

PCGFS-I²D LAB SEED GRANT SEMINAR

Dr. Brandon Boor

Nandi Clean Kitchen Study: Evaluating Indoor Air Pollution and Natural Ventilation of Traditional and Community-Developed Modified Kitchens in Nandi, Kenya



Tuesday, April 11, 2017
3:00 - 4:00 PM, MRGN 121

ABSTRACT: Household air pollution associated with the burning of biomass for cooking and heating is associated with 4.3 million deaths per year (WHO, 2012). Many efforts to solve this global environmental health challenge have focused on developing “clean” biomass cookstoves with improved combustion efficiency. While these stoves tend to consume less fuel, they have seen low levels of adoption by many communities and can still emit high levels of wood smoke. If we wish to make tangible progress towards cleaner methods of cooking, community-led approaches are needed.

The aim of this project is to evaluate indoor air pollution and ventilation of community-developed modified kitchens in Nandi County, Kenya. The kitchens have been modified by Nandi women’s groups working with a local AMPATH nurse and include chimneys, a roof-vent and additional windows and airflow pathways for improved natural ventilation, and an incubation chamber for chicks beneath the stove. Importantly, the kitchens preserve the traditional Nandi stove layout. Preliminary results from a January 2017 field campaign demonstrate that the modified kitchens can effectively reduce concentrations of wood smoke (fine and ultrafine particulate matter) and CO by 50 to > 80%. We are continuing to work with the Nandi community and will build two “demo” kitchens this summer in Nandi to test different ventilation designs.

Brandon E. Boor, Ph.D., is an Assistant Professor of Civil Engineering at Purdue University. His research group focuses on characterizing the dynamics of airborne particles (aerosols) in buildings and human exposure to indoor air pollutants. He received his Ph.D. from the Department of Civil, Architectural, and Environmental Engineering at the University of