

**FY 2013 Healthy Homes Technical Studies Grant Abstracts HUD's Office of
Healthy Homes and Lead Hazard Control
August 2013**

Alaska

Project Title: Improving the Respiratory Health of Alaska Native People through Home-Based Interventions

Alaska Native Tribal Health Consortium will be awarded \$743,044 in 2013 Healthy Homes Technical Studies funds to build and expand upon a pilot project funded by the Commission for Environmental Cooperation, undertaken in 2011-2012, to improve indoor air quality through the implementation of low-cost household remediation in four southwestern Alaska Native villages. The Consortium's Division of Environmental Health and Engineering, in collaboration with regional health care providers, will select four more villages reporting a high incidence of childhood respiratory disease for the continued testing of low-cost home-based interventions to decrease air pollutant levels in thirty new residences over a two-year period. Measures of air quality include fine particulates, volatile organic compounds, carbon monoxide, carbon dioxide, and relative humidity. In addition to air quality measures, the project will develop educational materials and provide home-based education to teach and reinforce practices known to reduce indoor air pollutants.

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Illinois

Project Title: Building Assessment of Radon/Moisture Reduction w/ Energy Retrofits (The BARRIER Study)

The Board of Trustees of the University of Illinois (with its partner, the National Center for Healthy Housing) will be awarded \$747,566 in 2013 Healthy Homes Technical Studies funds to assess the potential benefits of a low-cost "enhanced sealing" intervention when conducted in conjunction with home weatherization to improve energy efficiency in low income housing. This study will determine if the enhanced weatherization protocol will reduce radon levels in different housing types in two climate zones in areas with high radon levels, as well as quantifying any benefit in improved moisture control. A total of 160 houses will be randomly assigned to intervention and control groups in each of the two geographic regions. Eligible homes will be those with baseline radon levels of at least 1.5 pCi/L.

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Project Title: Helping Chicago's Westside Adults Breathe and Thrive: A Healthy Homes Approach to Improving Respiratory Health

Sinai Health System will be awarded \$749,931 in 2013 Healthy Homes Technical Studies funds to address asthma disparities employing a multi-pronged approach to improve asthma by educating adults to better manage asthma medically and reduce the presence of asthma triggers in the home. The approach will address asthma at three levels: (1) individual; (2) environmental; and, (3) community. The project will incorporate rigorous scientific methods to document the process and success of the initiative in meeting its goals, and will use a community-based approach engaging stakeholders and community members to inform these methods and to help ensure a lasting change in the lives of the families and communities the program impacts. The intervention integrates an intense environmental assessment, modeled after previous asthma interventions and a current HUD-funded program. Community health workers will make 5-6 home visits over a 12-month period, during which time they will educate participants on asthma and its proper management, assist adults with poorly-controlled asthma to improve asthma management and reduce the presence and effects of home asthma triggers. Expected outcomes for adults are improvement in asthma control, reduction of daytime and nighttime symptom frequency and a reduction in asthma-related health resource utilization. A cost-benefit and cost-effectiveness analysis is also planned.

Contact: Claude H. Hall, Jr., Director, Grants & Strategy, 773-257-2749, claud.hall@sinai.org

Project Title: Indoor Air Quality Interventions for Individuals with COPD: Measuring the Impact on Objective Lung Function, Quality of Life, Symptoms, and Health Care Utilization

American Lung Association of the Upper Midwest will be awarded \$690,558 in 2013 Healthy Homes Technical Studies funds to examine the impact of targeted interventions to remediate home indoor air quality (IAQ) threats to residents with chronic obstructive pulmonary disease (COPD) in four tribal communities (Pine Ridge, Cheyenne River, Standing Rock, and Mille Lacs Reservations). Objectives of the study include: (1) to measure the impact that IAQ interventions in tribal homes have on COPD symptoms; (2) to measure the correlation between IAQ hazards and symptom severity; (3) to improve understanding of the impact of IAQ hazards on people with COPD; (4) to determine the impact of mold remediation on secondary fungal infections; (5) to determine the feasibility of bringing IAQ intervention services to limited income, geographically isolated tribal populations; (6) to measure the impact of IAQ interventions on the health care utilization of individuals with COPD; and (7) to measure the additional impact of the IAQ interventions on children and other household members with respiratory illness.

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Louisiana

Project Title: Integrated Pest Management for the Control of Multiple Cockroach Species

Tulane University will be awarded \$748,610 in 2013 Healthy Homes Technical Studies funds to develop a new integrated pest management (IPM) approach that incorporates strategies targeting American cockroaches along with the German cockroaches that current IPM strategies primarily

target. American cockroaches are a major source of asthma-inducing allergens found in homes throughout humid regions world-wide, but there is a large gap in the current understanding of this species because research in the U.S. has focused on geographic areas where American cockroaches do not thrive. Using the classic field ecology techniques of life history tables and mark-release-recapture studies, combined with the innovative statistical techniques of pathway analysis, the most promising strategies in the IPM arsenal will be identified. This project will culminate in a controlled field trial employing these promising techniques to assess the impact on reducing cockroach allergen levels in homes.

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Maryland

Project Title: A Cost Benefit Study of Green & Healthy Homes Interventions in Baltimore, Maryland

University of Maryland, Baltimore County (with their partner the Coalition to End Childhood Lead Poisoning) will be awarded \$749,856 in 2013 Healthy Homes Technical Studies funds to address three primary research objectives: (1) Determine the extent to which green and healthy housing (GHHI) interventions reduce asthma morbidity and costs measured directly as health care utilization and other costs among low-income Baltimore residents; (2) Assess the extent to which GHHI interventions reduce non-medical costs related to school absences, utility usage, and work-loss days for parents or caregivers of children with asthma; and (3) Evaluate how varying intensity levels of GHHI interventions impact post-intervention resident health and overall cost savings.

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Massachusetts

Project Title: Healthy Homes for Elders: Multi-Trigger, Multi-Component Environmental Interventions for Asthma

University of Massachusetts, Lowell will be awarded \$749,999 in 2013 Healthy Homes Technical Studies funds to evaluate the hypothesis that multi-trigger, multicomponent healthy homes interventions improve the respiratory health and reduce home asthma triggers for the elderly. The researchers will enroll 90 elders with asthma or chronic obstructive pulmonary disease who reside in low-income, multi-ethnic public housing. Data will be collected on respiratory health outcomes before and after healthy homes intervention and exhaled nitric oxide (a measure of lung inflammation) will be measured. Home environmental assessments will also be conducted, including evaluation of asthma trigger-inducing activities and exposures before and after healthy homes intervention.

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Missouri

Project Title: Kansas City Home Environmental Assessment Research Taskforce (KC-HEART)

The Children's Mercy Hospital will be awarded \$748,727 in 2013 Healthy Homes Technical Studies funds to develop an exposure probability model through a series of data collection and analysis tasks that evaluates the relationship between housing hazards and health. KC-HEART seeks to validate this model through a combination of health data analysis and community-based home environmental health assessments. They will also perform 100 home assessments in the homes of children with no reported chronic health problems to serve as controls for the approximately 300 homes in the Kansas City Metro region that received extensive interventions through two HUD-funded Healthy Homes programs that were completed in this community. Through this effort, KC-HEART will attempt to provide significant advancement in knowledge about the relationship between basic housing conditions and the health of occupants as well as new knowledge about the relationship between outdoor and indoor environmental characteristics of homes and the methods and data collected to assess these hazards.

Contact: Candice Foster, Grants Specialist, 816-701-1343, cafoster@cmh.edu

Nevada

Project Title: Clark County Landlord-Tenant Hotline Study (CCLTHS)

Board of Regents, NSHE, obo University of Nevada, Las Vegas will be awarded \$650,000 in 2013 Healthy Homes Technical Studies funds to address important gaps in healthy homes literature by evaluating the efficiency, and costs, associated with mitigating housing hazards through the use of a landlord-tenant hotline. To address significant health and housing disparities, the CCLTHS has outlined specific, measurable program objectives to be accomplished over the 36-month grant production period, which include: 1) Analyze existing (and new) landlord-tenant hotline data to improve knowledge about the specific types of housing hazards present in renter-occupied units (ROUs); 2) Evaluate the effectiveness of the landlord-tenant hotline as a means to improve housing-related hazards in ROUs; and 3) Conduct a cost-benefit analysis that compares the costs of operating the hotline to the cost of property remediation to ROUs.

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New Jersey

Project Title: Implementation and Evaluation of a Model Bed Bug Management Program in Low-Income Housing

Rutgers, The State University of New Jersey will be awarded \$342,905 in 2013 Healthy Homes Technical Studies funds to design and implement a model bed bug integrated pest management (IPM) program for low income communities that focuses on quality of the pest

control contractor's service and participation of the housing staff in monitoring and evaluation. A comparative analysis of the results from this IPM program with those of existing IPM strategies will be performed in an effort to create practical, widely applicable and accepted protocols that will reduce bed bug management costs and improve the health and well-being of residents through effective eradication of bed bugs.

Contact: Changlu Wang, PhD, Assistant Professor, 848-932-9552, cwang@aesop.rutgers.edu

Project Title: Cost-Effective Detection of Multi-Family Housing-Related Health and Safety Hazards

Rutgers, The State University of New Jersey will be awarded \$687,000 in 2013 Healthy Homes Technical Studies funds to test and refine cost-effective methods for detecting health and safety hazards in affordable housing by using laser and infrared imaging equipment capable of detecting structural deficiencies, moisture, mold, breaches in insulation, insect harborage and vermin tracks at very detailed levels and, by leveraging building information models created from laser scan data, to gain systems level understanding of patterns of health and safety hazards. This work will be conducted at two and possibly three multi-family housing sites. It is the goal that this research will lead to improved knowledge about the occurrence and patterns of health related building deficiencies and enhanced resident quality of life for occupants of HUD-assisted and other forms of lower-income housing.

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New York

Project Title: Fungal Exposure, Allergic Sensitization and Asthma among Middle-Income Children in New York City (NYC)

The Trustees of Columbia University in the City of New York will be awarded \$722,378 in 2013 Healthy Homes Technical Studies funds to identify the major fungal taxa across selected homes in NYC and develop a unique panel to quantify NYC-specific fungal burden and test for associations with allergic-sensitization and asthma. The researchers will determine whether or not the individual species and concentrations of domestic dust borne fungi vary across NYC middle-income housing by neighborhood and housing type. They will also determine whether, among 7-8 year olds, higher levels of domestic fungi are associated with allergic sensitization at age 7-8 and with asthma persistence at ages 10-11.

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North Carolina

Project Title: CARE MORE: Interventions for Cockroach Allergen Reduction and Elimination of Micro-Organisms from the Home Environment

North Carolina State University will be awarded \$735,264 in 2013 Healthy Homes Technical Studies funds to quantify the association of microorganisms (bacteria and fungi) with cockroach and bed bug droppings and highlight the multiplicity of clinical significance of these household pests. The primary objective of this study is to eliminate significant obstacles to the implementation of Integrated Pest Management (IPM) and evaluate the impact of two IPM-based interventions in reducing 1) the numbers of cockroaches and bed bugs; 2) allergen levels (i.e., cockroach, dust mite, mold); and, 3) microorganisms and microbial metabolites in the home. If successful, the interventions would be expected to reduce asthma morbidity in inner-city and other at-risk populations.

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Ohio

Project Title: Residential Air Quality and Chronic Obstructive Pulmonary Disease (COPD)

Case Western Reserve University will be awarded \$749,952 in 2013 Healthy Homes Technical Studies funds to develop an in-depth pilot study that proposes to enroll elderly COPD patients cared for at the Louis Stokes Cleveland Department of Veterans' Affairs Medical Center. There will be continuous air quality measurements and at least daily respiratory health measurements in their homes over a two-year period. Following recruitment of these non-smoking COPD patients who have no significant co-morbidities, their homes will have an initial evaluation employing both HUD's Healthy Home Rating System and the moisture- and mold-focused Visual Assessment Tool to specifically assess potential sources of air quality concerns in their homes.

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Texas

Project Title: Filter Forensics: A Novel Method for Exploring Asthma Triggers for Children in Low-income Rural Homes

The University of Texas at Austin will be awarded \$683,805 in 2013 Healthy Homes Technical Studies funds to conduct research to better understand the environmental and socioeconomic factors that affect both the development and severity of asthma in children with the utilization of an alternative contaminant sampling method. The proposed research will examine the merits of using heating, ventilation and air conditioning (HVAC) filters as passive, integrated samplers of indoor airborne contaminants in homes to evaluate the relationship between environmental contaminant concentrations (asthma triggers) in HVAC filter dust and asthma severity and quality of life factors for asthmatic children. The study will focus on investigating the home

environment of a particularly vulnerable population – rural and primarily low income, school age children diagnosed with asthma in central Texas. To provide a basis for comparison, contaminant levels in homes of children without asthma from the same study population will also be evaluated.

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