Airborne Fungal and Bacterial Levels Associated With the Use of Automobile Air Conditioners or Heaters, Room Air Conditioners, and Humidifiers

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Abstract:

The authors performed 3 experiments to measure temporal variation in airborne bacterial and fungal levels associated with the use of air conditioners (ACs), heaters, and humidifiers. The concentrations of bioaerosols that they measured inside vehicles and a seminar room prior to use of an AC were lower than or similar to those for outdoor air. In most cases, elevated concentrations occurred 5 to 15 minutes after the use of an automobile or household AC, and these concentrations decreased over time. For 3 of 5 cars, however, the bacterial concentrations did not vary significantly. For cars, the maximum bacterial concentration (2,550 CFU m⁻³) was 46 times higher than the in-vehicle background concentration (55 CFU m⁻³). Three fungi (Cladosporium, Penicillium, and Aspergillus) exhibited the highest concentrations for most sampling periods of the ACs and heater. The use of automobile heaters and household humidifiers could suppress in-vehicle and in-room microbial concentrations.

Keywords:

bioaerosol, fungus, temporal variation

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