U.S. Department of Housing and Urban Development
Office of Lead Hazard Control and Healthy Homes
2023 Program Managers Conference

Policy and Standards Division
Brenda Reyes, MPH, Director

DAY 1 – PSD 1 - SUMMIT 431
April 17, 2023

1:30 PM– 2:15 PM
Session I: Indoor Air Quality

I.1 Sessions Name: Reducing the Effects of Gas Stove Emissions on Older Adults with Asthma

Session Description: Research has documented that housing conditions often negatively impact resident health, particularly vulnerable populations (Northridge, 2010). Asthma has many known indoor environmental triggers, as evidenced by approximately 18 million adults (CDC, 2014) in the U.S. with asthma. Home intervention studies have demonstrated that air purifiers with HEPA/carbon filters reduce indoor nitrogen dioxide (NO2) concentrations more effectively than ventilation hoods (Paulin et al, 2014), and HEPA air filter interventions effectively reduce indoor particulate matter (PM) (Maestas et al, 2019; Cox et al, 2018; Rice et al, 2018).
A major gap in these findings is the absence of studies measuring both PM and NO2 concentrations from cooking with gas stoves and the concurrent reduction in both pollutants when using these air purifiers. This research answers the following questions: 1) will the use of HEPA/charcoal filtration decrease NO2 and PM levels from cooking in homes with gas stoves; 2) will reductions in PM symptoms and reduces health care utilization.

Session I.1 Presenters: David Turcotte PhD, Khafayat Kadiri, University of Massachusetts Lowell

Session I.2 Title: : Smoke-free Housing Policy Implementation Research: Developing New Tools to Address an Old (and Persistent) Problem

Session Description: Smokefree housing rules, including a federal mandate in PHAs, are being increasingly adopted in multiunit residential settings to reduce the serious illness caused by chronic secondhand smoke exposure and promote better quality of life. Effective implementation of those policies is needed to ensure optimal impact, yet there are few evidence-based implementation resources. We will report findings of an evaluation of the effectiveness of an evidence-informed, smokefree housing implementation framework designed to be tailored to the needs of low-income housing communities. This study was conducted among 12 affordable housing communities in the northern Appalachian region as they adopted a smoke-free rule for the first time. A randomized, adaptive intervention was

used in which three "waves" of N=4 properties received basic exposure to the implementation framework, or an iteratively enhanced implementation intervention, based on Property Manager and resident feedback. We observed marked improvements in objective measures of indoor SHS, coupled with lowered perceived exposure to SHS among residents and an overall reduction in cigarettes consumed, one month after the policy went to effect, which were sustained through eight months post-adoption. Our new project aims to adapt the smokefree housing implementation framework to meet the needs of Permanent Supportive Housing (PSH) communities, which have resident communities with high smoking rates and challenging social and health needs, including substance use and mental health disorders. As PSH expands in coming years, tools to support smokefree communities are urgently needed to reduce the burden of tobacco smoke exposure and achieve more equitable health outcomes among people with a history of chronic homelessness. We will discuss our plans to test the acceptability and feasibility of an adapted version of our Building Success smokefree implementation toolkit, by fully integrating ancillary social and health services into a smokefree implementation framework to meet the needs of PSH residents.

Session I.2 Presenter/Panelist : Vaughan Rees, PhD, Harvard T.H. Chan School of Public Health

2:30 PM – 3:15 PM
Session II: 1) Assessing Longevity of HH Interventions 2) Leveraging Data, Machine Learning

Session II.1 Title: Assessing the Longevity of Changes from a 10 Year Healthy Homes Intervention Program

Session Description: SERI has been working in low income and marginalized communities since 1994 utilizing the Promotora method to educate and promote environmental justice. During 2011-2014 SERI conducted a healthy homes program that consisted of a 29 hazards evaluation where over 2,500 homes were visited and changes were conducted such as providing education; installing items such as smoke alarms, CO_2 alarms, or grab bars; or major interventions such as mold removal or roof repair. We are now going back to these homes to re-evaluate the homes, to compare today's findings with the conditions of the homes from after our interventions over 10 years ago, and to measure if the changes made are sustainable over time. There have been many barriers and challenges faced especially due to the pandemic, but we have learned how to overcome those barriers and successfully conduct the re-evaluation of these homes.

Session Presenter: Flor Sandoval, Program Director, Sonora Environmental Research Institute

Session II.2 Title: **PREDICT Healthy Homes Study: Targeting Homes with High Pb Exposure Risk by Leveraging Big Data and Advanced Machine-Learning Algorithms**

Session Description: Childhood lead (Pb) exposure is a persistent public health problem in the U.S., disproportionately impacting low-income and Black children. Currently, state, and local agencies use blood tests and house age to prioritize homes for Pb hazard

interventions. However, this approach has critical limitations. First, a proactive, preventive approach that does not require using children as sentinels would be more cost-effective in avoiding the cognitive damage associated with early-life Pb exposure. Second, a variety of risk factors, not captured by house age alone, may contribute to Pb exposure. Our project addresses the need for more cost-effective methods to prevent the damage from childhood Pb exposure by seeking to shift the current hazard control paradigm toward an approach analogous that used in precision medicine. In this approach, machine-learning techniques, and data on a child's total residential Pb exposome are used to match interventions to household context. We will discuss our approach and lessons learned on integrating "big" data, and training and validating prediction models with community partners and citizen scientists. If successful, this project will equip state and local agencies with a proactive, preventive, and more cost-effective approach and actionable tools for prioritizing neighborhoods and households for potential participation in federal and/or state Pb hazard remediation programs.

Session Presenter/Panelist: Michelle Del Rio, Ph.D., MPH; Department of Environmental and Occupational Health, School of Public Health, Indiana University

3:30 PM – 4:15 PM
Session III Lead Exposure and Remediation

Session III.1 Title: Childhood Lead Exposure Pathways

Session Description: Using data collected from 345 homes (429 children) in Michigan from 2017–2021, NCHH explored routes of childhood lead exposure using repeated measures pathways models. Data collected included lead in blood, paint, dust, soil, water, and other housing, demographic, and behavioral metrics. This presentation will present insights from the findings as well as observations about exposure pathways from research by NCHH and other sources.

Session Presenter/Panelist: Jonathan Wilson, Deputy Director, National Center for Healthy Housing

Session III.2 Title: Evaluating the Long-Term Effectiveness of Residential Lead Remediation

Session Description: Despite efforts to mitigate lead exposures, children continue to be exposed to lead; these exposures result in adverse health outcomes over the life course. Because there is no safe blood lead level, residential lead remediation is an effective primary and secondary prevention approach for lead poisoning. However, the long-term effectiveness of residential lead remediation has not been described. We present preliminary data to assess the long-term effectiveness of residential lead remediation and share some of the experiences recruiting homes into the study.
Fifty- six homes were enrolled into the study and a lead risk assessment conducted. Based on the risk assessment reports, we characterized homes as being lead safe or lead unsafe. The preliminary data show that homes remediated more than 13 years ago are lead unsafe.

Session Presenter/Panelist: Harriet Okatch, PhD, Jefferson University, Philadelphia

4:30 PM to 5:15 PM
Session IV: 1) Engaging Residents 2) Non-intrusive approach to identify lead poisoning risks

Session IV.1 Title: Engaging residents to maximize the impacts of housing rehabilitation programs on SVOCs, allergens, and lead.

Session Description: Our primary goal is to evaluate the effectiveness of integrating resident engagement in homes participating in lead and healthy homes rehab programs to sustainably improve housing conditions and to evaluate the combined influence of housing rehabilitation and resident engagement on exposures to SVOCs, lead, and allergens. The success of HUD's Lead Hazard Control (LHC) program to reduce dust lead levels effectively and sustainably in homes has been well documented; however, the influence of LHC on other housing hazards has not yet been evaluated. It is possible that LHC activities influence chemical hazards in the home, potentially resulting in even greater benefit with respect to reduced exposure and improved health than realized. We measure SVOC levels, including pesticides, phthalates, and flame retardants, in homes before (baseline), shortly after clearance (after lead hazard control work is completed), and then 4 months after clearance in homes taking part in a HUD-funded LHC program in Rochester, NY. As well, to quantify the impact of a healthy housing assessment program that directly engages the resident, we will conduct a two-armed randomized controlled trial (RCT) with half of the homes receiving only the HUD-funded LHC remediation work (the control) and the other half receiving LHC as well as an enhanced version of New York State's Healthy Neighborhoods Program (the intervention, HNP+). The HNP+ intervention directly engages the resident by providing education, referrals, and products to reduce common housing hazards such as lead, allergens, pesticides, and other SVOCs. To date, enrollment and first visits have been completed (86 participants) and approximately half have undergone Lead Hazard control. This project also leveraged pilot funding to investigate PFAS in a subset of households' dust and a NIEHS R-21 grant to collect and analyze urine samples from 60 participants for the same chemicals being measured in dust. This presentation will provide an overview of the study design, progress to date, and the potential to utilize our findings for future collaborative research and policy change.

Session Presenter/Panelist: Katrina Korfmacher, PhD, Professor of Environmental Medicine, University of Rochester

Session IV.2 Title: The neighborhood housing conditions survey: a simple, inexpensive, and non-intrusive approach to identify lead poisoning risks.

Session Description: The neighborhood housing conditions survey (NHCS) measures easily observed conditions of residential housing structures along with the with grounds surrounding them and the civic infrastructure. The NHSC has been used in the Kansas City metropolitan area to evaluate over 260 thousand housing units over a fifteen-year period. It has a rigorous

training protocol and quality control procedures to ensure the ratings are consistent across surveyors, geographic location, and time. It is inexpensive with total costs between $4.25 and $7.50 per structure. Since it involves observations in a public setting, it does not require human subjects review. The NHSC has been used for a variety of purposes including establishing how housing conditions can influence health. In this talk, I show how the NHCS can be used to track homes more effectively at risk for childhood lead poisoning.

Session IV.2 Presenter/Panelist: Stephen Simon, PhD, Department of Biomedical and Health Informatics, School of Medicine, University of Missouri-Kansas City.

Policy and Standards Division
Brenda Reyes, MPH, Director

Day 2 – PSD Track 1 SUMMIT 431
April 18, 2023

9:45 AM– 11:00 AM
Session V: Assessment Tools to Measure Lead in Water

V.1 Session Title: Healthy Homes Need Healthy Water: Toward a Lead in Drinking Water Assessment Tool

Session Description: To minimize water as a source of lead in homes, there is an urgent need to develop tools to predict whether homes are at high risk of lead in water contamination. Publicly and widely available tools to identify high risk homes for lead in water contamination do not exist and are a critical gap in efforts to identify and eliminate childhood lead exposure. The primary goal of this project is to build such tools and help promote use in lead hazard assessments. This presentation will describe work to develop a lead in drinking water assessment tool, leveraging a high quality and comprehensive dataset from the lead in water crisis in Flint, MI, used to demonstrate a city-wide lead contamination problem. We are working to build a Flint specific water lead risk score to identify homes that had a high risk of lead-in-water contamination and then adapt and generalize the water lead risk assessment tool to be more widely applicable to other communities.

Session Presenter: David Cwiertny, PHD. University of Iowa

V.2 Session Title: Characterizing and mitigating lead in private well water across 5 Illinois counties

Session Description: Millions of US homes receive water from private wells, which are not required to be tested for lead (Pb)--a well-known developmental neurotoxin. In a cross-sectional study conducted in three Illinois counties, we characterized distribution of water lead levels (WLLs) and corrosivity in tap water of homes with private residential wells (N=150). Lead was detected in nearly half of first-liter samples, and 3% were >15ppb, the threshold in EPA's Lead and Copper Rule that applies to municipal water systems. In the current study funded by HUD, we expand into two additional Illinois counties and conduct a randomized controlled trial to assess effectiveness and cost of several lead mitigation methods.

Session Presenter: Sarah Geiger, PhD, Univ. of Illinois-Urbana Champaign

V.3 Session Title: Tile Investigation and Lead Evaluation Study (UNLV TILES)

Session Description: *UNLV TILES* has three main objectives: (1) Characterize the lead content of commercially available tile, (2) Characterize the lead dust hazards from intact tile, and (3) Characterize the lead content of demolished tile debris. Investigation 1 will characterize the lead concentrations of new, intact, commercially available tile from home improvement stores and specialty tile stores. Investigation 2 will determine whether the installation of tiles creates lead-dust hazards. Investigation 3 will characterize the concentration of lead present in demolished tile debris. Staff will discuss their experimental design, preliminary results, and the potential to inform relevant policies and practice.

Session Presenters: Shawn Gerstenberger, PhD and Erin Sheehy, MPH, University of Nevada, Las Vegas

11:15 AM – 12:30 PM
Session VI Title: Radon Testing and Mitigation (RTM) Demonstration Program Grantee Workshop: Standardization of Data Collection.

Session Description: HUD staff will provide a walkthrough of HHGMS radon tutorial and instructions on how to create and upload radon testing and mitigation data in HHGMS.

Session Presenters: Damien Slaughter, MBA, Rhona Julien, ScD, Eugene Pinzer, MS

2:00 PM – 2:45 PM
Session VII Title: Healthy Homes & Weatherization Cooperation Demonstration (HHWCD) Grantee workshop.

Session Description: This workshop is a working meeting with HHWCD grantees, HUD Policy and Standards staff and contractor, QuanTech, to discuss the objectives of the HHWCD NOFO which are aimed assessing how well the coordination of service delivery under HHWCD grants achieves cost savings and better outcomes by improving energy efficiency, safety, indoor environmental quality (IEQ) and health of residents.

Session Presenter: Gary DeWalt, PhD, QuanTech and Brenda M. Reyes, MPH, Director, Policy and Standards Division

3:00 PM – 3:45 PM

Session VIII Title: HHWCD Grantee Workshop Cont'd.

Session Description: Workshop cont'd.

Session Presenter: Gary DeWalt, PhD, QuanTech and Brenda M. Reyes, MPH, Director, Policy and Standards Division

4:00 PM – 4:45 PM
Session IX Title: Policy and Standards Division Grantees' Networking.

Session Description: Networking opportunity for grantees to converse and share information/resources with each other.

Session Presenter: NA