Addressing Childhood Asthma in Rural Agricultural Communities

2000s Observed connection between air pollution and asthma in urban children. [1]

2009 Developed and validated a new outdoor air sampler to handle multiple exposures in rural environments. [2]

2010 Created and optimized new electrostatic dustfall collectors technique for large-scale, in-home exposure assessment for endotoxin, a risk factor for asthma. [3, 4]

2010 Collaborated with community partners to establish a cohort to examine air pollution and child asthma health in rural agricultural communities. [5]

2010-2013 Measured high ammonia levels in homes near industrial-scale dairy operations. [6, 7]

2012 Identified LTE4 as a sensitive and noninvasive inflammatory biomarker associated with asthma. [8]

2014 Developed and validated method to estimate exposure to animal feeding operations and the relationship with health effects in children with asthma. [9]

2014 Worked with community partners to develop an intervention study to improve pediatric asthma. [10]

2015 Used MicroPEM samplers to allow low-burden indoor PM exposure assessment. [10, 11]

2015 Linked PM2.5 exposure to increased reported asthma symptoms and decreased lung function in rural agricultural community children. [12]

2015; 2020 Tested urinary LTE4 as a biomarker for inflammatory response to exposures. [9,10]

2015 Linked reduced lung function and high rates of exposure to ammonia in children's neighborhoods. [6]

2015 Adapted local Community Health Worker asthma education program to include HEPA air cleaners to reduce exposure to ammonia and PM. [10]

2015-2018 Tested education program combined with HEPA intervention. [10]

2019 Used LTE4 as biomarker; identified link between combined exposure to PM, ozone, and OP pesticides, and OP pesticides alone, and increased asthma morbidity among children. [13,14]

2020 Combination of HEPA and education intervention reduced PM2.5 and PM10 exposure levels in homes. [15,16] Improved asthma control, reduced asthma symptoms, decreased LTE4. [17]