO will replace sealing tapes with a special sealant used in submarine applications*

The Defence Research and Development Organisation (DRDO) will be assisting Indian medical professionals battling the Coronavirus outbreak in the country. The DRDO recently said it would be providing doctors with bio suits, made from the same technology used in submarine applications.

These bio suits use a special sealant as an alternative to seam sealing tape. The same sealant is used in submarine applications. The use of the sealant will help since the usually used sealing tapes are not widely available in the country right now. The lack of tapes has hampered the production of bio suits in India, confirmed the DRDO.



The DRDO also mentioned that the bio suits using the special sealant have already passed the required tests. Further, the suits are soon expected to hit mass production. "Presently, bio suits prepared using this glue for seam sealing by an industry partner has cleared the 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," said the DRDO in a press statement.

The organization has also made the suit effective against the Coronavirus. Moreover, the suit also exceeds the criteria defined for suits, by providing protection against synthetic blood. “The current production capacity is 7,000 suits per day. Another vendor is being brought in with experience in garment technology and efforts are on to ramp up the capacity to 15,000 suits per day,” added DRDO in the statement.

Elsewhere, a Bengaluru startup started donating 3D printed Face shields to medical staff. Acting as a primary defense against contaminated droplets in the air, the face shields enhance the effectiveness of masks greatly. The startup has been donating the shields to various tier 2 and tier 3 regions. Moreover, the group has now started receiving government orders for about 1,00,000 units of the shields.

<https://www.bgr.in/news/drdo-to-mass-produce-bio-suits-for-medical-professionals-fighting-coronavirus-884420/>

# The Tribune

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## 6 Ludhiana units to supply PPE kits

Chandigarh: Six industrial units from Ludhiana on Monday got approval for supplying the much-needed personal protection equipment (PPEs) for health workers engaged in fighting Covid. The equipment will be ready for supply this week.

Of the six units, four — Evershine, Shivatex, Swamitex and Shingora — will be providing the complete PPE suits. The other two — Navyug Laminates and GuruKripa Tex Fab — will be providing the fabric needed to make the masks.

All six units got the approval from the South India Textile Research Association (SITRA). JCT Mills in Phagwara is also ready to supply the suits to the state. It has assured the state of supplying 10,000 PPE suits every day starting on April 20.

So far, a majority of health workers, including doctors and paramedics who are treating patients and collecting their samples, have been working without the PPE suits. Also, there is a shortage of masks. All over the country, there are a handful of units that have received approval to supply PPE suits and masks. As per the protocol, the PPE suit has to be discarded after use.

Hindustan Latex Limited (HLL) will procure the PPE suits from the units and supply them to other states.

Vini Mahajan, Additional Chief Secretary, Industries, said two units – Surgeine in Hoshiarpur and Oxiclear Private Limited in Zirakpur — have received approval from the Defence Research and Development Organisation (DRDO) for supplying N-95 and N-99 masks to the state government. The combined per day production capacity of the two units is 5,000.

“The government hopes to receive the much-needed supplies for the frontline warriors this week. We will also start getting imported protective gear that HLL has procured on behalf of the Centre,” Mahajan said. At present, Punjab has placed an order for two lakh PPE suits. The order will be scaled up in case of any eventuality.

<https://www.tribuneindia.com/news/punjab/6-ludhiana-units-to-supply-ppe-kits-66672>

## Coronavirus in India: New weapons to combat Covid-19

*Two critical defence ministry stakeholders -- the Defence Research and Development Organisation (DRDO) and the Ordnance Factory Board (OFB) -- have been tasked with meeting shortfalls--from ventilators to emergency care facilities and basic personal protection equipment like masks, clothing and gloves*

*By Sandeep Unnithan*

New Delhi: With the Coronavirus pandemic slowly increasing its footprint in India, the government is scrambling to meet the massive shortfalls in health infrastructure. Two critical defence ministry stakeholders -the Defence Research and Development Organisation (DRDO) and the Ordnance Factory Board (OFB) - have joined the war against the Coronavirus.

These organisations have been tasked with meeting shortfalls--from ventilators to emergency care facilities and basic personal protection equipment like masks, clothing and gloves. The DRDO has a network of 46 laboratories while the OFB has 40 weapons and ammunition making factories. The DRDO - the nodal agency to protect soldiers from a biological weapons attack- has reoriented itself to fighting a pandemic.

Chairman DRDO Dr V Satheesh Reddy says eight laboratories have been earmarked to producing personal protective equipment, masks and ventilator parts. "We have given the government a list of our technologies and our scientists are continuously rolling out new applications over the next few days," he says. One of its labs in Delhi has developed portable backpack area sanitisation equipment.

The DRDO is working with industry to ramp up production capacity to 15,000 bio suits per day.

The Bhopal-based Defence Research and Development Establishment (DRDE), the nodal agency for protection from biological weapons, has been asked to test for Covid-19 cases.

The Kolkata-based Ordnance Factory Board has temporarily halted the production of arms, ammunition and equipment in nearly 40 factories across the country in keeping with the government rules during the 21-day lockdown. It is now producing PPE masks coveralls and hand sanitisers.

Three factories Aruvankadu, Bhandara and Itarsi - which usually produce explosives have produced 50,000 litres of hand sanitisers - equivalent to 5 lakh bottles - in less than a week. The board has given emergency powers to 10 of its factories to procure raw materials to manufacture protective equipment. OFB Chairman Hari Mohan puts his organisation's role in perspective.

"OFB is meant to support the country in war - and today the country is at war with coronavirus, our medical fraternity are our soldiers now - it is our duty to support our soldiers, our health workers and our police forces."

<https://www.indiatoday.in/mail-today/story/coronavirus-in-india-new-weapons-to-combat-covid-19-1664115-2020-04-07>

