7C.01

Indoor Air Bio-aerosols in varying Micro-environment: Prevalence of Bacteria, Fungi and Thermophilic Actinomycetes in Mumbai. RAKESH KUMAR(1), Varsha Kelkar (2), *(1) National Environmental Engineering Research Institute (NEERI), Mumbai, (2) Department of Life Sciences, University of Mumbai, Mumbai*

Bioaerosols, a group of organic aerosols ranging from ~ 10 nm to 100 um airborne particles or large molecules that are either alive, carry living organisms or are released from living organisms (e.g., bacteria, fungi, virus, pollen, cell debris, and biofilms). The presence of various types of bioaerosols in indoor air, in the troposphere and even in the stratosphere has long been established (Gidlen, T., Biological Reviews, (1948) 23, 109-126).

India being a tropical country, experiences several changes in the atmosphere, brought about by the meteorological factors. The climate in given region also signifies the composition of microbes existing within that environment. In urban areas due to over crowding, insufficient spaces are available for dwelling units leading to improper ventilation. Due to poor ventilation, people are exposed to various pollutants and as a result increase in respiratory diseases.

The present study delineates the nature and composition of the microbes in the given environment so that it would finally help to undertake measures to prevent and control diseases arising due to such exposures. Microenvironments which have been investigated are Shopping Mall, Temple, Household, Canteen and Sewage Treatment Plant. Prevalence of bioaerosols suggests diurnal variation with activities and the hour of the day of sampling. Seasonal variations were also noticed. Exposure risk of population in each of the microenvironment has been assessed.

7C.02

Measurements of Airborne Influenza in a Healthcare Facility. WILLIAM G. LINDSLEY (1), Francoise M. Blachere (1), Terri A. Pearce (1), Stephen Davis (2), Melanie Fisher (2), Rashida Khakoo (2), Barbara J. Meade (1), Owen Lander (2), Robert E. Thewlis (1), Bean T. Chen (1), Ismail Celik (2), Don H. Beezhold (1), *(1) NIOSH, Morgantown, (2) West Virginia University*

Influenza is transmitted from person to person by multiple pathways, which may include inhalation of small aerosol particles generated when infectious individuals sneeze, cough, speak or breathe. However, the relative importance of airborne transmission compared to other routes of infection is unknown and is the subject of considerable debate. To assess the amount of potentially infectious airborne influenza virus in typical healthcare settings, we collected size-fractionated aerosols in a hospital emergency department and a student health clinic during influenza season. Aerosols were collected using a novel two-stage cyclone sampler with a first-stage cutoff diameter of 4 micrometers, a second-stage cutoff diameter of 1 micrometer, and a filter to collect particles less than 1 micrometer. At 3.5 liters/minute, the novel sampler conforms to the ACGIH/ISO criteria for respirable particle sampling. Sampling was conducted on 8 days for 3 to 5 hours per day during influenza season. Fourteen healthcare workers were equipped with personal samplers, and 98 samplers were mounted on stands in waiting rooms, exam rooms and reception areas. RNA in the collected material was isolated, reverse-transcribed and amplified using real-time PCR with primers specific to an Influenza A matrix protein. Preliminary results indicate that influenza virus was detected in 3 of 14 personal samplers and 10 of 98 stationary samplers, and that 50% of the viral particles were detected in the respirable aerosol fraction. The results suggest that a measurable amount of airborne influenza virus can be found within a typical healthcare facility, and that the amount of airborne virus varies considerably both spatially and temporally.

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