

IIT Bhubaneswar Study Confirms Social Distancing Standards and Face Mask Effectiveness

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Highlighting the importance of social distancing to contain the spread of COVID-19, a new study from IIT Bhubaneswar has found that small droplets released during a sneeze can travel up to 25 feet without protective measures like a face mask and tiny particles can escape through these gears as well.

The study said protective measures such as a face shield and face shield effectively reduce leakage and the range of sneezing to less than 1ft 3ft. However, they don't completely stop the leakage of smaller droplets, he said.

Social distance is therefore just as important. The study recommends using the elbow or hand to prevent droplet leakage even after wearing a mask during coughing and sneezing, IIT Bhubaneswar said in a statement.

Noting that controlling the spread of the virus has been a major challenge, he said the study was conducted on the effectiveness of various non-standard and standard face masks under the act of sneezing.

The study, conducted by Dr. Venugopal Arumuru, assistant professor, School of Mechanical Sciences (SMS), and his team, confirmed that without protective measures like a face mask, the smallest droplets expelled during a sneeze can travel up to 25 feet in a stagnant environment. .

It also confirms and recommends a 6-foot social distance from all directions to avoid transmission of COVID-19.

“In the COVID-19 scenario, the present study will improve the understanding of the dynamics of smaller droplets / particles in turbulent flows, which causes transmission of the virus. These visualization results will raise awareness of wearing a mask and maintain social distancing for the general public,”he said.

Professor RV Raja Kumar, director of IIT Bhubaneswar, said the institute’s faculty and student groups have worked tirelessly during the COVID-19 pandemic by offering technological developments and research studies of great societal relevance.

Commending the team for conducting such focused studies on current societal relevance, Prof Raja Kumar said the current study is a step in that direction. “As is known, the spread of COVID-19 infection is primarily through droplets ejected during coughing, sneezing and talking. This study shows how smaller droplets can escape through various protective measures. The importance of social distancing is clear from this study,”he added.

These results will not only raise awareness, but will motivate researchers to bring innovation to the design of masks.

I would like to reiterate that our researchers at IIT Bhubaneswar will continue to focus on research and development related to COVID-19 to help humanity in the ongoing fight against the pandemic,”said Professor Raja Kumar.

Professor Sujit Roy, R & D Dean, IIT Bhubaneswar says: “The discovery of the IIT Bhubaneswar team is expected to create new awareness of COVID-19, which will further help prevent its transmission through the spread of the community.” Dr Mihir Kumar Pandit, Director of the School of Mechanical Sciences at IIT Bhubaneswar, said: “The present study went very well in visually highlighting the leakage of droplets from various non-standard masks, which is largely used. Therefore, the results will raise awareness among the public. Dr Arumuru said, “Our flow visualization study shows how smaller particles escape from different face masks and the distance they travel during sneezing. The importance of social distancing is visually evident in this study, which will educate the general public on the importance of face masks and social distancing in preventing transmission of COVID-19. He said: “Our proposed simple experimental setup can be used to test new mask designs. The sneeze is simulated as it exits the nose of a standard mannequin, using air and tracer particles. The peer-reviewed article was selected as a “featured article” in the Physics of Fluids Journal by the American Physical Society, the statement added.

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