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Surface Coating Innovation that Kills COVID-19 Virus Developed in Guelph

NanoCleanSQ is the joint effort between the University of Guelph and EnvisionSQ.
Photo: EnvisionSQ

A SURFACE COATING THAT KILLS viruses upon contact, like the COVID-19-causing coronavirus, and that lasts for weeks, is based on innovation developed by the University of Guelph and Guelph-based company EnvisionSQ.

This self-sterilizing nano-coating, called NanoCleanSQ, is among the latest Canadian technologies to receive funding from the government's Next Generation Manufacturing Canada program. The program is aimed at developing and producing new, in-demand technologies, equipment and medical products to fight the COVID-19 pandemic.

SARS-CoV-2, the virus that causes COVID-19, can live on surfaces for upwards of 72 hours, increasing the threat of spread. NanoCleanSQ is a clear coating that when applied to surfaces kills 99.9 per cent of viruses and bacteria, researchers say. Its germ-fighting power is fuelled by light and can provide longer protection against surface-to-contact transmission than conventional sterilizers.

It can be used on high-touch surfaces such as plastic chairs, doorknobs and handrails to reduce the spread of COVID-19, says University of Guelph engineering professor Bill Van Heyst, who helped develop the technology.

"There is tremendous opportunity for the application of NanoCleanSQ in hospitals, long-term care facilities, day cares, public transit and other public spaces where transmission of SARS-CoV-2 has been more prominent. It will have a direct impact on helping protect front-line workers and expedite the return to normalcy."

NanoCleanSQ is a transformation of a novel air pollution removal technology called SmogStop developed by Van Heyst and EnvisionSQ that can clean smog, industrial pollutants, cannabis odor and other airborne chemicals from the air.

The technology uses a photocatalyst, or light-activated coating of chemicals, that break down pollutants into harmless elements like nitrogen and oxygen.

The SmogStop photocatalytic coating technology has been tested in highway noise barriers along Highway 401 with positive results.

Funding Facts

In May, Next Generation Manufacturing Canada (NGen), the industry-led organization behind Canada's Advanced Manufacturing Supercluster, invested more than \$21 million in projects it says will lead to the production in Canada of critically needed technologies, equipment, and medical devices to aid in the fight against COVID-19.

- Since NGen announced its COVID-19 funding program in late March, it received more than 900 expressions of interest from advanced manufacturing companies across Canada. The projects approved to date include the development and manufacturing of ventilators and components, test kits, face shields, and a coating material that kills bacteria and viruses on contact.
- NGen worked closely with the Ministry of Innovation, Science and Economic Development, Canada's National Research Council, Health Canada, and the Public Health Agency of Canada to prioritize projects for funding.
- NGen funding will allow EnvisionSQ to scale up production of NanoCleanSQ within 12 weeks to produce more than 1,000 liters per week. This is enough product to protect more than one million doorknobs, 75,000 km of handrails, or the interiors of 8,750 elevators, 400 city buses or 200 passenger airplanes per week.

"We always knew that our SmogStop pollution removal technology had the ability to kill bacteria and viruses, but it was not optimized for this purpose," says Scott Shayko, CEO of EnvisionSQ. "We specifically reformulated SmogStop to help society combat the COVID-19 pandemic."

The funding provided by the federal government will be used to establish the first production facility of NanoCleanSQ at University of Guelph.

"University of Guelph is proud to be at the forefront of research and innovation that is being used to combat the COVID-19 pandemic" says Malcolm Campbell, Vice-President (Research). "Prof. Van Heyst's exceptional contribution to EnvisionSQ's brilliant COVID-19-combatting innovation exemplifies the University of Guelph approach toward creating impactful, real-world solutions that improve life." ■