



Ministry of Health and Family Welfare

# Use, Disinfect & Reuse PPEs, Masks, thanks to Vajra Kavach

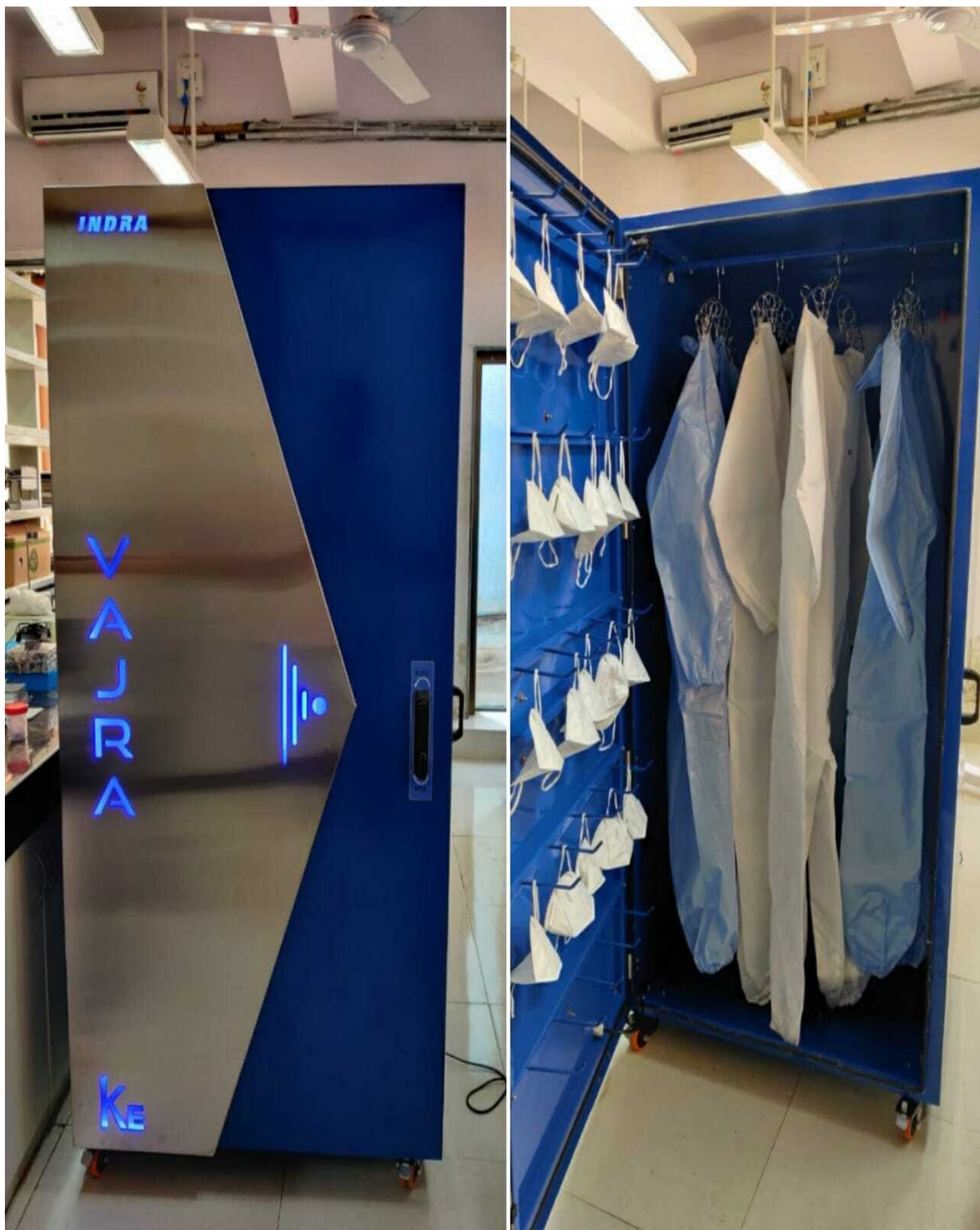
“PPE, N95 Masks will get Disinfected in a few Minutes, Viral Load Reduction by 99.999%”

“Environment-friendly solution, reduces biomedical waste generation”

Posted On: 31 MAY 2021 1:46PM by PIB Mumbai

A product aptly named *Vajra Kavach* removes the scourge of viral particles from equipment used by our Corona warriors. Yes, the disinfection system, developed by Mumbai-based startup Indra Water, removes any possible traces of the disease-causing SARS-Cov-2 virus from Personal Protective Equipment, N95 masks, coats, gloves and gowns. It thus enables reuse of PPEs and other materials used by healthcare workers. It thus protects not only them, but our environment too, by helping reduce biomedical waste generation. It is also making personal protective equipment more available, affordable, and accessible.





### **“Your Material will get Disinfected in a few Minutes”**

What makes this even more useful is that the disinfection is done in just a few minutes. The system is being manufactured at Indra Water’s factory at Bhiwandi in Mumbai, from where it is delivered to hospitals.









**Factory at Bhiwandi**

### **Viral Load is reduced by One Lakh times**

“Our system is able to achieve a 1,00,000-fold reduction in the number of microorganisms; in scientific terms, tests showed that we got 5 log (99.999%) reduction of viruses and bacteria”, informs a proud Abhijit VVR., one of the cofounders of Indra Water. ‘Log reduction’ is a term used to signify the relative number of living microbes that are eliminated after a process such as disinfection.

The validation and testing of the system was done by the Department of Biosciences & Bioengineering at IIT Bombay. “*Vajra Kavach* went through a very long trial and testing process. It was tested with Escherichia virus MS2 (a single-stranded RNA virus and a well-known surrogate of human respiratory viruses such as influenza virus and coronavirus) and E.coli strain C3000. Full loads of the virus and bacteria samples were placed on a PPE. The PPE was then placed inside the *Vajra Kavach*. After the disinfection cycle time, the PPE was removed and the sample was rechecked to assess the growth rate and log reduction of the virus.” Abhijit informs that the system employs a multistage disinfection process consisting of advanced oxidation, corona discharge and UV-C light spectrum to inactivate the viruses, bacteria, and other microbial strains present on the PPE, achieving more than 99.999% efficiency.

### **The Idea of Vajra Kavach**

Abhijit told PIB how the product took root from a simple yet powerful and frugal idea of reusing rather than disposing. “The idea of *Vajra Kavach* was conceived during the nation-wide lockdown in March 2020. We began to think about what exactly we could do to help the country fight the pandemic. We realized the  was a huge demand for PPE Kits and  for PPE Kits and  masks and the nation was 

struggling to provide our healthcare workers with the necessary medical requirements. That is when we came up with an idea – a simple disinfection process that enables our Corona Warriors to reuse their masks and PPEs.”



***Vajra Kavach* being launched by Ms. Pamela Satpathy, Commissioner of Greater Warangal Municipal Corporation, Govt. of Telangana in collaboration with ASCI (Administrative Staff College of India) at GWMC office in Warangal, Telangana.**

### **From Idea to Implementation**

To implement the idea, Indra Water modified its water purification technology and came up with the totally indigenous disinfection system, says Abhijit. “Every component used in the manufacturing of this disinfection system is made in India. Nothing is procured from outside.”

Indra Water was set up with the Department of Science & Technology’s NIDHI-PRAYAS grant (through Society for Innovation and Entrepreneurship, IIT Bombay) for coming up with innovations in the water sector. Indra Water is one among the 51 startups which were funded and supported under Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH), an initiative by National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology (DST), Government of India.

### **Healthcare Workers find it Very Useful, New Version on the Way**

“Vajra Kavach’s UV disinfection of PPE is elegant, user friendly and convenient. The system is adequate for our 25-bed Covid Care Center. It will help us use fewer PPEs,” says Doctor Nisha Shah, Chief Medical Officer, IIT Bombay Hospital. Mumbai’s Cama Hospital, Chhatrapati Shivaji Maharaj Hospital, St. George Hospital are some other hospitals in Mumbai where Vajra Kavach disinfection



system has been installed. A hospital in Warangal has also got one, says Abhijit. “Around 10 *Vajra Kavach* systems have already been installed in various hospitals in Mumbai. After talking to a lot of health care workers, we came to know that the system is being used by them to disinfect not only N95 masks and PPE kits, but also lab coats, masks, aprons, face shields, stationery material in the ICU, basic medical equipment, gears and other medical cloth materials as well.”



Abhijit informs that they are now coming up with a second version – compact and more user-friendly. “Since the PPE Kit is big in size, we had to provide enough room for it in the system. However, we are planning to make the system compact.”


Indra Water is a 20-member startup whose core area is treatment and disinfection of wastewater discharged from apartments, industry, factories, etc. The firm can be contacted at [contact@indrawater.com](mailto:contact@indrawater.com).



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 <https://t.co/ea1TYCfND9> [pic.twitter.com/8ewkKjyecN](https://t.co/ea1TYCfND9)

— PIB in Maharashtra IN (@PIBMumbai) May 31, 2021

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