



# Environmental Science Graduate Program Student Seminar Series

## Indoor Environmental Quality: Implications for Children with Asthma and Astronauts on the International Space Station

Dr. Karen Dannemiller

Assistant Professor

◆ Civil, Environmental & Geodetic Engineering

COPH -Environmental Health Sciences

Smith 3150 | February 7, 2020 | 2:00-3:00pm



Karen C. Dannemiller, PhD is an assistant professor at Ohio State University with a joint appointment in Civil, Environmental, and Geodetic Engineering and Environmental Health Sciences. She also has a courtesy appointment in Microbiology and is a core faculty member of the Sustainability Institute. At Ohio State, she leads the Indoor Environmental Quality (IEQ) group and studies the indoor microbiome and indoor chemical exposures. Recent findings have demonstrated chemical and microbial degradation of phthalate esters in house dust and outlined development of a smartphone-based system for detection of formaldehyde in homes. Her work improved our understanding of human exposures linked to childhood asthma development and severity. Her research also elucidated resident microbial populations and fundamental microbial processes occurring in homes. In 2017, she was awarded the Denman Distinguished Research Mentor Award, and in 2019 she received the IMR Early Career Innovator of the Year Award. She is also a recent recipient of the NSF CAREER award.

Prior to her current position, Dr. Dannemiller graduated with honors in Chemical and Biochemical Engineering from Brown University and earned her MS, MPhil, and PhD at Yale University in Chemical and Environmental Engineering. During this time, she completed an internship at the California Department of Public Health in the Indoor Air Quality Program. She was also a Microbiology of the Built Environment Postdoctoral Associate at Yale University.

### Abstract

We spend 90% of our time indoors where we are surrounded by a complex mixture of chemicals and diverse community of microbes. These exposures can have important implications for our health. This talk will describe how these indoor exposures can affect asthma in children and how the decisions about our home environment can impact our exposures. Elevated moisture levels indoors are associated with adverse health effects and important changes to indoor microbial communities and indoor chemistry. Finally, we will discuss the specialized environment of the International Space Station (ISS) and methods to control the indoor microbiome on spacecraft.