**Federal Interagency Committee on Indoor Air Quality (CIAQ) Meeting Minutes**

**March 20, 2019**

**Moderator:** Laureen Burton, EPA

**Meeting Overview**

- Welcome, Introductions and Announcements

- Federal CIAQ Member Agency Updates (Pages 2–24)



- Presentation

Characterization of Particle and Chemical Emissions From 3D Printers
**Marilyn Black, Ph.D., LEED AP,** Vice President and Senior Technical Advisor at Underwriters Laboratories, Inc.

and

**Rodney Weber, Ph.D.,** Professor in the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology

The technical brief on ANSI/CAN/UL 2904 referred to in the presentation can be found at www.ulchemicalsafety.org/wp-content/uploads/2019/03/3DPrintStandard_Brief.pdf . Anyone interested in learning more about UL Chemical Safety's 3D printing initiative, can visit our website (www.ulchemicalsafety.org) or follow us on Twitter (www.twitter.com/UL_ChemSafety).

- Post-Meeting Updates and Announcements

  - The next CIAQ meeting is scheduled for June 5, 2019.

# Federal Interagency Committee for Indoor Air Quality (CIAQ)

**Special Congratulatory Announcement**

Phil Jalbert who served as the Executive Secretary to this Committee for many years has announced his retirement. After more than 42 years of exemplary Federal service, Phil will be leaving us this May. As his successor and colleague, I especially want to thank Phil for all his support both with CIAQ and as a colleague and mentor within the Indoor Environments Division. If you'd like to reach out to Phil, he can be reached via email at philjalbert66@gmail.com.

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# Centers for Disease Control and Prevention (CDC), National Institute of Occupational Safety and Health (NIOSH) and National Center for Environmental Health (NCEH)

**NIOSH**

NIOSH has been working to develop a simple and easy-to-use tool to assess dampness and mold in buildings for the past several years. Finally, the NIOSH Dampness and Mold Assessment Tool (DMAT) forms and instruction manual have been published on the NIOSH website. The NIOSH DMAT was developed originally for assessing school buildings, but now included is a form for assessing general buildings as well. The links for accessing the forms are as follows:

- Form for general buildings [DHHS (NIOSH) Publication Number 2019-115]: www.cdc.gov/niosh/docs/2019-115/

- Form for school buildings [DHHS (NIOSH) Publication Number 2019-114]: www.cdc.gov/niosh/docs/2019-114/

A collaborative environmental investigation of homes in Houston, Texas, impacted by Hurricane Harvey in 2017 will be conducted during summer and fall of 2019. This investigation is part of the Hurricane Harvey–related mold work in Houston and Harris County in Texas led by the National Center for Emerging and Zoonotic Infectious Diseases. The study includes (1) surveillance of invasive mold infection (IMI) before and after Hurricane Harvey (2016–2018) to determine IMI incidence from patients' chart reviews in five hospitals in the Houston area; (2) interviews of immune-compromised individuals to understand their knowledge, attitudes and practices in relation to remediation of flooding and mold in affected homes; (3) environmental sampling to understand the ecology of mold in homes in Houston after Hurricane Harvey and specifically identify mold known to cause invasive infections; and (4) development of guidelines to prevent invasive mold infections after flooding. The environmental study of homes includes (1) assessing dampness and mold using the NIOSH DMAT form; (2) sampling floor dust in living rooms and bedrooms for characterizing fungal diversity using DNA sequencing, determining mold known to cause invasive infections using qPCR, and quantifying various microbial

agents including endotoxin, ergosterol and muramic acid; and (3) collecting information on home characteristics through a questionnaire. The expected number of homes to be recruited is a minimum of 75 to maximum of 150 (i.e., flooded/remediated [25–50 homes], flooded/non-remediated homes [25–50], and non-flooded homes [25–50]) in Houston, Texas, impacted by Hurricane Harvey in 2017.

**NCEH**

The Notice of Funding Opportunity (NOFO) EH19-1902 for National Asthma Control Program was posted on http://www.grants.gov . Search for "asthma." The electronically submitted applications must be submitted no later than 11:59 p.m., ET, on May 31, 2019.

## U.S. Department of Energy (DOE)

**Building America Program**

The Building America Program conducts applied research, development and deployment in residential buildings related to energy efficiency and indoor air quality (IAQ). You can find out about the ongoing projects on this web page: www.energy.gov/eere/buildings/building-america-research-teams.

**Building America Program: New Research Awards**

On January 29, DOE announced that it is investing up to $11.5 million in 16 new projects to drive innovation and early-stage research and development that will improve the energy performance of building envelopes and heating, ventilation and air conditioning systems in American homes. In addition, projects will address key challenges impacting building industry design and construction practices. Of the 16 projects, several are particularly related to air quality in homes:

**Boston University (Boston, MA):** "Development of Advanced Measurement and Modelling Standards for Zonal Infiltration and Compartmentalization in Multifamily Buildings." The research team will develop a simplified test method for measurement of air leakage in multifamily buildings. The simplified Zonal Multipoint Pressure testing method requires development of more robust models to better predict complex natural airflow and pressure mapping throughout these multizone buildings, based on long-term monitoring of natural pressure differences for low-, mid-, and high-rise housing in several climate zones.

*Center for Energy and Environment (Minneapolis, MN):* "Aerosol Envelope Sealing of Existing Residences." The research team will use an aerosol envelope sealing technology to improve envelope airtightness of existing buildings by up to 90 percent. The process involves pressurizing the house or unit for 1 to 2 hours while applying an aerosol sealant to the building interior. As air escapes the building through leaks in the envelope, the sealant particles are carried to the leaks and seal them.

*University of Alabama (Birmingham, AL):* "IoT Based Comfort Control and Fault Diagnostics System (i-COMFORT) for Energy Efficient Residential Houses." The research team aims to develop an innovative smart home energy management system including a low-cost sensor network, automated fault detection and diagnostics methods for both building envelope and HVAC systems that utilize the sensor network, and a prototype real-time smart home energy management system that integrates these components with smart controls to optimize home energy use and occupant comfort.

*Steven Winter Associates Inc. (Norwalk, CT):* "Low-Load HDAC Comfort System." The research team will conduct research to develop a new integrated heating, dehumidification and air conditioning (HDAC) system for high-performance homes. The prototype HDAC system will provide 1 ton of space conditioning system that can better meet the specific heating, cooling and humidity control loads of energy-efficient multifamily dwelling units and low-load single-family homes.

**Building America Program: DOE Participation in the American Council for an Energy Efficient Economy (ACEEE) Conference on Health, Energy and the Environment**

Eric Werling, the Director for the DOE Building America Program, was part of a discussion panel called "Assessing the Landscape: Emerging Trends and Opportunities at the Nexus of Health and Energy," during the meeting that was held December 3–5, 2018. This 2-day, multitrack event showcased the groundbreaking research of ACEEE's new Health and Environment Program, as well as the work of prominent experts and academics in this growing field. More information can be found at aceee.org/conferences/2018/chee.

**Department of Energy's Solar Decathlon**

DOE's Solar Decathlon is a collegiate competition, comprising 10 contests, that challenges student teams to design and build highly efficient and innovative buildings powered by renewable energy. One of the contests is "Comfort & Environmental Quality."

Students from 47 teams have taken a big step in advancing their education and careers by being selected as finalists in the next Solar Decathlon. DOE congratulates these teams as they vie to be the grand winner during the Design Challenge Weekend, April 12–14, 2019, at the National Renewable Energy Laboratory in Golden, Colorado (www.solardecathlon.gov/2019/design/challenge.html). Teams present their designs to a panel of industry expert jurors, compare their projects to those of other teams, learn from presentations by thought leaders and collegiate peers, and engage with a variety of organizations about energy careers.

The Comfort & Environmental Quality contest evaluates the building's capability to integrate comfort and indoor environmental quality with energy-efficient performance. For occupants to be comfortable, the building must be able to control temperature and relative humidity levels, as well as reduce disturbances from interior and exterior sources of noise. To provide a healthy indoor environment, the design must include a comprehensive approach to IAQ that incorporates ventilation, filtration, dilution and material selection strategies.

The 11 teams selected to compete in the Solar Decathlon Build Challenge must design and construct fully functional houses. Teams choose to build a house compliant with the guidelines of one of two Divisions: the National Showcase or the Local Build. In the National Showcase Division, teams build a small house that will ultimately be displayed and operated as part of the Smithsonian Folklife Festival in June and July 2020 on the National Mall in Washington, D.C. In the Local Build Division, teams build, display and operate houses in their own communities and bring a smaller representative exhibit to the Smithsonian Folklife Festival.

**Building America Solution Center**

(basc.pnnl.gov/) The BASC provides access to expert information on hundreds of high-performance construction topics. Guides for home construction have been recently added for:

- Mechanical Ventilation for Attached Garage (new guide).
- Air Leakage Test Garage to House (new guide).
- Whole-House Dehumidification (updated guide).

**Lawrence Berkeley National Laboratory: Healthy Efficient Homes Research & Standards**

This project is advancing innovative technologies, industry guidance, and codes and standards to ensure good IAQ in homes. The program is core-funded by DOE and an Interagency Agreement with EPA's Indoor Environments Division. Research efforts are coordinated with several California Energy Commission projects and also work being conducted with other partners and collaborators. You can see more about this effort at this web page: energy.gov/eere/buildings/downloads/healthy-efficient-homes-research-standards. Five areas of particular focus are: developing an IAQ scoring tool, developing smart ventilation algorithms and tools, overseeing the Building America new home IAQ study conducted by competitively selected teams, conducting research to identify efficient solutions to inadequate kitchen exhaust ventilation, and improving building codes and standards.

Project contacts: Iain Walker, iswalker@lbl.gov, *and* Brett Singer, bcsinger@lbl.gov

**Lawrence Berkeley National Laboratory: Online Survey About IAQ**

Lawrence Berkeley National Laboratory and the University of California, Berkeley, are conducting an online survey about IAQ in recently built U.S. homes. The goal of the study is to improve our understanding of how well new homes are meeting expectations for IAQ and about the factors that lead to more or less satisfaction. The survey was designed to take 20–25 minutes. iaqsurvey.lbl.gov

We invite you to participate if:

- You live in a single-family house, townhouse or side-by-side duplex.
- Your home was built in 2010 or later.
- You are 18 or older and currently live in the United States.

**Lawrence Berkeley National Laboratory: Recent Conference Papers**

- Indoor Air Quality in New California Homes with Mechanical Ventilation
- Measured Pollutant Removal Performance of Range-Integrated Downdraft Exhaust Kitchen Ventilation Device

- Reassessing Occupancy-Based Ventilation and IAQ in Homes
- Methodology to Assess the Exposure to Cooking Emissions in Combination With the Efficiency of Range Hoods
- Are Low-Cost Sensors Good Enough for IAQ Controls
- Measured Pollutant Performance of Island Overhead Kitchen Exhaust
- Rethinking Occupancy-Based Ventilation Controls
- Methodology to Assess Exposure to Cooking Emissions in Combination With the Efficiency of Range Hoods
- Ventilation and Occupants' Activities Impact on Indoor Air Quality in New California Homes

**Lawrence Berkeley National Laboratory: New Journal Article**

The Journal *Indoor Air*, January 2018. Quantifying fine particle emission events from time-resolved measurements: Method description and application to 18 California low-income apartments. Wanyu R Chan, Jennifer M Logue, X. Wu, Neil E Klepeis, William J Fisk, Federico Noris, Brett C Singer. onlinelibrary.wiley.com/doi/full/10.1111/ina.12425

Fine particulate matter ($PM_{2.5}$) exposure is associated with significant health risk. Exposures in homes derive from both outdoor and indoor sources, with emissions occurring primarily in discrete events. Data on emission event magnitudes and schedules are needed to support simulation-based studies of exposures and mitigations. This study applied an identification and characterization algorithm to quantify time-resolved $PM_{2.5}$ emission events from data collected during 224 days of monitoring in 18 California apartments with low-income residents.

## National Institute of Standards and Technology (NIST)

Agency point of contact: Lisa Ng, 301-975-4853, lisa.ng@nist.gov

**NIST Net-zero House**

The NIST Net Zero Energy Research Test Facility (NZERTF) is a two-story, four-bedroom house incorporating energy-efficient construction, space conditioning systems and appliances, as well as solar water heating and solar photovoltaics to meet the house's energy needs. For more information on the house in general, view the following video: http://www.youtube.com/watch?v=xSzu83fyQaQ. All publications can be found at the NIST NZERTF web page http://www.nist.gov/el/nzertf/. Testing is on-going of the thermal comfort provided using a small duct, high velocity distribution system as compared to a conventional air-to-air heat pump. Preliminary findings on this work were presented at the Indoor Air 2018 conference in Philadelphia, July 22-27, 2018. The work was done in collaboration with Dr. Hyojin Kim at The Catholic University of America. A tracer gas system has been installed in the home in order to obtain continuous air change rate measurements. Plans for installing a $CO_2$ heat pump water heater and a geothermal heat pump are underway. Contact: Lisa Ng, 301-975-4853, lisa.ng@nist.gov.

**Cigarette Butt Emissions:**

Globally, around five trillion cigarette butts are disposed of per year. FDA has regulatory authority over cigarettes and associated waste. FDA funded an interagency agreement with the National Institute of Standards and Technology (NIST) to conduct a two-part investigation into airborne emission of non-smoldering cigarette butts. The first phase of this effort was a comprehensive literature review conducted to gather and analyze existing research related to airborne emissions from non-smoldering cigarette butts (Poppendieck, Khurshid et al. 2016). The experimental phase examined over 1,600 butts to determine 1) the initial distributions of emitted target chemicals in the cigarette butt, 2) the influence of environmental parameters (temperature, relative humidity, aqueous saturation, UV, and airflow rate) on airborne emissions, and 3) airborne emission rates for target chemicals from cigarette butts in a simulated indoor environment. In summary, non-smouldering butts can be a significant source of airborne chemicals, including nicotine. Results will be present at 2019 Joint Annual Meeting of The International Societies of Exposure Science (ISES) and Indoor Air Quality and Climate (ISIAQ) in Kaunas, Lithuania and in two upcoming journal articles. Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov.

**Real-time outdoor air infiltration rates:**

NIST has completed a Cooperative Research and Development Agreement (CRADA) with the National Center for Healthy Housing, and Beetle Management, Inc. entitled "Determination of real-time infiltration rates in homes using low-cost sensors". The objective of this collaboration was to investigate the use of air pressure sensors to estimate real-time infiltration rates in a home, in part to control mechanical ventilation systems. The development of such a method is intended to overcome some of the challenges and limitations that exist with tracer gas methods for determining infiltration rates. NIST conducted a series of tracer gas tests at the Indoor Air Quality Test House and the NZERTF on the NIST campus. Using the data and a detailed multizone airflow model of the home, NIST and the CRADA partners developed a simplified model of the house that can be used to estimate real-time air infiltration rates. A report on the work and findings is forthcoming. Contact Lisa Ng, 301-975-4853, lisa.ng@nist.gov.

**ASHRAE Standard 62.2**

The committee responsible for Standard 62.2 on residential ventilation and IAQ met in June in Houston and in January in Atlanta to continue working on proposed changes that may be included in the 2019 version of the standard. Topics being addressed include changes to multifamily housing requirements, ventilation system capacity, kitchen hood capture efficiency, and ventilation requirements for use of unvented combustion heaters. The committee will continue working on these and other topics in January in Chicago. Contact: Steven Emmerich, 301 975-6459, steven.emmerich@nist.gov.

**ASHRAE Residential IAQ Guide**

ASHRAE recently published a guide titled Residential Indoor Air Quality Guide: Best Practices for Acquisition, Design, Construction, Maintenance and Operation which was developed under a project

sponsored by ASHRAE's Environmental Health Committee. This guide addresses single- and multifamily dwellings, unrestricted by building size or HVAC system type. It was written by experts in residential IAQ and presents best practices to achieve excellent IAQ. It provides information and tools that residents, home designers, and builders can use to integrate IAQ into dwellings while addressing budget constraints and other functional requirements.

This guide presents the best available information to allow informed decision-making, with eight objectives for improving IAQ and detailed implementation strategies:

Objective 1 - Acquire, Design, Construct, and Operate a Dwelling to Achieve Good IAQ

Objective 2 - Manage Moisture

Objective 3 - Limit Contaminant Entry into the Living Space

Objective 4 - Control Moisture and Contaminants Related to Mechanical Systems

Objective 5 - Limit Contaminants from Indoor Sources

Objective 6 - Keep Contaminants in their Place

Objective 7 - Reduce Contaminant Concentrations Through Ventilation, Filtration, and Air Cleaning

Objective 8 - Minimize Energy Use, Maximize Comfort, and Address Interactions of Factors that Affect IAQ

Contact: Steven Emmerich, 301 975-6459, steven.emmerich@nist.gov.

**ASHRAE Position Documents**

The IAQ Position Document Committee will meet in January in Chicago as they continue to work on updating that document. The new version of the Position Document is expected to be published in 2018. Contact: Andrew Persily, 301 975-6418, andyp@nist.gov.

ASHRAE has initiated a revision of its Position Document on Environmental Tobacco Smoke, which is expected to be approved and published in 2019. Contact: Andrew Persily, 301-975-6418, andyp@nist.gov.

ASHRAE has also initiated a revision of its Position Document on Indoor Air Quality, which is also expected to be approved and published in 2019. Contact: Andrew Persily, 301-975-6418, andyp@nist.gov.

ASHRAE has also initiated a new Position Document on Resilience, with the responsible committee holding its first meeting in June 2018. Meetings have continued since then, with a final version expected to be completed around June 2019. Contact: Andrew Persily, 301-975-6418, andyp@nist.gov.

**ASHRAE Standard 189.1**

The 2017 version of ASHRAE/ICC/IESUSGBC SSPC 189.1, Standard for High-Performance Green Buildings Except Low-Rise Residential Buildings, was approved for publication late last year and includes 75 individual revisions to the 2014 version. The standard constitutes the technical content of the 2018 International Green Construction Code, which was just published late in 2018 and is available from the International Code Council and ASHRAE. Standard 189.1-2017 itself will only be available outside of the U.S. and Canada per an agreement between AIA, ASHRAE, ICC, IES and USGBC. In the area of indoor environmental quality, revisions that have been incorporated into the 2017 standard (and therefore the 2018 IgCC) include a restriction on the indoor use of unvented combustion devices, a requirement for occupant surveys to assess satisfaction with indoor environmental quality, and improvements to lighting quality through daylighting and glare control.

The committee holds monthly web meetings, which are open to all interested parties. More information on the 189.1 committee activities can be found on the ASHRAE website, where you can sign up for notifications of public reviews and other information at https://www.ashrae.org/resources--publications/free-resources/listserves. Contact: Andrew Persily, 301-975-6418, andyp@nist.gov.

**ASTM: D22.05 Subcommittee on Indoor Air**

The subcommittee has several new efforts underway. Efforts from WK62732 (New Standard Performance Evaluation of Consumer-Grade Indoor Air Quality Sensors and Sensing Devices) are finalizing draft standard methods to balloted for carbon dioxide and PM2.5 sensors. Work on measuring Spray Polyurethane Foam (SPF) Insulation emissions at Large-Scales (WK58355) and modeling efforts (WK58356) are continuing. Contact: Dustin Poppendieck, 301-975-8423, dustin.popendieck@nist.gov.

Section 6 of Standard D6245 Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation was recently revised and published. A revision of the entire standard is now just beginning. Anyone interested in participating in the revision should contact: Andrew Persily, 301-975-6418, andyp@nist.gov.

***Web-based Particle Exposure Modeling Tools***

NIST developed two particle exposure tools. Development of the tools was supported by the Consumer Product Safety Commission under the leadership of Dr. Treye Thomas.
The first, a CONTAM-based single-zone – single-size particle model (CXPM), is based on the ContamX solver of the existing CONTAM software developed by NIST, and the second, single-zone – size-resolved particle model (SRPM), is a newly-developed tool which accounts for coagulation and deposition of a user-defined log-normal particle size distribution. Both tools can be accessed and run via their respective web interfaces, links to which are provided below:

https://pages.nist.gov/CONTAM-apps/webapps/NanoParticleTool/index.htm
https://pages.nist.gov/CONTAM-apps/webapps/coag/index.htm

An associated report and program documentation is available at https://www.nist.gov/publications/development-airborne-nanoparticle-exposure-modeling-tools

Contact: W. Stuart Dols, 301-975-5860, stuart.dols@nist.gov.

## U.S. Environmental Protection Agency (EPA), Indoor Environments Division (IED)

**IAQ Science**

*Air Cleaners*

*EPA Air Cleaner Guidance Updates in 2018*: Revised editions of EPA's technical and consumer-focused guides to air cleaners—*Residential Air Cleaners: A Summary of Available Information* and *A Guide to Air Cleaners in the Home*—were released. These guides are updated to include the latest information on portable air cleaners and HVAC filters. The publications are available as PDFs on IED's website at www.epa.gov/indoor-air-quality-iaq/guide-air-cleaners-home. A Spanish-language version of *A Guide to Air Cleaners in the Home* also will be released.

*Residential Air Cleaners Webinar***:** IED hosted a webinar on residential air cleaners on February 21, 2019, featuring Terry Brennan, President of Camroden Associates, Inc. in New York, and Lew Harriman, Director of Research at Mason-Grant Consulting in New Hampshire. The presentation provided information on EPA's recent update of *A Guide to Air Cleaners in the Home* and discussed current knowledge on central system filter efficiency and assessing the effectiveness of portable air filters. The recorded webinar will be posted to our website at www.epa.gov/iaq when it becomes available.

*New Residential Air Cleaners Webinar*: On March 21, 2019, from 1:00–2:30 p.m., IED will again welcome Terry Brennan, President of Camroden Associates, Inc. in New York, and Lew Harriman, Director of

Research at Mason-Grant Consulting in New Hampshire for a follow-up webinar on air cleaners. This presentation will provide information on EPA's recent update of the *Residential Air Cleaners: A Technical Summary* and discuss current knowledge on central system filter efficiency and assessing the effectiveness of portable air filters. Webinar details and a registration link are posted on our website at www.epa.gov/iaq.

*Flood Cleanup Resources Now Available Online*

Two updated documents and a new webinar recording on flood cleanup and IAQ are now available on the EPA website at https://www.epa.gov/indoor-air-quality-iaq/flood-cleanup-protect-indoor-air-quality.

*Report on Flood-Related Cleaning*: This document addresses strategies for safely returning flooded buildings to habitable conditions after a hurricane or other weather event. It is a technical summary of existing research and guidance on health hazards from floods, flood damage and cleanup activities. This final report replaces the 2009 draft that was previously available on the IED website.

*Flood Cleanup Fact Sheet*: This updated fact sheet provides an overview of IAQ concerns related to flood events (such as a flash flood or flooding after a hurricane). It provides links to resources that can help address those concerns during flood cleanup. The information emphasizes residential flood cleanup, but it is also applicable to other types of buildings. This new version includes illustrations of key information, links to new and up-to-date information from EPA and other organizations, and revised text for easier reading.

*Flood Cleanup Webinar Recording*: IED hosted a webinar on flood cleanup on July 16, 2018, featuring Dr. Gene Cole, an expert on flood cleanup and the use of biocides. The recorded webinar can be viewed from the above website or via the EPA YouTube channel at www.youtube.com/watch?v=UtFFVboMf8M.

*New Flood Cleanup Webinar*: On April 18, 2019, from 1:00–2:30 p.m., IED will again welcome Dr. Gene Cole for a follow-up webinar on flood cleanup. In response to attendees' questions during his July 2018 webinar, Dr. Cole will expand on cleaning techniques (including the use of certain biocides) and drying strategies for residential buildings affected by flooding. Webinar details and a registration link will be posted to www.epa.gov/iaq when they become available.

*On November 5, 2018, EPA hosted an IAQ research webinar entitled, "Particle Resuspension Dynamics in Infant Near-Floor Microenvironments." The presenter was Dr. Brandon Boor, Ph.D., Assistant Professor*

*Particle Resuspension Dynamics in Infant Near-Floor Microenvironments*

of Civil Engineering and Environmental and Ecological Engineering, Purdue University. This webinar provided information on how crawling infants can stir up and resuspend concentrated clouds of PM from floor dust and the implications of early-life microbial exposures. A recording of the webinar will be posted to the IED's IAQ website at www.epa.gov/indoor-air-quality-iaq.

*Wildfires*

IED is working with an interagency workgroup to revise the Wildfire Smoke Guide for Public Health Officials. The guide provides comprehensive information about the health effects of wildfire smoke, strategies to reduce smoke exposure, recommendations for communicating air quality conditions, and public health actions to consider during a wildfire event. The guide is expected to be available in early Summer 2019. The current version of the guide is available at https://www3.epa.gov/airnow/wildfire_may2016-revised.pdf.
Some of the pending updates to the Wildfire Smoke Guide have been incorporated into a series of fact sheets for the general public. The fact sheets are available on AirNow.gov at https://airnow.gov/index.cfm?action=topics.smoke_wildfires

IED is also developing web content on Wildfires and IAQ, which should be available soon. The content provides basic information for the public on how to reduce exposure to wildfire smoke indoors, including step-by-step guidance on setting up a clean room at home.

**Radon**

*National Radon Action Plan (NRAP)*

IED continues to support the growing national network of federal agencies, private sector, nongovernmental organizations (NGOs) and states to prevent lung cancer deaths through the NRAP. Along with its founding members, the American Lung Association has brought in supporting organizations (those who have signed a declaration of support) and emerging potential partners (organizations identified to help drive progress) to increase the mitigation of existing homes and the construction of new homes with radon-reducing features. The NRAP expands the efforts under the Federal Radon Action Plan to focus on actions that go beyond federal governmental actions alone.

The NRAP presents a long-range strategy for eliminating avoidable radon-induced lung cancer in the United States. The Plan's near-term goals are to reduce radon risk in 5 million homes and to save 3,200 lives by 2020. While the 2020 goals offer bold and important milestones, they are not the endpoint. The NRAP's ultimate goal is to eliminate avoidable radon-induced lung cancer in the United States by incorporating radon testing, radon mitigation and radon-resistant construction into the systems that govern purchasing, financing, constructing, and renovating homes and other buildings. Progress for NRAP strategies can be tracked at www.radonleaders.org/resources/nationalradonactionplan.
Some highlights include:

- NRAP Leadership Council Meeting.
- Standards of Professional Practice
- New CDC Study Finds Radon Education Increases Testing.

*Credentialing of Radon Service Providers*

As part of EPA's role to support state programs and make sure consumers receive the best possible radon services, EPA issued a *Federal Register* (FR) Notice seeking public feedback on a proposed approach for developing voluntary criteria for organizations that credential radon service providers. These criteria will establish an ongoing and open evaluation process for organizations wanting to credential radon service providers. The FR Notice comment period closed on November 23, 2017, and EPA is evaluating the comments. During the next year, EPA will focus its efforts on formulating and initiating an approach forward. The Agency plans to hold a listening session in May 2019 to further engage stakeholders around possible approaches. Please visit www.epa.gov/radon to learn more about EPA's proposal.

**Asthma Triggers**

*Sustainable Financing Efforts*

EPA continues to partner with the U.S. Department of Health and Human Services (HHS) and U.S. Department of Housing and Urban Development (HUD) to advance sustainable financing for in-home asthma interventions.

On December 18, 2018, EPA's Asthma Program hosted a webinar entitled "Using Housing Codes to Improve Asthma Health Outcomes." The webinar featured Amanda Reddy, Executive Director of the National Center for Healthy Housing (NCHH) and Robert Curry of the City of Dallas, TX. NCHH was a cooperative agreement partner of EPA, providing technical assistance to communities across the country looking for sustainable funding for asthma in-home environmental interventions. NCHH worked with the city of Dallas in its effort to enact proactive housing code inspection and enforcement strategies that will improve asthma and other health outcomes. This webinar provided an opportunity to share the experiences in Dallas and focus on the connection between housing codes, asthma and health outcomes. Participants learned about:

- Communities, including Dallas and others, that have focused on infrastructure and other housing code strategies to positively impact children with asthma.
- The National Healthy Housing Standard and how it can be used in housing codes to improve asthma outcomes.
- NCHH's experience providing technical assistance and coaching to communities working to promote access to in-home asthma environmental interventions.

An archive of the webinar will be posted on www.asthmacommunitynetwork.org.

EPA facilitated a day-long summit with asthma programs and coalitions from across the country at the Allergy and Asthma Network's U.S. Asthma Summit in Seattle, Washington, on November 16, 2018. A session entitled "Community of Practice: Lessons Learned from National Leaders to Advance Efforts on Sustainable Financing" featured presentations from Missouri, California and Philadelphia. The experts shared their lessons learned in seeking financial reimbursement for asthma in-home environmental

interventions. There were more than 120 in-person participants, and over 700 virtual participants registered for the live-stream of the summit. The recording from the summit will be available at www.asthmacommunitynetwork.org.

*Asthma Disparities Workgroup (ADWG)*

ADWG held its quarterly meetings on December 10, 2018, and March 11, 2019, in Washington, D.C. ADWG is an extension of the Federal Asthma Disparities Action Plan co-chaired by EPA, HHS and HUD. The group comprises more than 60 federal stakeholders committed to coordinating activities and leveraging resources to address nationwide disparities in asthma health outcomes. The December meeting featured discussions on future priorities of the ADWG, CDC's Controlling Childhood Asthma, Reducing Emergencies Initiative and action on sustainable financing for in-home asthma interventions. During the March meeting, the ADWG discussed the priority areas that will be focused on during the next 5 years, which include reimbursement for home-based asthma interventions, coordinating research efforts on asthma, and advancing guidelines-based asthma care.

*Asthma Awareness Month*

May is Asthma Awareness Month, and it's coming soon. Asthma Awareness Month provides a great opportunity for EPA and our partners to raise asthma awareness and educate stakeholders on the importance of comprehensive asthma management, which includes medical treatment and reducing exposures to environmental triggers. Tools and resources are available on www.asthmacommunitynetwork.org to maximize your and your partners' program impact this May. Participating organizations can promote Asthma Awareness Month events in the Events Calendar, and connect with other programs by sharing Asthma Awareness Month stories in a Network Blog. If you are not already a member of the Network, we encourage you to join today and engage with over 1,100 asthma programs.

*National Environmental Leadership Award in Asthma Management*

During Asthma Awareness Month, EPA will honor leading asthma programs with the 2019 National Environmental Leadership Award in Asthma Management. This award signifies that a program is outcome-driven, comprehensive and grounded in best practices for asthma care. For more information and to learn about these award-winning programs, visit www.asthmacommunitynetwork.org/awards.

*Asthma Resources Available on AsthmaCommunityNetwork.org*

On September 11, 2018, IED sponsored a webinar entitled "A New Tool for Asthma Home Visiting Programs: The Environmental Scoring System." The webinar featured experts from the Boston Public Health Commission and Massachusetts Department of Health. The experts shared how this tool was developed and implemented through a unique city-state collaboration. During the live event, 313 attendees learned how to use this tool in their home-visiting programs to assess indoor environmental asthma triggers and improve health outcomes for people. More than 635 participants

registered for the event and will be able to access this webinar, along with all previous asthma webinars, which are archived on www.asthmacommunitynetwork.org.

*Home Characteristics and Asthma Triggers Checklist for Home Visitors (Home Assessment Checklist) Now Available*

The Home Assessment Checklist has been co-branded with our federal partners, CDC and HUD. The checklist is intended for use as a guide for trained home visitors to start a dialogue with the residents to develop a tailored action plan to reduce environmental triggers of asthma and is available at www.epa.gov/asthma/asthma-home-environment-checklist.

**Comprehensive IAQ Interventions in Homes**

*Indoor airPLUS: New Homes*

EPA's Indoor airPLUS program continues to grow with new builder and rater partners, as well as with new Indoor airPLUS–labeled homes, which now total over 17,000 across the United States. EPA released Revision 4 of the Construction Specifications in early 2018 and continues to share program updates in various industry forums around the country.

In October, the EPA team announced the 2018 Indoor airPLUS Leader Award winners, which included three Home Energy Raters and five Homebuilder partners. EPA also introduced a new award for the Indoor airPLUS Leader of the Year, recognizing just one builder and one rater who have done exceptional work in labeling Indoor airPLUS homes and communicating the benefits to their market. The Leader Awards largely focus on the efforts of partners to educate the public about IAQ through various forums and media, including the use of Indoor airPLUS sales and marketing tools. In the award application, builders also offered some technical details about the construction of their "Best Indoor airPLUS Home," which were featured on posters and presentations during the award ceremony, which was held on October 17, 2018, at the 2018 Energy & Environmental Building Alliance Summit in San Diego (http://summit.eeba.org).

EPA is currently working on a new Indoor airPLUS Maintenance Guide, a customizable resource that builders can deliver to their buyers, informing them of key features in the home and ways they can continue to improve IAQ through regular maintenance. The Indoor airPLUS team also is working on updated program requirements to be included in the Indoor airPLUS Version 2 (V2) Construction Specifications, anticipated to be released for public comment in late 2019.

*Indoor airPLUS: Existing Homes*

EPA will include existing homes in an upcoming draft of Version 2 (V2) of the Indoor airPLUS Label Specifications. A central focus of V2 is to assist the home-performance industry (energy auditors, renovators, HVAC service providers, etc.) through providing a platform consisting of technical expertise, guidance and tools intended to increase consumer activity/demand for healthy home improvements. EPA has been meeting with key stakeholders from the home performance industry, including

representatives from the Building Performance Institute, DOE Home Performance with Energy Star, HUD, Efficiency First, and Home Performance Coalition, and networking at regional and national conferences to discuss labeling existing homes and to assess the technical needs of industry and stakeholder buy-in and support. EPA is nearing completion of the first draft of specifications and intends to have a final draft out for public comment in late 2019.

*Energy Saving Plus Health Guidance Updates:*

EPA is updating its guidance for single-family (2011) and multi-family (2016) to address IAQ concerns and technology advancements during energy upgrades, through voluntary guidance that gives best practices for improving IAQ in conjunction with energy upgrade work. These updates include references to building codes, industry standards and URLs; best practices and technical guidance; recent developments in pollutant control (e.g., particulate matter, radon, moisture); and general formatting for improved usability by industry stakeholders. The end result will be guidance that will not only help users improve their IAQ but also will provide an opportunity to market improvements in existing homes.

**Comprehensive IAQ Interventions in Schools**

*Indoor Air Quality and Preventive Maintenance in Schools*

EPA is developing a suite of resources to help school personnel take a proactive approach to IAQ issues by using current and forthcoming new guidance to support preventive maintenance practices in schools. By using the lens of preventive maintenance to engage school staff, EPA hopes these resources will accelerate the rate of adoption of IAQ management programs and protect the health of our nation's students. New resources under development include:

- IAQ Tools for Schools Preventive Maintenance Guidance and Appendices
- IAQ Preventive Maintenance Checklist
- IAQ Preventive Maintenance Model Plan

While these tools have been under development, EPA has hosted a series of webinars on IAQ preventive maintenance. They can be viewed on-demand at www.epa.gov/iaq-schools/indoor-air-quality-knowledge-action-webinar-series-calendar.

On March 28, 2019, IED's IAQ Tools for Schools Program will host a webinar to help launch the guidance entitled "Next-Level IAQ: Step Up Your School's IAQ Program with Preventive Maintenance." The webinar will feature Fred Remelius, Upper Merion School District, Pennsylvania; Tyler Puls, Des Moines School District, Iowa; and Shawna Cragun, Davis School District, Utah. Register at: https://register.gotowebinar.com/register/3176724784641938179?utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term.

*IAQ and Student Health and Performance*

The Healthy Buildings Team at Harvard T.H. Chan School of Public Health released a report, *Schools for Health: Foundations for Student Success* (schools.forhealth.org), highlighting the influence of school buildings on student health, thinking and performance. The report synthesizes more than 30 years of scientific research, including findings from over 250 research articles and more than 70 health and performance metrics about the impacts of indoor environmental quality in schools. The report also identifies diverse metrics of success beyond standardized test scores. EPA hosted a webinar on November 29, 2018, with over 1,400 registrants and featuring Harvard School of Public Health experts, including Joseph G. Allen, John Spengler and Erika Eitland. The webinar is now available on-demand at www.epa.gov/iaq-schools/forms/webinar-examining-evidence-how-school-buildings-influence-student-health-thinking.

*Expanding the Reach for School IAQ Training*

EPA has enjoyed tremendous success with two professional training webinar series; the 10-part *IAQ Master Class Professional Training Webinar Series,* and the subsequent series, *IAQ Knowledge to Action Professional Training Webinar Series.* Since the launch in 2015, more than 3,000 participants have generated nearly 6,000 views of the trainings. All webinars are available "on demand." Register to view the webinars at www.epa.gov/iaq-schools/indoor-air-quality-master-class-professional-training-webinar-series. EPA is eager to drive even more action in school districts through spreading the IAQ Master Class Professional Training Webinar Series across more networks and platforms. Please contact us at iaqschools@epa.gov if your organization would like to use your existing training platforms and vehicles to host or link to EPA's IAQ Master Class Professional Training Webinar Series.

**Improved Household Energy/Cookstoves**

*ISO Standards*

In fall of 2018, the International Organization for Standardization (ISO) published the first international standard for laboratory testing of cookstoves. The standard was developed by international experts from 45 countries and approved by a vote by ISO countries. The new standard includes protocols to test and report the emissions, efficiency, safety and durability of cookstoves in a lab setting.

The laboratory test standard replaces an ISO International Workshop Agreement from 2012, which was led and organized by EPA through the Partnership for Clean Indoor Air. It will serve as the basis for national policies and programs on cookstoves, while also incentivizing manufacturers and developers to improve stove quality and performance. An accompanying ISO technical report that benchmarks performance to voluntary performance targets, or tiers, and provides guidance on how to understand and interpret laboratory test results was also approved by member countries of the ISO Committee and published. Development of the standard was led by EPA staff, with strong engagement of DOE staff.

Another household energy standard being developed through ISO is "Guidance on Field Testing Methods for Cookstoves." This standard is in the Final Draft Implementation Stage and was sent in late February 2019 to ISO to disseminate to countries to vote to approve/disapprove.

These voluntary documents provide a framework for organizations, countries and regions to adapt and implement the protocols, metrics and targets based on their priorities over the coming months and years. EPA will be working closely with other partners to widely disseminate the standard and encourage their adoption. EPA worked with the World Health Organization, the Clean Cooking Alliance, and ISO to organize and facilitate a regional workshop in Nepal, with representatives from 10 countries, to promote the adoption or the adaptation of the ISO harmonized laboratory standards for clean cookstoves and clean cooking practices by countries throughout Asia. The partners also organized a concurrent workshop for staff of household energy laboratories to provide technical assistance and guidance on laboratory testing methods contained in the new ISO standard.

More workshops will be held in 2019. ISO standards are reviewed and updated regularly, so these standards can be updated based on future research and on the progress in the cookstove and fuel market.

**Communication and Partner Outreach**

*Tribes and IAQ/Woodsmoke*

The Navajo Nation stove changeout pilot continues to make progress. A Native American NGO, Red Feather, has been selected to manage the in-home visits that include resident education on new stove operation, health improvement, behavior change and conversations with residents pre- and post-installation.

*Secondhand Smoke*

IED continues to collaborate with federal agency partners regarding implementation of HUD's smoke-free public housing rule, which became effective in July 2018. In addition, IED is seeking to expand the collaboration to new partner organizations in affordable housing and community development. IED's expectation is that such partnerships will help increase smoke-free policy adoption and implementation in privately owned low-income/affordable multifamily housing.

*National Radon Action Month*

January was National Radon Action Month. EPA joined the states, tribes, EPA's regional offices, partners and other radon stakeholders in promoting awareness-building and risk reducing activities. January was a shortened month for EPA due to the federal government shutdown. EPA was able to issue bilingual social media for its Facebook and Twitter accounts and for use by others. Email alerts were sent to our GovDelivery radon subscribers providing them with ideas and resources for their own and local activities.

*IAQ Communication Resources*

Visit www.epa.gov/radon for information about radon measurement and mitigation. For National Radon Action Month outreach ideas and materials, visit www.radonleaders.org/nram.

If you're doing outreach, please consider taking advantage of IEDs various radon assets and public service announcements; view them and order or download from www.epapsa.com.

*Consider Subscribing to Email Alerts on IAQ Topics*

EPA offers a free subscription service for information on over 20 indoor air topics—opt-in at public.govdelivery.com/accounts/usepaiaq/subscriber/new to receive email updates on IAQ. More than 82,000 subscribers regularly receive announcements of upcoming trainings, webinars and events as well as practical tips and information resources to improve IAQ. People can choose among interesting topics such as mold, air cleaners, radon, environmental asthma and air quality in schools. Many topics are also in Spanish. Subscriptions can be cancelled easily at any time.

## U.S. Department of Housing and Urban Development (HUD)

**HUD's Technical Studies Grant Programs**

On October 2, 2018, HUD announced the award of about $7.5 million to eight universities and public health organizations to develop new and improved methods to identify and control lead and other residential health hazards. About $5.6 million was awarded under the Healthy Homes Technical Studies Grant Program to six institutions, and about $2 million was awarded under the Lead Technical Studies Grant Program to two institutions (see abstracts below):

*Healthy Homes Technical Studies Grant Awards*

**The Massachusetts Department of Public Health (MDPH),** partnering with the University of Massachusetts, Lowell, was awarded $1 million to conduct the ROAAD-X study, which will provide evidence as to whether a scaled-down version (fewer home visits) of an innovative community health worker-led multicomponent asthma home-visiting intervention with strong clinical-community linkages has the potential to improve asthma control and health care utilization for older adults with asthma. The ROAAD-X study will enroll eligible participants at Lowell Community Health Center, the ROAAD pilot clinical site, and conduct an analysis of the cost effectiveness and return on investment of the interventions. It will also seek to validate a tool created by MDPH to quantify indoor environmental asthma triggers.

HUD contact: Eugene A. Pinzer, eugene.a.pinzer@hud.gov

**President and Fellows of Harvard College**, teaming with an affordable housing provider (Beacon Communities), was awarded $999,912 to conduct a study to optimize the impact of smoke-free

residential policies in federally assisted multifamily housing using an evidence-informed implementation approach. The study will use six key implementation strategies identified in earlier research on the experiences of public housing authorities that implemented smoke-free housing policies. The primary objective is to develop evidence-based smoke-free policy implementation strategies. It uses an established implementation science framework to guide the approach using a mixed methods approach embedded within a longitudinal design to collect and analyze outcome and implementation process data.

HUD contact: Eugene A. Pinzer, eugene.a.pinzer@hud.gov

**Tufts University**, teaming with the City of Somerville, Massachusetts, was awarded $779,935 to develop a performance-based evaluation framework specific to multifamily housing near highways that considers air quality benefits, indoor comfort and sustainability of various HVAC and air-filtration systems. The study has two main objectives to (1) quantitatively assess the IAQ benefits derived from use of high efficiency filters and optimization of ventilation system design parameters in public housing located near highways and (2) develop a guidance document based on a stakeholder workshop that can be used to inform the design of HVAC systems and their operation for multifamily housing near busy roadways.

HUD contact: J. Kofi Berko, Jr., j.kofi.berko@hud.gov

**The Trustees of Columbia University in the City of New York**, partnering with The Ohio State University, was awarded $991,572 to conduct a study that directly builds on a prior HUD-funded work to address critical knowledge gaps in the understanding of the determinants of fungal exposure in low-income, urban homes and the relevance of early-life domestic exposure to a specific type of commonly occurring fungi in children's asthma development. The study design leverages biospecimens and databases readily available from two New York City study cohorts, including a comprehensive prospective birth cohort of African-American and Hispanic children who have grown up in the northern Manhattan and the South Bronx, two communities with high burdens of poverty, asthma and reported domestic mold.

HUD contact: J. Kofi Berko, Jr., j.kofi.berko@hud.gov

**Baylor College of Medicine** was awarded $1 million to conduct a randomized pragmatic clinical trial to assess the efficacy of residential asthma interventions in the homes of 100 individuals with asthma age 12 years and older who reside in one of two public housing communities owned and operated by the Houston Housing Authority. Researchers will also assess the impact of interventions on chronic rhinitis, which can also be triggered by residential exposures. Participants will be randomized into one of two treatment groups: (1) phone calls only or (2) home visits to implement and reinforce a clinically driven multicomponent trigger reduction and asthma control plan. The study will include an onsite clinic for enrollment at each complex. In addition, a community health worker will be hired and trained from each property and will be as an integral part of the research team.

HUD contact: J. Kofi Berko, Jr., j.kofi.berko@hud.gov

**The University of Texas at Austin** was awarded $798,498 to use a community filter forensics approach to study linkages or microbial, semivolatile organic compounds and other exposures to childhood

asthma severity. A previous study on filter forensics used analysis of HVAC filters to determine mold and other allergens in the home. The work will take place in a low-income urban community in Austin. Fifty households will participate in an initial pilot study to compare results with a previous filter forensics study in rural settings, and the further study will include 150 Texas city homes in three climate zones. If successful, the community filter forensics methodology could provide a potentially more efficient and effective way for exploring healthy homes.

HUD contact: J. Kofi Berko, Jr., j.kofi.berko@hud.gov

*Lead Technical Studies Grant Awards*

**The University of Texas at El Paso** was awarded $699,911 to study the effectiveness of a neighborhood-based approach, integrating community education on child lead exposure with household-level lead hazard detection and caregiver-assisted mitigation in preventing elevated blood-lead levels (BLLs) in children. The study will use three sets of objectives to guide the collection of data needed to test study hypotheses. The effectiveness of interventions will be determined by assessing post-intervention changes in residential lead hazards, children's BLLs, and caregivers' knowledge and perception on preventing children's lead exposure.

HUD contact: Eugene A. Pinzer, eugene.a.pinzer@hud.gov

**The National Center for Healthy Housing, Inc.**, partnering with Cincinnati Children's Hospital, was awarded $650,000 to conduct a retrospective data analysis of the effectiveness of lead hazard control abatement techniques that were used in the HOME Study (previously funded by HUD and the National Institutes of Health). The grantee will determine whether aggressive lead hazard control interventions, conducted in both urban and suburban households, can keep dust-lead levels sufficiently low to prevent children from developing elevated blood-lead levels. The study will also provide information about the intensity of interventions needed to achieve dust-lead clearance levels that are lower than the current federal standard.

HUD contact: J. Kofi Berko, Jr., j.kofi.berko@hud.gov

**The National Center for Healthy Housing, Inc.**, partnering with the Michigan Department of Health and Human Services, was awarded $596,830 to analyze data collected by the state of Michigan's lead poisoning prevention program to characterize and assess recent lead levels in dust, soil, paint and drinking water, while controlling for a large number of potentially confounding variables. These levels will be modeled to predict exposures using robust structural equation modeling, which has been used previously in the evaluation of HUD's Lead Hazard Control Grant program and other research. The study will provide updated information on the relative contributions of various residential lead exposure sources to children's blood-lead levels.

HUD contact: Eugene A. Pinzer, eugene.a.pinzer@hud.gov

**American Healthy Homes Survey II (AHHS II)**

This survey is being conducted on a representative sample of U.S. housing in which children can reside; HUD's primary interest is to determine the presence of lead-based paint and lead-based paint hazards.

Drinking water samples also will be collected for lead analysis and service lines will be inspected. Other sampling includes formaldehyde in air and mold and pesticides in settled dust. The AHHS II is now completing home recruitment and onsite Round 10 (of 12) and has now completed sampling in 529 housing units. The two remaining rounds will take place over the next 2 months. The report is expected at the end of 2019.

HUD contact: Eugene A. Pinzer, eugene.a.pinzer@hud.gov Eugene.A.Pinzer@hud.gov

**Testing of X-Ray Fluorescence (XRF) Performance at Lower Paint-Lead Levels**

To determine the capability of the current commercial XRF instruments at lower lead levels, testing is currently underway at HUD's XRF Archive of Materials to see if Performance Characteristic Sheets can be developed with no "inconclusive" readings at lead loadings of 0.7, 0.5, 0.3 or even 0.1 mg/cm$^2$ (i.e., at lower paint-lead levels than the current federal definition for lead-based paint of 1.0 mg/cm$^2$ ). The instruments being tested include ones from Thermo/Niton, ProTec/RMD, Heuresis and Olympus/InnovX. Preliminary results are expected by mid-April.

HUD contact: Eugene A. Pinzer, eugene.a.pinzer@hud.gov

**New Edition of the HUD Lead Paint Safety Field Guide**

In February 2019, HUD's Office of Lead Hazard Control and Healthy Homes released "Lead Paint Safety: A Field Guide for Interim Controls in Painting and Home Maintenance." This is a highly graphic, lay-level publication, which completely overhauls the first edition, describes simple work practices to protect children and workers from lead exposure from work that disturbs lead-based paint. This is a HUD publication with substantive input received from EPA and CDC. The 80-page manual is designed to be used on the job at work sites. The text is supported by many illustrations. The Guide can be reproduced and distributed without prior permission from HUD or any other federal agency.
www.hud.gov/sites/documents/doc_11878.pdf

HUD contact: Kitt Rodkey, clyde.k.rodkey@hud.gov

**Healthy Homes Production Grants to Tribes and Tribal Agencies**

On September 6, 2018, HUD awarded more than $12 million in Healthy Homes Production grants to 13 tribes and tribal agencies to protect children and families from home health and safety hazards, such as airborne mold. The grant funding will target health hazards in 1,300 low-income homes with significant home health and safety hazards. The Healthy Homes Production grant program has a demonstrated history of success, filling critical needs in communities where no other resources exist to address substandard housing that threatens the health of the most vulnerable residents.
www.hud.gov/press/press_releases_media_advisories/HUD_No_18_099

HUD contact: Michelle Miller, michelle.m.miller@hud.gov

**Lead Hazard Reduction Grants with Healthy Homes Supplements to State and Local Governments**

On December 19, 2018, HUD awarded more than $139 million in 48 Lead Hazard Reduction Grants to state and local governments to protect children and families from lead-based paint hazards; 39 of those

grantees applied for and were awarded Healthy Homes Supplemental funding to address home health and safety hazards other than from lead-based paint, dust-lead or soil-lead. The grant funding will target hazards in 6,500 low-income homes with significant lead-based paint hazards and home health and safety hazards. HUD's lead hazard control grant programs have a demonstrated history of success, shown in over a dozen peer-reviewed papers from the National Evaluation of HUD's Lead Hazard Control Grant Programs. www.hud.gov/press/press_releases_media_advisories/HUD_No_18_149

HUD contact: Yolanda Brown, yolanda.r.brown@hud.gov

**Federal Lead Action Plan Published**

The *Federal Action Plan to Reduce Childhood Lead Exposures and Associated Health Impacts*, developed by the President's Task Force on Environmental Health Risks and Safety Risks to Children, was published on December 19, 2018. The Action Plan was rolled out by the HUD Secretary, EPA Acting Administrator, and HHS Deputy Administrator at a press conference. The Lead Action Plan is a blueprint for reducing lead exposure and associated harms by working with a range of stakeholders, including states, tribes and local communities, along with businesses, property owners and parents. Its four goals of the Action Plan are to:

- Reduce Children's Exposure to Lead Sources
- Identify Lead-Exposed Children and Improve their Health Outcomes
- Communicate More Effectively with Stakeholders
- Support and Conduct Critical Research to Inform Efforts to Reduce Lead Exposures and Related Health Risks

ptfceh.niehs.nih.gov/features/featured-resource/index.htm

Contacts: CDC: Adrienne Ettinger, abe7@cdc.gov; EPA: Michael Firestone, firestone.michael@epa.gov; HUD: Warren Friedman, warren.friedman@hud.gov.

**$2.2 Billion New York City (NYC) Funding for HUD-New York City Housing Authority (NYCHA) Mold, Lead, Pests, Elevators and Heat Settlement**

On January 31, HUD announced an agreement with NYC and NYCHA setting milestones to address the serious longstanding management, mold, lead, elevator, heat and vermin issues at NYCHA's public housing. For mold, the milestones include <15% repeat verified mold complaints in 12 months; <15% of verified mold complaints $\geq$10 ft$^2$; $\leq$3 mold appearances per year in a housing unit (but with a *de minimis* exception for small amounts of incidental mold growth [e.g., limited mildew on shower curtains, bathtub caulking]); $\geq$95% of verified mold complaints remediated $\leq$5 days, with written root cause plan sent to tenant; $\geq$95% of floods, leaks from above and other major moisture problems abated $\leq$24 hours with standing water removed $\leq$48 hours. The City committed $\geq$$2.2 billion through 2029 to address these issues. HUD will continue to fund to NYCHA with approximately $1.5 billion in fiscal year 2019. Control of NYCHA's day-to-day operations stays with it and the city but with a monitor in place and strong remedies immediately available to HUD and the U.S. District Court for the Southern District of New York to address any future failure to perform.
www.hud.gov/press/press_releases_media_advisories/HUD_No_19_004

HUD contact: Warren Friedman, warren.friedman@hud.gov

## Consumer Product Safety Commission (CPSC)

Agency point of contact: John Gordon, 301-987-2025, jgordon@cpsc.gov

Nano materials: (POC Joanna Matheson, 301.987.2564, jmatheson@cpsc.gov).

No new updates from the last update (delivered (2018-8-15). We continue to work on the projects with NIOSH, EPA and NIST, and will deliver these reports when they are ready for release.

Portable generator safety: (POC Janet Buyer, 301.987.2293, jbuyer@cpsc.gov).

No new updates from the last update (delivered (2018-8-15). We continue to work on the projects with a plan for evaluating the effectiveness of PGMA and UL voluntary standards.

Spray Polyurethane Foam (SPF) activities: (POC Adrienne Layton, 301.987.2590, alayton@cpsc.gov).

No new updates from the last update (delivered (2018-8-15). We continue to work on the projects with ASTM, and will deliver these reports when they are ready for release.

Mold Projects: (POC Eric Hooker, 301-987-2516, ehooker@cpsc.gov).

No new updates from the last update (delivered (2018-8-15). We continue to work on the projects with TERA, and will deliver these reports when they are ready for release.

Emerging Technologies/3D Printers: (POC Treye Thomas 301.987.2560, tthomas@cpsc.gov).

There are a couple of short updates since the last update (delivered (2018-8-15). We continue to work on the projects with 3D printers and will deliver these reports when they are ready for release.

There are devices that can be used by the public to determine the presence of chemicals in the indoor environment. The National Academy of Science held a workshop on “citizen scientists” using such devices. http://nas-sites.org/emergingscience/meetings/personal-environmental-exposure-measurements-making-sense-and-making-use-of-emerging-capabilities/

The beta version of an exposure tool is available. Developed through an interagency agreement with NIST and is based on the NIST CONTAM model. This exposure tool will predict exposure over time based on source strength.

Link: https://www.nist.gov/el/energy-and-environment-division-73200/nist-multizone-modeling