

Effect of Temperature and Relative Humidity on Aerosol Spread

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Abstract : Airborne transmission is a problem that all viral respiratory diseases have in common. In late 2019, a disease outbreak, now known as SARS-CoV-2, suddenly expanded across China and the rest of the world in a matter of months. Research on the spread and transmission of SARS-CoV-2 airborne particles is ongoing, as well as the development of strategies for the prevention of the spread of these pathogens using indoor air quality (IAQ) methods. By evaluating the surface area of pollutants on the surface of a mannequin in a mock-based clinic room, this study aims to better understand how altering temperature and relative humidity affect aerosol spread and contamination. Four experiments were carried out at a constant temperature of 70 degrees Fahrenheit but with four different humidity levels of 0%, 30%, 45 percent, and 60%. The mannequin was placed in direct aerosol flow since it was discovered that this was the position with the largest exposed surface area. The findings demonstrate that as relative humidity increased while the temperature remained constant, the amount of surface area infected by virus particles decreased. These findings point to approaches to reduce the spread of viral particles, such as SARS-CoV-2 and emphasize the significance of IAQ controls in enclosed environments.

Keywords : IAQ, ventilation, COVID-19, humidity, temperature

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