College of Public Health News

August 25, 2017

Georgia Southern University

Georgia Southern Examines Validity of Mold Sampling Method

August 25, 2017

Exposure to mold spores are associated with allergic sensitization, which is a risk factor for atopic asthma in a community. Small aerodynamic sizes of spores (<10 µm) allow them to penetrate in the lower airways and produce damaging byproducts including allergens and other immunomodulators. Usually mold spores in ambient atmosphere are collected by impactors in air monitoring stations, which are operated in a single standard air flow rate. However, sampling efficiency of an impactor can change in different air flow rates. Because spore aerodynamic sizes vary a lot and atmospheric temperature and humidity can influence aerodynamic properties of airborne mold spores, the authors of the study hypothesized that mold data acquired based on a single air sampling flow rate – as currently being reported by most ambient air monitoring stations – could be incomplete. In this study, they have collected atmospheric mold spores simultaneously at three different air flow rates (5 L, 10 L, and 15 L per minute) and samples were collected from four rural ambient locations in different days. A widely used spore trap cassette was considered for sampling of mold spores, which provide the sampling versatility to capture mold spores of 1.5–3.9 µm. As hypothesized, they found a substantial difference between total spore concentrations collected at different air flow rates: 1,306 ± 960, 1,709 ± 1,430, 1,081 ± 923 spores/m^3 (airborne mold spores per cubic meter of air) at 5 L, 10 L, and 15 L per minute, respectively. Mold spores of *Aspergillus/Penicillium* (typically <3 µm aerodynamic diameter) showed less variability compared to Ascopsores and *Cladosporium*. Collected data showed that 10L/min air flow rate is generally more effective for collecting most airborne mold spores than other examined flow rates.

"Effect on Different Air Flow Rates on the Collection of Atmospheric Mold Spores of Different Sizes by a Slit Impactor," was recently published in WIT Transactions on Ecology and the Environment.

Dr. Atin Adhikari, assistant professor of environmental health sciences at the Jiann-Ping Hsu College of Public Health Georgia Southern University was the lead author and students, Mrs. Bushra Shah, Mr. Teddye Gandy, Ms. Oreoluwa Adeyinka, and Mrs. Galela Shebani were co-authors.