Healthy Homes Grantees in Region V, Midwest

Name of Grantee: University of Minnesota School of Public Health
Name of Project: Comparison of Samplers for Measuring Common Allergens in Inner City Homes
Amount Awarded: $490,000
Contact Info: Associated Professor, John L. Adgate, Ph.D., 612.624.2601, jadgate@umn.edu

Project Partners: None

Summary of Project Activities:

The main objectives of the proposed laboratory-based study are: (1) to estimate the variability in the bulk dust and allergen collection efficiency for four vacuum samplers commonly used in allergen health effect studies; (2) quantify the effect of key environmental (e.g., relative humidity), dust (e.g., particle size), surface (e.g., carpet fiber cross-sectional shape, pile density) and sampler characteristics (e.g., suction velocity) on dust and allergen collection efficiency; (3) to develop an empirical model that adjusts allergen measurements for varying collection efficiency, with the goal of making between- and within-study comparisons feasible, and supporting the development of health-based guidelines for allergens. Using bulk dust obtained from a recent HUD-funded intervention study in inner-city homes, we will develop a reference house dust with known levels of common allergens for use in these controlled experiments. A rigorous experimental protocol for estimating collection efficiency has been developed with a novel fractional factorial design. This study design allows the evaluation of the effects of a large number of factors in a relatively small number of experiments.

Product Outcomes/Outputs:

(1) to estimate the variability in the bulk dust and allergen collection efficiency for four vacuum samplers commonly used in allergen health effect studies; (2) quantify the effect of key environmental (e.g., relative humidity), dust (e.g., particle size), surface (e.g., carpet fiber cross-sectional shape, pile density) and sampler characteristics (e.g., suction velocity) on dust and allergen collection efficiency; (3) to develop an empirical model that adjusts allergen measurements for varying collection efficiency, with the goal of making between- and within-study comparisons feasible, and supporting the development of health-based guidelines for allergens.