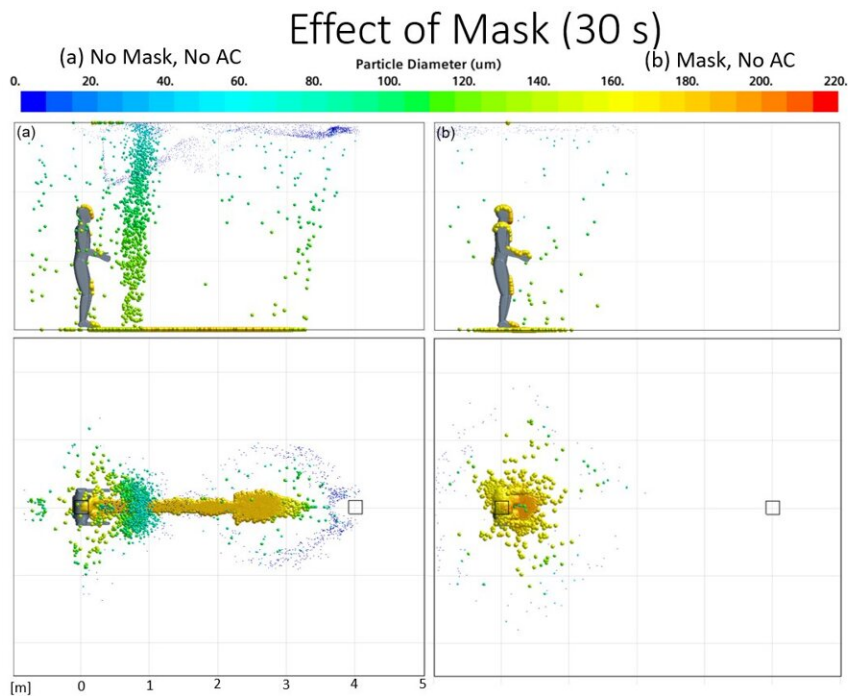


COVID-19: Without masks, two meters distancing is not enough

October 5 2021



- Cloth Mask, 4 um pore size
- Permeability of mask and filtration thresholds were defined: Porous region



- Effect of Mask: Reach

Muthusamy, J., Hag, S., Akhtar, S., Alzoubi, M. A., Shamim, T., & Alvarado, J. (2021). Implication of coughing dynamics on safe social distancing in an indoor environment—A numerical perspective. *Building and Environment*, 108280.

Implication of coughing dynamics on safe social distancing in an indoor environment. Credit: McGill University

To prevent the spread of COVID-19 indoors, the two meters physical distancing guideline is not enough without masks, according to researchers from Quebec, Illinois, and Texas. However, wearing a mask indoors can reduce the contamination range of airborne particles by about 67 percent.

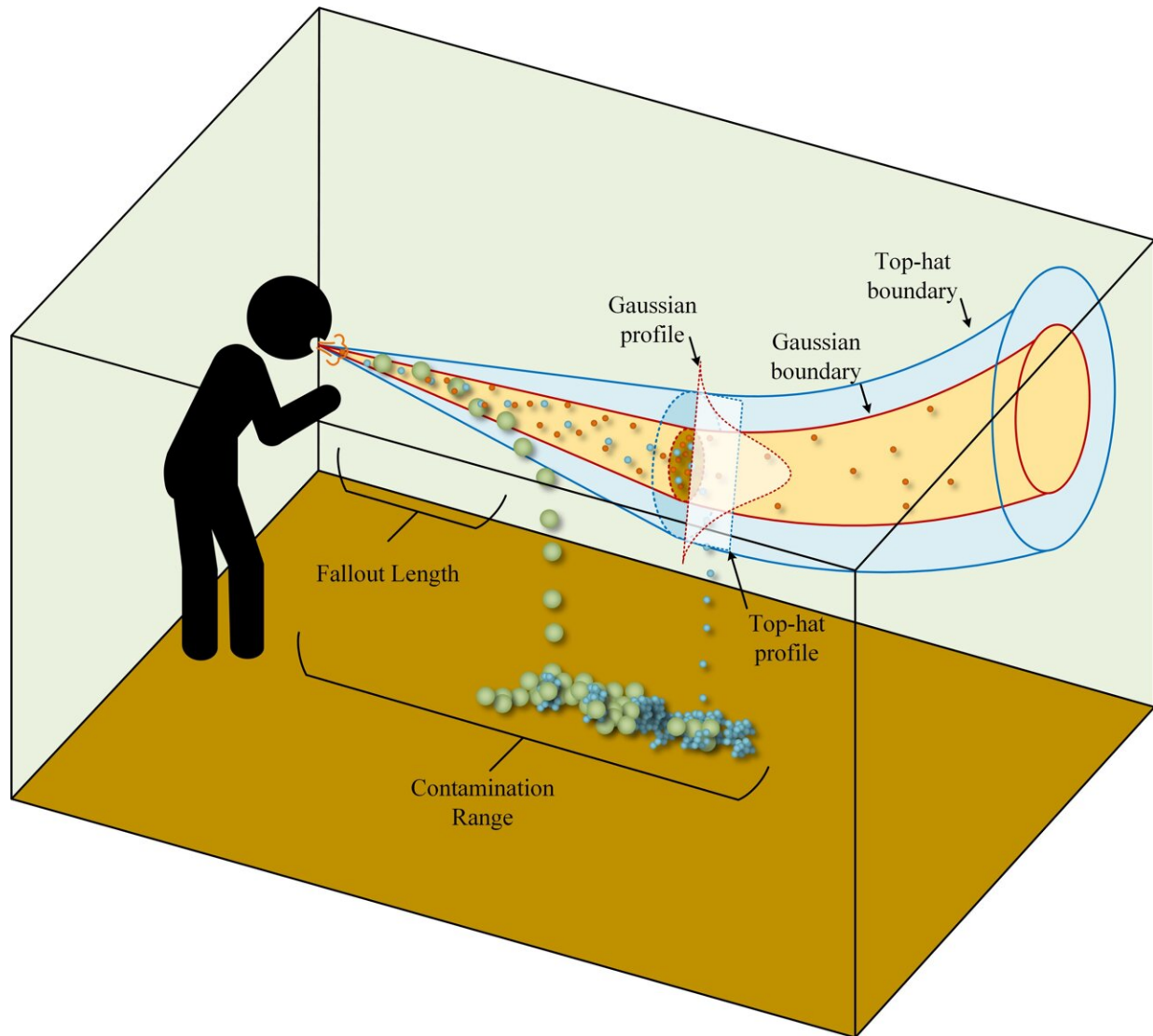
"Mask mandates and good ventilation are critically important to curb the spread of more contagious strains of COVID-19, especially during the [flu season](#) and winter months as more people socialize indoors," says Saad Akhtar, a former doctoral student under the supervision of Professor Agus Sasmito at McGill University.

While most [public health guidelines](#) recommend physical distancing of two meters for people from different households, the researchers say distancing alone is not enough to prevent the spread of COVID-19. In a study published in *Building and Environment*, the researchers found that when people are unmasked, more than 70 percent of airborne particles pass the two meters threshold within the 30 seconds. By contrast, less than 1 percent of particles cross the two-meter mark if [masks](#) are worn.

Simulating coughing dynamics

Building on models used by scientists to study the flow of liquids and gasses, the team from McGill University, Université de Sherbrooke, Texas A&M University, and Northern Illinois University, developed a computer program to accurately simulate coughing dynamics in indoor spaces.

While ventilation, a person's posture, and mask-wearing impacted the spread of the bio-contaminants significantly, the impact of age and gender was marginal, the researchers found.



Implication of coughing dynamics on safe social distancing in an indoor environment. Credit: McGill University

Coughing is one of the main sources of spread of airborne viruses from symptomatic individuals. "This [study](#) advances the understanding of how infectious particles can spread from a source to its surroundings and can help policymakers and governments make informed decisions about guidelines for masks and distancing in indoor settings," says Akhtar.

More information: Jayaveera Muthusamy et al, Implication of coughing dynamics on safe social distancing in an indoor environment—A numerical perspective, *Building and Environment* (2021). [DOI: 10.1016/j.buildenv.2021.108280](https://doi.org/10.1016/j.buildenv.2021.108280)

Provided by McGill University

Citation: COVID-19: Without masks, two meters distancing is not enough (2021, October 5) retrieved 6 May 2024 from <https://medicalxpress.com/news/2021-10-covid-masks-meters-distancing.html>

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