



IIT Bhubaneswar study confirms the effectiveness of wearing face masks, physical distancing

IIT Bhubaneswar's new study has found that a sneeze releases small droplets that can travel up to 25 feet without protective shields like a face mask and tiny particles can also escape through materials.

Highlighting the importance of social distancing to control the spread of Covid-19 the study suggests that these measures act as a guard and reduce the leakage and reach of the sneeze within 1ft3ft. However, they do not completely stop the leakage of smaller droplets, the study said.

The study advises using the elbow or hand to prevent droplets leakage during coughing and sneezing even after wearing a mask.

The study was conducted on the efficacy of different non-standard and standard face masks under the act of sneezing.

The study is conducted by Dr Venugopal Arumuru, Assistant Professor, School of Mechanical Science (SMS), and his team have established that without shielding measures like a face mask, the smaller droplets discharged during a sneeze can travel up to 25ft in a stagnant environment, recommending to maintain a social distance of 6ft to prevent transmission of Covid virus.

The study said, "In the COVID-19 scenario, the present study will improve the understanding of smaller droplets/particles dynamics in turbulent flows, which causes transmission of the virus. These visualisation results will bring awareness to wear a mask and maintain social distancing for the general public."

Prof R V Raja Kumar, Director, IIT Bhubaneswar, said the faculty and students of the Institute have worked hard during the pandemic in developing technology and research studies that have high societal relevance.

Prof Raja Kumar added, "As well known, the spread of COVID-19 infection is mainly through droplets ejected during coughing, sneezing, and talking. The present study shows how smaller droplets can leak through various protectives measures. The importance of social distancing is evident from this study."

Prof Kumar said that the study results will bring awareness and also motivate other researchers to come up with innovative face mask design. He emphasised that IIT Bhubaneswar will continue its research work towards Covid-19 and development to help the society fight the pandemic.

Prof Sujit Roy, Dean R & D, IIT Bhubaneswar says, "The finding by the IIT Bhubaneswar team is expected to create new awareness on COVID-19, which will further help in preventing its transmission via community spread."

Dr Mihir Kumar Pandit, Head of School of Mechanical Sciences, IIT Bhubaneswar says the study explains nicely about ‘visually highlighting the escape of droplets’ from various non-standards masks.

Dr Arumuru said the research studies the flow visualisation explaining how smaller particles can escape from the various face masks and length of their travel during sneezing. “The importance of social distancing is visually evident from this study, which will educate the general public on the importance of the face mask and social distancing to prevent transmission of COVID-19. Our proposed simple experimental setup can be used to test new face mask designs. The sneeze is simulated at the exit of the nose of a standard mannequin, using air and tracer particles.”

The peer-reviewed article has been chosen as a "Featured Article" in Physics of Fluids Journal by the American Physical Society

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