EFFICIENT AIR PURIFIERS

can reduce the risk of SARS-Cov-2 infection in closed rooms drastically.

XTRACTION®

One of the most important findings of the last months about SARS-Cov-2, the pathogen of COVID-19, was that the infection can also occur via aerosols and not only via droplets that are expelled when coughing and sneezing[1,2] Aerosols are the smallest suspended particles that are constantly exhaled. While breathing probably releases very few virus particles, speaking or singing increases this number significantly[3,4].

The possible transmission of virus particles via aerosols also explains why the risk of infection is many times higher indoors than outdoors in the fresh air[5] An important reason for this, apart from UV radiation which destroys the genetic information of the virus[6], is that the virus particles in aerosols outdoors dilute very quickly.

This means that the probability of inhaling enough virus particles outdoors to become infected is relatively low. In closed rooms, however, the number of exhaled virus particles increases constantly. Therefore, the risk of infection increases the more people are in the room, the longer you stay in it and the worse the air exchange is.

The amount of virus particles required for an infection varies greatly from virus to virus and from person to person. In the case of SARS-Cov-2, the amount of virus required depends, among other things, on how many virus particles can successfully infect target cells carrying the ACE2 receptor before they can be rendered harmless by defense mechanisms both outside and inside cells. In general, the fewer virus particles inhaled, the lower the risk of infection.

To minimize the risk of infection with SARS-Cov-2 indoors, it is therefore necessary to reduce the amount of virus particles emitted by infected people in the indoor air. A highly efficient technical solution to achieve this is the air purifier VITAPOINT®, developed by Xtraction®. This air purifier is equipped with an H-14 HEPA filter, which is also used in sterile workbenches in laboratories. This ensures that even virus particles efficiently filtered from the air. The air in rooms with a surface of 100 m^2 can be circulated and cleaned up to 15 times per hour. Even in large rooms with a surface area of over 300 m^2, an air exchange rate of 5 times is still achieved. This corresponds to over 1,000 liters of air that can be cleaned per second. It is assumed that a ventilation rate of approx. 25 L/s per person is necessary to prevent respiratory diseases[6].

Another important feature of VITAPOINT® is the integrated CO2 monitoring. A high CO2 value indicates poor air quality and a high particle density in the room air. This is an important indicator of an increased risk of infection. The Vitapoint warns if the CO2 value is too high, so you can react accordingly and, for example, ventilate or interrupt a meeting.

The humidity of the room air also influences the risk of infection. If the room air is too dry, this leads to a reduction in the size of the droplets, which means that they remain in the air longer and are easier to inhale. The risk of infection is therefore higher when the air is too dry[7].

For this reason, VITAPOINT® also monitors the air humidity and allows countermeasures to be taken, e.g. with a humidifier. I am convinced that VITAPOINT®, thanks to its enormous circulation capacity in combination with an H-14 filter, reliably and quickly manages to massively reduce the viral load in the room air and thus drastically reduce the risk of infection.

The use of such an air purifier is therefore an extremely important measure to reduce the risk of infection in closed rooms to a minimum. In addition to wearing a mouth-nose cover, the use of an efficient air purifier is a decisive contribution to preventing the spread of SARS-Cov-2 and to ensure the maintenance of public life during the COVID-19 pandemic8. Especially since there is no vaccine against COVID-19 yet, it would be very important to deploy such technologies throughout the country e.g. in hospitals, schools, restaurants, gyms, stores, etc.

Dr. Jan Kranich

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