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Contact: Carissa Matthews  
(315) 443-3507  
cmatthews@syracusecoe.org

## **Dr. Yuguo Li Speaks on Infectious Disease – Masks Don't Mask Disease**

Today, Dr. Yuguo Li, a plenary speaker at the Ninth International Healthy Buildings Conference, hosted by the Syracuse Center of Excellence, outlined the history of research on infectious disease transmission, referencing the statement that, "our understanding of the transmission of infectious disease is woefully inadequate," a quote taken from a 2007 US National Academy of Science Report. Li is a Professor of Mechanical Engineering at the University of Hong Kong and Associate Editor of Indoor Air.

Modern technology can tell us much about how particles that we breathe and cough travel through the air. In his presentation, Li showed a video that demonstrated the major ways in which infectious disease can be transmitted. The illustration focused on the fact that masks don't necessarily mask disease. When coughing into a mask, airborne disease can still escape and surround the infected person.

Airborne disease transmission occurs through the passage of microbes from one source to another through aerosols, while droplet infection occurs through the spray of droplets via coughing, talking, and breathing, traveling less than one meter to the mucosa of the contractor. Li noted that special ventilation is not necessary to prevent droplet infection as the droplets do not travel long distances, but rather settle. Disease can also be transmitted as a contractor touches a surface that has been affected by direct spray droplets and as settled droplets become re-suspended in the air as dust. It is not known which pathway is most significant for transmission.

In his talk, Li discussed research that has demonstrated that a disease-carrying person is most likely to transmit the infection to another person who is at a distance of 1.5 meters away. As one distances himself further away from infection, his likelihood of contracting the disease reduces greatly. Studies also show that proper ventilation can reduce the infection risk in a room, however, it remains unknown what minimum rate is required to achieve ventilation control.

In addition, Li drew attention to the change in interest in the spread of infectious disease over time, peaking with higher incidences of contraction, beginning in the 1930s, dropping off in later decades, and resurging today with the spread of SARS and H1N1. He states that this remains, "an unsolved, old problem," that current technology is attempting to address more adequately, especially relevant with the incidence of H1N1 on the rise.

**-Christina Imrich, HB2009 Ground Reporter**

*Syracuse Center of Excellence (syracusecoe.org) is a collaborative organization of more than 200 businesses and institutions that creates innovations for sustainable built and urban environments. SyracuseCoE members work on research, development, and educational projects relating to clean and renewable energy, indoor environmental quality, and water resources.*

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