

CORONASYS INNOVATION SHEET 2

“DYPHOX” SURFACE COATING

Background

The SARS-CoV-2 virus can remain infectious on inanimate surfaces for some time, depending on the environmental conditions¹². Transmission of SARS CoV-2 through contaminated surfaces can therefore not be ruled out, especially in the immediate vicinity of infectious persons. Surfaces that are touched by many people can pose a particularly high risk of infection. Manual disinfection only works in a temporal context and recontamination between disinfection cycles can hardly be prevented³. The permanently effective antimicrobial coating “dypfox” can help to close those hygiene gaps.

Features

Surfaces (e.g. desks and doorknobs in public buildings, grab handles in public transport, and near-patient surfaces in hospitals and nursing homes) can be coated with the clear lacquer⁴⁵. It creates a photodynamic effect to kill bacteria, viruses, and fungi and works on dry and wet surfaces⁶⁷. In addition, the manufacturer⁸ offers the disinfecting molecules as an admixture for other coatings⁹. A study¹⁰ showed that the germ colonization on the surface is significantly reduced for about a year. The agent causes a germ reduction of more than 99.99%.¹¹ The relative risk of high germ loads has been shown to decrease by up to 67% and thus also the risk of spreading germs over surfaces. According to the manufacturer, the one-time treatment of a desk, for example, costs about 30 Euros¹².

Potentials

The varnish could be a valuable addition to other measures. In particular, frequently touched surfaces in public buildings and health facilities could be treated with it to reduce the transmission of coronaviruses and other germs. A major advantage is that the transparent lacquer can be applied to almost all kinds of surfaces. Also, the technology is environmentally friendly¹³.

Points to consider

The number of germs is only reduced and other ways of transmission are still far more likely for SARS-CoV-2- infections than smear infection via contaminated surfaces. Therefore, further hygiene measures are of course mandatory and must be obeyed.

Conclusion

In public buildings, public transport, nursing homes, and hospitals the coating can be a good addition to existing pandemic management and prevention measures. However, it is not a substitute for these existing measures.

State of information: 18/08/2020

Market launch: 2018

Country: Germany

Focus area: Prevention, Disinfection

Developers: TriOptoTec GmbH

Beneficiaries:

- general public
- especially in public areas and in health facilities

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 - ² Chin, Alex W. H. et al. (2020). Stability of SARS-CoV-2 in different environmental conditions, The Lancet Microbe (1), e10, Online: [https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247\(20\)30003-3/fulltext](https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247(20)30003-3/fulltext) (10.08.2020)
 - ³ Dyphox product website (2020). Technologie. Online: <https://dyphox.com/technologie/> [08/18/2020]
 - ⁴ Management & Krankenhaus. Zeitung für Entscheider im Gesundheitswesen (04/21/2020). Start-up für Hygienetechnologie wächst weiter: Bayern Kapital investiert erneut in TriOptoTec. Online: <https://www.management-krankenhaus.de/news/start-fuer-hygienetechnologie-waechst-weiter-bayern-kapital-investiert-erneut-trioptotec> [08/18/2020]
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 - ⁶ Finanznachrichten. de (05/13/2020). Dauerhaft entkeimt: Die Technologie Dyphox hält Oberflächen aller Art hygienisch rein und ist für Mensch und Natur völlig unschädlich. Online: <https://www.finanznachrichten.de/nachrichten-2020-05/49646768-dauerhaft-entkeimt-die-technologie-dyphox-haelt-oberflaechen-aller-art-hygienisch-rein-und-ist-fuer-mensch-und-natur-voellig-unschaedlich-007.htm> [08/18/2020]
 - ⁷ WDR. De (06/02/2020) Essener Ruhrbahn: Mit Klarlack gegen Corona. Online: <https://www1.wdr.de/nachrichten/ruhrgebiet/klarlack-gegen-corona-dyphox-in-ruhrbahn-essen-100.html> [08/18/2020]
 - ⁸ Dyphox product website (2020). Online: <https://dyphox.com/> [08/15/2020]
 - ⁹ Dostert, Elisabeth (02/11/2020). Die Saubermacher. Online: <https://www.sueddeutsche.de/wirtschaft/chemie-start-up-die-saubermacher-1.4793396> [08/18/2020]
 - ¹⁰ Eichner A, Holzmann T, Eckl DB, et al. Novel photodynamic coating reduces the bioburden on near-patient surfaces thereby reducing the risk for onward pathogen transmission: a field study in two hospitals. J Hosp Infect. 2020;104(1):85-91. doi:10.1016/j.jhin.2019.07.016 Online: <https://pubmed.ncbi.nlm.nih.gov/31369806/> [08/15/2020]
 - ¹¹ Dyphox product website (2020). Efficacy certificate. Online: https://dyphox.com/wp-content/uploads/2020/07/Dyphox-Universal_Wirksamkeit.pdf [08/18/2020]
 - ¹² Vetter, Philip (07/14/2020) Diese Idee soll Oberflächen dauerhaft von Viren befreien. Online: <https://www.welt.de/wirtschaft/article211459977/Corona-Dieser-Lack-soll-Oberflaechen-dauerhaft-von-Viren-befreien.html> [08/15/2020]
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Background on Innovation Sheet Series

As part of a real time evaluation of the SARS CoV 2 pandemic (with focus on epidemiological, medical, economical, societal, technical and cultural developments in Germany and Armenia) the CoronaSys research team, under the leadership of Prof. Dr. Martin Voss, is conducting a continuous monitoring of developments and medical, technical, and social innovations concerning Covid-19.

Multiple national and international media outlets, research platforms and scientific and organizational guidelines, briefs and updates are screened to feed into this outlet. The rationale behind this is to support the projects' network partners in Armenia and Germany with short summaries of key developments and promising innovations that are shaping the global, German and Armenian outbreak response and recovery.

The aim of these short briefs is to give condensed and structured information on selected innovations emerging out of the conducted horizon scanning. This could be mainstream big-ticket items or fringe subjects that are easily overlooked in the global flood of information. Some innovations will be followed through their evolution in time while others may only appear once. While subjectively selected, the briefs are descriptive in nature and leave analysis and critical interpretation to the reader. Network partners in both countries are invited to provide feedback on their interest areas and suggest particularly relevant topics for the CoronaSys Workshop series.

The CoronaSys Innovation Sheet Series is published by the [Academy of the Disaster Research Unit](#), which is, as a non-profit limited liability company, a spin-off of the [Disaster Research Unit](#) at the Free University of Berlin. The series is part of the research project "[CoronaSys: Addressing the corona pandemic in Armenia through systemic risk management](#)", sponsored by the German Federal Ministry of Education and Research.

Previous CoronaSys Innovation Sheets

- 1 "New" Antiviral Face Masks

All previous CoronaSys Innovation Sheets are available online:

<http://coronasys.a-kfs.de/category/innovation-stream/>

If you have any questions, suggestions, or if you wish to be taken on (or off) the project mailing list for CoronaSys updates, innovation sheets, and workshop invitations, please send a message to Janina Schäfer (schaefer@a-kfs.de). For general project inquiries, you may contact the team lead Sara Merkes (merkes@a-kfs.de) or the project lead Martin Voss (voss@a-kfs.de).

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