

Can Mobile Air Purifiers Reduce the Risk of COVID-19 Transmission?

COVID-19 can be transmitted via virus-containing aerosol particles in the air, particularly in closed spaces such as classrooms and offices



To safely restart the use of closed spaces, suitable measures must first be taken to prevent the airborne transmission of the COVID-19 virus

Can mobile air purifiers reduce the airborne COVID-19 viral transmission risk?

Experiment

Closed classroom during class

4 portable air purifiers with high-efficiency particulate air (HEPA) filters

Aerosol concentration decreased by over 90% homogenously across the room

Calculations

Inhaled dose of aerosol particles determined considering parameters of a closed room with one highly contagious person, with and without air purifiers

For 180 m³ room

With HEPA-filter-equipped air purifiers providing a total air exchange rate: 5.7 h⁻¹

Inhaled dose reduced by a factor of 6

Further, multiple smaller air purifier units could be more advantageous than one large unit for achieving high air exchange rates and homogeneous mixing throughout the room

Mobile air purifiers could be effective and feasible for significantly reducing the airborne transmission of the COVID-19 virus in closed spaces

