CAMBRIDGE Mathematics

What is a Corsi-Rosenthal box and what does research suggest about its use?

How COVID-19 spreads

COVID-19 spreads from one person to another by airborne aerosols and indirect contact[1] – simply being in the same space as someone breathing, coughing, talking, singing, and/or sneezing the virus into the air could cause you to inhale it yourself.[2]

What we can do to stop it

To help prevent the spread of COVID-19 schools should assess classroom ventilation.[3] Poor ventilation in classrooms increases the risk of giving and getting COVID-19 (and other airborne diseases) because it allows particles that may contain the virus to accumulate in the air. Air filters reduce transmission rates in classrooms by increasing the air change rate (ACR) in the room and reducing the concentration of these particles.[3]

How Corsi-Rosenthal boxes can help

One way to filter the virus from the air that has been suggested as accessible, easy-to-construct and relatively low-cost is a do-it-yourself cube-shaped air filter made from cardboard, duct tape, four flat filters and a box fan, known as the *Corsi-Rosenthal Box*.[4] The filters used to build the box are available in different levels of Minimum Efficiency Rating Value (MERV); MERV-13 filters are recommended as a minimum for schools and universities.[3]

Cost and noise have been identified as the main barriers to using air filtration to prevent transmission of COVID-19 (and other airborne diseases).[5] Corsi-Rosenthal boxes compare favourably to HEPA (high-efficiency particulate air) filters in terms of cost, noise levels and effectiveness.[5] In one study based in an occupied classroom, Corsi-Rosenthal boxes reduced particle concentrations by 56–91% compared with not using them.[3]

It is important to remember that outdoor ventilation (for example, opening windows) is complementary to indoor air filtration; both together is ideal.[5]

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[5] Srikrishna, D. (2022). Can 10x cheaper, lower-efficiency particulate air filters and box fans complement High-Efficiency Particulate Air (HEPA) purifiers to help control the COVID-19 pandemic? *Science of The Total Environment, 838*(1), 155884. https://doi.org/10.1016/j.scitotenv.2022.155884