CIAQ
Federal Interagency
Committee on Indoor Air Quality

https://www.epa.gov/indoor-air-quality-iaq/federal-interagency-committee-indoor-air-quality

1301 Constitution Avenue, NW, Washington, DC 20005-4113

Minutes of the Wednesday, October 12th 2016 Webinar-Meeting

[The *next* CIAQ Webinar-meeting will be held on Wednesday, February 1st 2017]

Moderator: Laureen Burton (Burton.Laureen@epa.gov) **Duration: 208 minutes (3.5 hours)**
Attendance: 210 persons (400 registered) **Operator: Darla**

A-AGENDA

Welcome, introductions and announcements, *Moderator - Laureen Burton, IED-EPA*
Click here to opt-in and receive email updates about healthy indoor air.

Agency Updates on IAQ & IEQ activities
1-DOE-Department of Energy, Building Technologies Program, *Christopher Early*
2-NIST-National Institute of Standards and Technology, *Lisa Ng*
3-CPSC-Consumer Product Safety Commission, *Dr Joanna Matheson*
Q&A (on DOE, NIST and CPSC updates)

4-CDC-Centers for Disease Control (ONDIEH/NCEH), *Dr Ginger Chew*
5-HUD-Department of Housing and Urban Development
Office of Healthy Housing and Lead Hazard Control (OHHLHC), *Dr Peter Ashley*
Healthy Homes evaluator certification credential (HH training network), *Larry Zarker* (BPI)
6-EPA-Environmental Protection Agency
Air Pollution Prevention & Control Division (NC), NRMRL, *Gary Foley, Director*
Indoor Environments Division (IED), *Alisa Smith, Deputy Director*
Q&A (on CDC, HUD and EPA updates)

[See Section C (p.15) for details on accessing the presentations/audio recordings]

B-Updates on IAQ & IEQ activities from Federal CIAQ Member Agencies

1 - DOE, Department of Energy

(POC: Chris Early, chris.early@ee.doe.gov, 202-586-0514)

1.1-Building America Program – New Research Projects: The Energy Department recently made eight awards for about $5.5 million for research projects for industry partners to create healthier, more comfortable homes that will save homeowners money on their utility bills. http://energy.gov/eere/buildings/building-america-research-teams. Three of these awards are related to indoor air quality in homes:

1.1.1-Newport Partners (Davidsonville, Maryland) will develop a quiet "Smart" Range Hood that is five times more efficient than today's ENERGY STAR® models, captures nearly 100 percent of cooking pollutants, and is cost competitive with other kitchen range hoods currently on the market.

1.1.2-Steven Winter Associates, Inc. (Washington, DC) will demonstrate a ventilation integrated high-efficiency heat pump system that will provide balanced, distributed ventilation with heat recovery, reduce HVAC energy use by 400-800 kilowatts annually, and cost $1,000-$2,000 less than separate ducted systems.

1.1.3-Southface Energy Institute (Atlanta) will establish an IAQ scoring system for homes and assess the ability of a smart energy recovery ventilator to improve IAQ and comfort, while reducing the energy required for ventilation and dehumidification by 50 percent.

1.2-Current Projects by the Lawrence Berkeley National Laboratory for the DOE Residential Buildings Research Program. POC Brett Singer (bcsinger@lbl.gov) and Iain Walker: LBNL is conducting a broad collection of research aimed at improving both indoor air quality and energy efficiency of the US housing stock. A major focus is a project funded by DOE, HUD, EPA and other partners and collaborators on developing scientific guidance to for a health-based residential ventilation standard, a house IAQ scoring tool, standards and test procedures for kitchen range hoods, air filtration, combustion safety, and Smart Ventilation and Humidity control. DOE and LBNL continue to work with the committee responsible for Standard 62.2 on residential ventilation and IAQ.

The Department of Energy is considering, subject to fiscal year 2017 money being available, a project to be conducted by LBNL to conduct a baseline study of occupied new and existing homes. The study methodology and results will be shared with the ASHRAE Standard 62.2 committee, to help pave the way for future improvements to the standard. Expect a Notice of Intent and Funding Opportunity Announcement about it.

1.3-Recently Published Reports by LBNL for DOE and Other Organizations:

1.3.1. "*Development of a Tracer Gas Capture Efficiency Test Method for Residential Kitchen Ventilation*". Walker, Iain S., J. Chris Stratton, William W. Delp, and Max H. Sherman. February 2016. For DOE and HUD. http://eetd.lbl.gov/sites/all/files/iain_walker_-_development_of_a_tracer_gas_capture_efficiency_test_method_for_residential_kitchen_ventilation.pdf

1.3.2. "*Healthy Efficient New Gas Homes (HENGH) Pilot Test Results"*. Chan, Wanyu R., Randy L. Maddalena, J. Chris Stratton, Toshifumi Hotchi, Brett C. Singer, Iain S. Walker, and Max H. Sherman. May 2016. For DOE. http://eetd.lbl.gov/sites/all/files/1005818.pdf

The Healthy Efficient New Gas Homes (HENGH) is a field study that will collect data on ventilation systems and indoor air quality (IAQ) in new California homes that were built to 2008 Title 24 standards. Measurements will include mechanical ventilation system performance, indoor air contaminant concentrations, and other indoor environmental parameters. The collected data will be analyzed to evaluate IAQ in the sampled homes. It will also be used as input data for model simulations to determine how to provide adequate ventilation and acceptable IAQ while reducing air infiltration beyond the 2008 Title 24 standards. A pilot test was performed to help inform the most time and cost effective approaches to measuring IAQ in the 100 test homes that will be recruited for this study. Two occupied, single-family detached homes built to 2008 Title 24 participated in the pilot test.

1.3.3. "*Healthy Efficient New Gas Homes (HENGH) Field Study Protocol."* Chan, Wanyu R., Yang-Seon Kim, Brett C. Singer, Iain S. Walker, and Max H. Sherman. June 2016. For DOE and CEC. http://eetd.lbl.gov/sites/all/files/1005819.pdf. This field protocol describes the detail procedures for collecting indoor air quality, mechanical ventilation, and related parameters in 100 occupied California homes that were built to 2008 Title 24 standards.

1.3.4. "*Reducing Ultrafine Particle Emissions Using Air Injection in Wood-Burning Cookstoves*". Rapp, Vi H., Julien J. Caubel, Daniel Wilson, and Ashok J. Gadgil. June 2016. The Journal "*Environmental Science & Technology*". Using two new wood-burning cookstove designs from Lawrence Berkeley National Laboratory,

this research explores the effect of air injection on cooking performance, PM and gaseous emissions, and PM size distribution and number concentration.

2 – NIST, National Institute of Standards and Technology

2.1-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/.

The newest ones include: "Evaluating IAQ and Energy Impacts of Ventilation in a Net-Zero Energy House Using a Coupled Model", "Energy and Indoor Air Quality Benchmarking of the NIST NZERTF", and "Formaldehyde Concentrations in a Net-Zero Energy House: Real-time Monitoring and Simulation". Testing is on-going of the thermal comfort provided using a a small duct, high velocity distribution system as compared to a conventional air-to-air heat pump. Contact: Lisa Ng, 301-975-4853, lisa.ng@nist.gov.

2.2-Improving the Reliability of Product Emissions Testing: EPA has issued a rule limiting formaldehyde emissions from wood products. To support improved labeling of low-emitting products, NIST is developing a formaldehyde reference standard with known contaminant emissions profiles to ensure more accurate determination of product emission rates. The second generation prototype achieved a residual standard deviation of 1.5% for three different specimens. A third generation prototype formaldehyde reference material has been designed and constructed, and is currently being tested. The third generation prototype will be used in an inter-lab comparison study in 2017. Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov.

2.3-ASHRAE Standard 62.2: The committee responsible for Standard 62.2 on residential ventilation and IAQ will meet in January in Las Vegas to work on proposed changes that may be included in the 2019 version of the standard. Topics being addressed include filtration credit for reducing ventilation rates, changes to multifamily housing requirements, kitchen hood capture efficiency, ventilation requirements for use of unvented combustion heaters, and ventilation distribution credit. Contact: Steven Emmerich, 301 975-6459, steven.emmerich@nist.gov.

2.4-ASHRAE Position Documents: The IAQ Position Document Committee will meet in January in Las Vegas as they continue to work on updating that document. A focus of the document is discussion of factors that inhibit that provision of better IAQ. The new version of the Position Document is expected to be published in 2017. Contact: Steven Emmerich, 301 975-6459, steven.emmerich@nist.gov.

ASHRAE has initiated a revision of its Position Document on Environmental Tobacco Smoke, which is expected to be approved and published in early 2017. Contact: Andrew Persily, 301-975-6418, andyp@nist.gov.

2.5-ASHRAE IAQ 2016: ASHRAE held its triennial indoor air quality conference with the theme Defining Indoor Air Quality: Policy, Standards and Best Practice. The conference provided a unique opportunity for dialog among attendees to facilitate understanding of current indoor air quality policies, standards and best practices with themes such as regulatory vs. voluntary compliance for achieving IAQ, the role of IAQ in sustainable building programs and the relationship between IAQ and IEQ, etc. Of particular note, the conference included a workshop on IAQ metrics with participants from Lawrence Berkeley Laboratory, NIST

and EPA. For more information on the conference, visit www.ashrae.org/iaq2016. Contact: Steven Emmerich: 301 975-6459, steven.emmerich@nist.gov.

2.6-ASHRAE Standard 189.1: The committee responsible for ASHRAE/USGBC/IES SSPC 189.1, Standard for High-Performance Green Buildings Except Low-Rise Residential Buildings, is actively developing revisions that will be reflected in the 2017 version of the standard, which was last published in 2014. The committee last met face-to-face in late June in St Louis, is holding monthly web meetings and will meet again in person in Las Vegas in late January/early February. In the area of indoor environmental quality, revisions that are being processed for incorporation into the standard 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, glare control and improved views.

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: Andy Persily, 301-975-6418, andyp@nist.gov.

2.7-ASHRAE *Green Guide*: The committee responsible for the *Green Guide* is currently making revisions for Edition V to be published January 2018. NIST is taking the lead on revising the IAQ Chapter. Anyone interested in contributing to the revisions can contact Lisa Ng, 301-975-4853, lisa.ng@nist.gov.

2.8-ASTM: D22.05 Subcommittee on Indoor Air. The ASTM D22.05 Subcommittee on Indoor Air is working to finalize WK40293 Estimating Chemical Emissions from Spray Polyurethane Foam (SPF) Insulation using Micro-Scale Environmental Test Chambers and to develop a model for emissions from SPF. There are three remaining challenges to complete the standard: 1) how to conduct temperature measurements, 2) what chemicals should the method cover, 3) how to produce quality assurance data for those chemicals. Recent NIST efforts to support this work item include determining the accuracy of various temperature testing protocols. Contact: Dustin Poppendieck, 301-975-8423, dustin.popendieck@nist.gov.

3-CPSC, Consumer Product Safety Commission

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

3.1-Nano material studies: Interagency activities with NIOSH continue including evaluation of nano silver in consumer products and additives for wood and wood coatings. Similarly, interagency activities with the EPA continue on evaluating nanomaterial release from engineered nanomaterial (ENM) surface coatings applied to outdoor/outdoor surfaces for protecting and preserving outdoor surfaces. Aging effects will also be analyzed.

Interagency work at NIST continues on quantifying nanomaterial release from various matrices in the indoor environment, distinguishing engineered nanoparticles from those produced incidentally, and expanding indoor air models (e.g., CONTAM) to predict airborne exposures to nanoparticles in occupied buildings associated with release from consumer products used indoors. This work will document protocols to characterize nanoparticles released from surface coatings associated with flooring finishes, interior paints, and similar products. (POC Treye Thomas, 301.987.2560, tthomas@cpsc.gov; Joanna Matheson, 301.987.2564, jmatheson@cpsc.gov).

3.2-Portable generator safety: CPSC staff provided a briefing package to the Commission recommending a notice of proposed rulemaking (NPR) to address the carbon monoxide (CO) poisoning hazard associated with portable generators; download the NPR here: https://www.cpsc.gov/s3fs-public/Proposed_Rule_Safety_Standard_for_Portable_Generators_October_5_2016.pdf

As a recap from the last couple of CIAQ meetings, in January 2014 staff sent a letter to Underwriters Laboratories Inc. (UL) with a request for the formation of a task group and recommendations for requirements to address the CO hazard that could be used as a starting point for the task group to develop into specific proposals for the voluntary standard UL 2201, *Portable Engine-Generator* Assemblies. UL solicited for volunteers and formed the task group in April 2014.

The group has held 23 teleconferences to date and is making significant progress in developing an improved test method, relative to the one recommended in the letter, for measuring engine CO emission rates that would be used to verify compliance to a requirement that limits the CO emission rate from portable generators. In parallel with staff's work on the task group, CPSC staff is in the process of developing a draft notice of proposed rulemaking for the Commission's consideration in FY16. For more information, contact Janet Buyer, 301.987.2293, jbuyer@cpsc.gov).

Note: *The link to the portable generator NPR package (below) is apparently not working right now and CPSC is unsure that it will be working in the future. Consequently, the best way to find the NPR package on the CPSC website is to do the following: Go to* ***cpsc.gov****, click on* ***Newsroom****, click on* ***FOIA****, click on* ***Commission Briefing Packages*** *(on right side of screen), then find the package in the list.*

3.3-Spray Polyurethane Foam (SPF) activities: Under the ASTM Air Quality/Indoor Air (D22.05) subcommittee, CPSC has been involved in providing technical support for the development of voluntary standards to test for chemical emissions from SPF insulation. ASTM Work items WK40293, WK51588 and WK52052 focus on measuring or modeling emissions from SPF products using micro-scale environmental test chambers, a large-scale spray booth, or computer models.

CPSC contracted with Versar, Inc to produce a toxicological profile of select amine catalysts commonly found in SPF (http://www.cpsc.gov/PageFiles/129845/amine.pdf). Information from this report suggests that amine emissions may be the cause of these long term health effects. An interagency agreement (IAG) was signed with NIST to conduct chamber testing of SPF samples. The IAG has helped to develop methods that will characterize and quantify releases of amines and other compounds to aid in ASTM standard development. CPSC has also initiated a state only-CPSC working group on SPF. State agencies please contact Melanie Biggs if interested in participating. (POC Treye Thomas, 301.987.2560, tthomas@cpsc.gov; Melanie Biggs, 301.987.2593, mbiggs@cpsc.gov).

3.4-Mold Review: CPSC contracted with TERA to perform a review on the health risks of common mold species likely to be found in and around the home. Two reports, "Review of the Health Risks of Mold, Basic Mold Characteristics" and "Review of the Health Risk of Mold, Health Effects of Molds and Mycotoxins" can be found online at: http://www.cpsc.gov/en/Research--Statistics/Chemicals/Mold/ (POC Melanie Biggs, 301.987.2593, mbiggs@cpsc.gov).

3.5-NSF/UL 440 – Health-based VOC Emissions Standard (Voluntary) for Building Products and Interior Furnishings: CPSC staff had been providing technical assistance on a monthly basis to both the Toxicology and Environments/Products task groups. There hasn't been new activity with these task groups since draft proposal language was distributed and some of the proposals were approved to be balloted by the Joint Committee. The proposals cover chemical VOCs and toxicology endpoints, modeling scenarios and associated parameters, and other topics of interest. CPSC staff submitted comments regarding proposed revisions to the ANSI A208.1 (medium density fiberboard) and ANSI A208.2 (particleboard) standards. (POC Kent Carlson, 301.987.2578, kcarlson@cpsc.gov).

3.6-Formaldehyde (FA) Activities: CPSC staff participated in a UL-sponsored roundtable discussion of FA toxicology, airborne FA in residential settings, and resultant consumer uncertainty and concern. Following the discussion, UL identified next steps including the summarization of all available standards for FA and identification of standards gaps, evaluating and conducting research to further define the link from product emissions to air concentration, identification an review of acute/chronic exposure guidelines based on FA irritancy, summarizing current literature on FA in homes, identifying primary sources and modifiers of FA in the home, evaluating different consumer FA measurement devices, and evaluating different methods to relay FA-related information to consumers. (POC Kent Carlson, 301.987.2578, kcarlson@cpsc.gov).

3.7-Emerging Technologies/3D Printers: CPSC Staff is interested in consumer 3D printing and potential air contaminant (VOC and particle) release. Staff has reviewed publications with 3D printer emission data and estimated preliminary risk from exposure to emitted VOCs in order to determine potential health and safety issues to consumers. Staff has also recently participated in an ANSI/America Makes conference to identify current voluntary or other standards and standard gaps for additive manufacturing (3D printing). Federal agencies interested in sharing information should contact CPSC (POC Treye Thomas 301.987.2560, tthomas@cpsc.gov, Kent Carlson, 301.987.2578, kcarlson@cpsc.gov).

4 – CDC, Centers for Disease Control and Prevention/(NCEH)

(POC: Dr Ginger Chew, gjc0@cdc.gov)

Home Assessment Questionnaire: For the February 2016 CIAQ meeting, Ginger Chew, reported on a home assessment tool in development: "*CDC developed a Home Assessment Questionnaire that is focused in indoor asthma triggers. Right now, we're working on bulleted action steps that can be cross-cutting across the entire country, but it's a difficult task. Plus, some of the recommendations for some indoor asthma triggers (washing sheets in hot water) have changed, so we intend to work with EPA and HUD to see if we can harmonize messages across agencies and co-brand a document which is based upon the EPA checklist action steps.*"

In March 2016, a group of staff from EPA, HUD, and CDC (Laura Kolb, Tracey Mitchell, Sarany Singer, Peter Ashley, Gene Pinzer, and Ginger Chew) began discussions to harmonize our agencies' action steps for the Home Assessment Questionnaire. In April 2016, the group began bi-weekly conference calls to address each major asthma trigger in the home. We presented background literature for the use of questions (including evidence for positive and negative predictive values with exposure and health outcomes. Many of the updated action steps are from the recently-published Joint Task Force (AAAAI & ACAAI) Practice Parameters.

We reviewed each agency's website to compare current action steps for asthma trigger reduction. Then, we harmonized our messages for action steps to be included in the new Home Assessment Questionnaire. As of September, most action steps have been harmonized by the subject matter experts, and we have a current mock-up of the updated Home Assessment Questionnaire which will be reviewed by health communicators to ensure plain language.

5 – HUD, Office of Healthy Homes and Lead Hazard Control (OHHLHC)

5.1-Healthy Homes Technical Studies Grant Awards: On 9/27/16, HUD announced the award of approximately $3.3 million in Healthy Homes Technical Studies Program grants to improve methods for detecting and mitigating residential health and safety hazards. Five grants were awarded (see abstracts below):

5.1.1-Illinois Institute of Technology was awarded $699,611 to investigate the effectiveness of three approaches to residential mechanical ventilation systems in existing homes in reducing indoor air pollutants, maintaining environmental conditions and ventilation rates, and improving asthma health outcomes. They will also evaluate the impacts on building energy use and the costs of installation and operation in assessing the costs and benefits of using the different systems. Forty-five (45) low-income households in Chicago, IL with at least one asthmatic resident will be recruited for participation in the 3-year study. There will be four weeklong periods of data collection for approximately one year before installation, followed by four weeklong periods approximately one year after the installation. The team will administer standardized asthma outcome questionnaires to residents every 2 months throughout the duration of the study, for a total of 12 months of asthma outcome data collected over the course of two years.
HUD POC: Gene Pinzer, Eugene.A.Pinzer@hud.gov

5.1.2-The University of Massachusetts Lowell was awarded $700,000 to conduct a 3-year study assessing the sustainability of health outcomes and home environment improvements following initial healthy homes educational/behavioral and environmental interventions among children and elders with asthma. The study uses cohorts living in public or subsidized housing to conduct a follow-up round of health and environmental trigger assessments with 100 children and 50 elders with asthma, 2-6 years after the original intervention. The study will evaluate whether an additional intervention by community health workers creates added benefit, improving the sustainability of asthma health indicators and environmental trigger behaviors. HUD POC: Chris Trent, Chris.B.Trent@hud.gov

5.1.3-The Trustees of Columbia University in the City of New York was awarded $700,000 to conduct a 3-year study to develop resident-focused methods to improve the level of compliance with existing smoke-free policies in low income multiunit housing in New York City. The study will employ a Harm Reduction, Building Ambassadors and Resident Engagement model of smoke-free housing policy compliance and enforcement. The research team will also track environmental exposures and health outcomes among residents and compare them at two time points. Results are expected to improve the evidence base for the efficacy of smoke-free policy compliance with an aim to develop and disseminate tools and resources to maximize successful policy implementation in affordable housing settings.
HUD POC: Rachel Riley, Rachel.M.Riley@hud.gov

5.1.4-The University of Tulsa was awarded $699,958 to conduct a study to develop a technically-defensible and economically practical tool for defining the dampness-associated fungal contribution to a building's fungal ecology. Specific objectives include the following: (1) Conduct an extensive, nation-wide field campaign to sample fungi in water damaged and non-water damaged homes; and (2) Leverage this nationwide fungal ecology data to produce indices that quantitatively define the contributions of dampness-associated fungi in U.S. homes. The results will be used to develop indices based on fungal DNA analyses that can be used to identify homes with abnormal patterns (i.e., indicative of mold problems) and to confirm the effectiveness of remediation to mitigate mold and moisture problems. HUD POC: Kofi Berko, J.Kofi.Berko@hud.gov

5.1.5-Eastern Virginia Medical School was awarded $504,592 to conduct a 3-year study of the implementation of a smoke-free housing (SFH) policy implemented in multiunit public housing administered by the Norfolk Redevelopment and Housing Authority. Data will be collected through longitudinal surveying of residents, focus groups, and environmental sampling, and will address the following issues: the impact of the policy on indoor air quality; the impact of SFH policy on smoking behaviors and use alternative tobacco products (e.g., e-cigarettes), and resident knowledge and attitudes

regarding the policy. The study will employ community health workers who are recruited from the resident population. HUD POC: Rachel Riley, Rachel.M.Riley@hud.gov

5.2-Building Performance Institute's Healthy Homes Evaluator Credential: On 10/3/16 the Building Performance Institute (BPI) announced the launch of a Healthy Home Evaluator (HHE) certification for BPI-certified professionals. This certification will provide these professionals with the skills to conduct assessments in homes to determine conditions that may adversely affect occupant health and safety. The OLHCHH supported the development of a study course for the certification through a contract with Healthy Homes Solutions, Inc. HUD POC: Rachel Riley, Rachel.M.Riley@hud.gov

6 – EPA, Environmental Protection Agency, Indoor Environments Division (IED)

6.1-SCIENCE. National Academies of Sciences, Engineering and Medicine (NASEM)
6.1.1-Environmental chemical interactions with the human microbiome. IED is pleased to be a co-sponsor of the new NASEM study, *Advancing Understanding of the Implications of Environmental-Chemical Interactions with the Human Microbiomes*, which kicked off in September of 2016. For more information visit: http://www8.nationalacademies.org/cp/projectview.aspx?key=49795.

EPA & the National Institute of Environmental Health Sciences **(**NIEHS) have tasked the National Academies of Sciences, Engineering, and Medicine (NASEM) to complete a two-year study to look at environmental chemical interactions with the human microbiome. The committee will - *develop a research strategy to better understand the interactions between environmental chemicals and human microbiomes, including the intestinal, skin, and lung microbiomes, and the implications of those interactions on human health risk. The committee will assess the state of the science regarding the health implications of chemical metabolism by microbiota and chemical exposure on microbiota diversity and function.*

6.1.2-Microbiomes of the Built Environment: From Research to Application. To better understand microbiomes in the built environment and their impacts on human health, the US Environmental Protection Agency along with the National Aeronautics and Space Administration, the National Institutes of Health and the Alfred P. Sloan Foundation tasked the US National Academies of Sciences, Engineering, and Medicine (NAS) to convene a panel of experts to examine the formation and function of microbial communities in the built environment, their impact on human health, and how human occupants shape complex indoor microbes. The 3rd public meeting of the study panel will be held on October 17-18, 2016 at the Beckman Center at the University of California, Irvine. More information on the study including updates and links to recordings and presentations from all meetings see http://nas-sites.org/builtmicrobiome. The final consensus report is expected to be released in 2017.

6.1.3-Workshop on the Health Risks of Indoor Exposures to Particulate Matter (PM). This workshop was sponsored by EPA's Indoor Environments Division to obtain an independent assessment of the health risks of indoor exposures to PM, via a workshop of experts convened by NASEM. The workshop was held as NASEM facilities in Washington DC on February 10-11, 2016, and included 18 expert speakers, five planning committee members, and about 30 additional on-site attendees. The workshop was also broadcast via webinar with over 400 webinar connections in 12 countries, 38 U.S. states and Washington DC. A workshop summary report has been published by NASEM and can be downloaded for free at https://www.nas.edu/hmd/Reports/2016/health-risks-of-indoor-exposure-to-particulate-matter-ws.aspx. Presentations and video recordings from the workshop are also posted at the NASEM web site, www.nationalacademies.org/hmd/Activities/PublicHealth/Health-Risks-Indoor-Exposure-ParticulateMatter/2016-FEB-10.aspx.

6.2-SCHOOLS. Healthy School Indoor Environments: EPA's Healthy School Indoor Environments continues to drive action with school districts on institutionalizing a comprehensive indoor air quality management program in their schools. Part of these efforts include the following:

- IED's Schools Program recent participation in meetings with the federal members of the National Coordinating Committee on School Health and Safety (NCCSHS) including the Department of Education (ED), Centers for Disease Control (CDC) and Department of Housing and Urban Development (HUD) where outcomes included IED's Indoor Air Quality Tools for Schools (IAQ TfS) tools, resources and guidance will be included as part of the comprehensive set of regulations, guidance and technical assistance ED is developing to support implementation of the new Every Student Succeeds Act (ESSA) by 2017-2018. The collaboration provides a great opportunity to ensure that ED's work will now include guidance and other tools to support improving IAQ in schools and elevate the connection between student health, learning and the school physical environment.

- IED's Schools Team has also been focusing our attention on accelerating action on our tools and guidance including the following:

- IAQ Master Class Webinar Series. The 10-part training series which provides schools with the latest knowledge on maintaining a healthy school indoor environment. View the entire IAQ Master Class Professional Webinars series "on demand" at http://www.epa.gov/iaq-schools/indoor-air-quality-schools-master-class-webinar-series. Share this information with your networks and contacts and encourage them to view the "on demand" IAQ Master Class Professional Webinars and gain recognition.

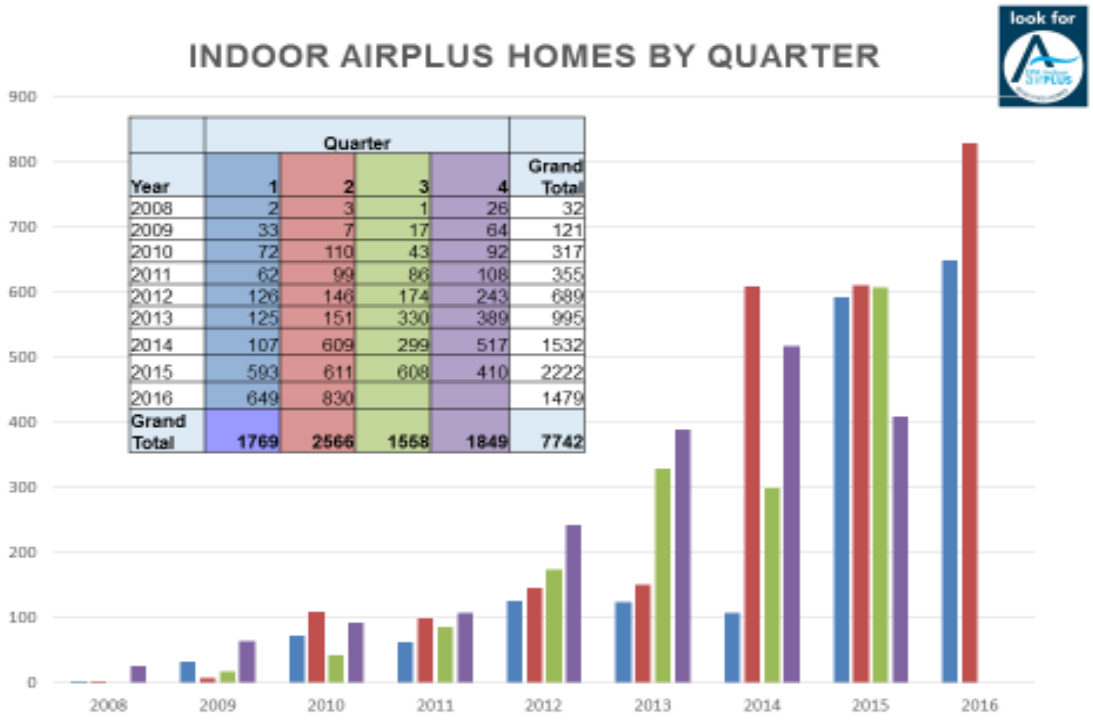
- IAQ Knowledge to Action Professional Training Webinar Series. The next phase of IED Schools Team training series includes a 4-part webinar series that demonstrates how to translate the knowledge gained in the IAQ Master Class Professional Training Webinar Series into action to improve or sustain an IAQ management program within schools or school districts. Participants attending the last webinar entitled, *Mold, Moisture and Money: How to Secure Funding to Address and Prevent IAQ Issues,* taking place on Thursday, October 20th at 1:00 pm ET will learn how to secure sustainable funding for IAQ/moisture management, including how to develop short- and long-term goals and implement evaluation methods to capture return on investment. The webinar will again highlight EPA resources—including the *IAQ Tools for Schools (TfS)* Framework, the School IAQ Assessment Mobile App, and the *IAQ Tools for Schools* Action Kit. Take advantage of this comprehensive training series and register for the latest webinar today at https://attendee.gotowebinar.com/register/8292144338493928708

POC: Michele Curreri (curreri.michele@epa.gov)

6.3-Indoor airPLUS Label (IAP)

- IED's Indoor airPLUS program has added over 200 new builder partners in the last four (4) Quarters and the second Quarter of 2016 was the program's best yet for new homes that qualified for the Indoor airPLUS label.
- The IAP program continues to develop new program resources, including recorded webinars, easy-to-use resources for locating low-emission products that comply with the Indoor airPLUS specifications and training materials to help builders convey the value of Indoor airPLUS to prospective home buyers. The program also works closely with DOE's Zero Energy Ready Home

program, which incorporates Indoor airPLUS as a prerequisite, as well as EPA's ENERGY STAR Certified Home and WaterSense programs to communicate the value of adopting these government-backed labels for new homes. Indoor airPLUS resources can be found at: https://www.epa.gov/indoorairplus.



	Quarter				
Year	1	2	3	4	Grand Total
2008	2	3	1	26	32
2009	33	7	17	64	121
2010	72	110	43	92	317
2011	62	99	86	108	355
2012	126	146	174	243	689
2013	125	151	330	389	995
2014	107	609	299	517	1532
2015	593	611	608	410	2222
2016	649	830			1479
Grand Total	1769	2566	1558	1849	7742

POC: Michele Curreri at curreri.michele@epa.gov

6.4-RADON

6.4.1-National Radon Action Plan: IED continues to team with the American Lung Association and working with a group of NGOs and industry representatives to transition the Federal Radon Action Plan to focus on actions that go beyond federal governmental actions alone. We announced this effort during a co-authored blog posting on the Huffington Post by EPA Administrator McCarthy and the president of the American Lung Association, Harold Wimmer earlier this year.

The National Radon Action Plan 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. Our 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.

We believe that by using simple and proven technologies, we can eliminate avoidable radon-induced lung cancers. We need to apply those technologies as standard practice and we will, over time, reduce radon risk across the U.S. building stock.

The NRAP has four key prongs:
1. Build in radon risk reduction
2. Provide incentives and support
3. Build capacity to test and mitigate using professional radon services
4. Increase visibility for the radon issue

The NRAP generally targets strategies aimed at institutionalizing radon risk reduction & increasing direct support and incentives to support it.

6.4.2-Federal Radon Action Plan: FRAP launched in 2011 (closed-out this February): Nine agencies committed to actions they could take within existing resources and program capacities to (1) demonstrate importance and value of radon risk reduction (2) provide incentives and (3) build demand for testing and mitigation.

FRAP generated 29 new commitments that reached an estimated 1.6 homes, schools and childcare centers. The most important policy change was a new requirement for radon testing and mitigation for HUD's Multifamily Housing Insurance Programs; has already resulted directly in 200K+ tests and fixes (when necessary) and significant carryover effect on the rest of the real estate market.

It spurred a national ramp-up in radon risk reduction - 2013 and 2014 saw the highest rates of total radon mitigation and new construction ever recorded in the U.S. and served as a springboard to more strategic national action – the National Radon Action Plan – launched this past November.

6.4.3-Radon Credentialing: As part of our role to support state programs and help ensure an effective radon industry, we've informed stakeholders that we will explore renewing our role in ensuring proficiency of radon service providers. We are currently mapping out an approach/process, but believe we will focus on best practices for accrediting credentialing bodies. EPA staff have been discussing options with internal and external groups, including ANSI. Currently providers are certified through state licensing process or by NRPP or NRSB, the two credentialing bodies currently recognized by EPA.

6.4.4-Improved website for radon: Please be sure to check out our revised radon web page, including a section on radon-related standards of practice. In response to stakeholder input, we improved the design of our radon webpage to more clearly delineate between current standards of practice and older, more outdated EPA guidance. The current standards are products developed through private, consensus-based processes and available through ANSI and the American Association of Radon Scientists and Technologists. EPA participates in these processes. A number of new standards are available, covering testing and mitigation practices in single and multifamily homes and schools, as well as new construction techniques. To view the pages, go to the 'publications and resources' section of epa.gov/radon. POC: Jani Palmer (Palmer.Janise@epa.gov)

6.5-ASTHMA

6.5.1-The asthma program, in support of promoting the sustainable financing for in-home asthma inventions, continues to collaborate in a series of local meetings supported by the HUD. Along with partners from HHS and CDC, EPA's Region 5 held the Great Lakes Regional Asthma Summit on June 8-9, in Chicago, IL. This interactive summit convened stakeholders from Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. The group representing public health, housing, environmental protection, and healthcare

financing shared best practices for managing home-asthma care and costs, and explored viable sustainable financing options in the region.

6.5.2-Just last month, on September 13, the North Carolina Forum on Sustainable In-Home Asthma Management was the ninth summit which brought together a wide variety of participants from across North Carolina and neighboring states. The Forum was designed to meet the following desired outcomes:

- Understand the health benefits and cost-effectiveness of in-home education, environmental assessments and interventions, especially for children with poorly controlled asthma;
- Gain knowledge about successful evidence based in-home assessment models with varied capacity;
- Develop strategies to engage critical stakeholders;
- Leverage the evidence and business cases necessary to secure sustainable financing.

Materials from these and other summits are available on EPA's Asthma Community Network website: www.asthmacommunitynetwork.org/resources/conferences

6.5.3-The Asthma Disparities Working Group met in September for their quarterly meeting where Federal agencies have the opportunity to connect with one another and to expand cross-Agency collaborations.

6.5.4-Also, in our continued efforts to engage with health plans in order to support the delivery, infrastructure and/or sustainable financing of environmental asthma interventions in homes, EPA and America's Health Insurance Plans (AHIP) hosted a *very popular webinar entitled: Collaborating for Better Care: Strategies for Successful Partnerships Between Health Plans and Asthma Programs*, on September 27. The webinar had 449 participants, making it one of the most well-attended asthma webinars to date. Health Care Service Corporation, a multi-state health plan, and the American Lung Association of the Upper Midwest, described how partnering to implement community-based, environmental interventions resulted in significant reductions in ED visits and hospitalizations for children and adults with asthma.

6.5.5-In addition, coming up on October 27, OAR Acting Asst. Administrator, Janet McCabe, will provide opening remarks at the second day of the AHIP National Medicaid Conference being held here in Washington, DC. Janet will discuss the "Important Role Medicaid Health Plans Play in Asthma Prevention."

6.5.6-On October 11-12, the Indoor Environments Division participated in an NCHH-sponsored meeting to advance healthcare financing of home-based asthma services. In recent years, there has been a sustained, and now growing, interest among healthcare payers to address social determinants of health as a means of curbing costs and improving patient outcomes. NCHH gathered key partners, leaders, and experts to reflect on the current landscape of healthcare financing of home-based asthma services and draft a model benefit package that describes the scope, staffing, and services associated with healthcare coverage of these services.

6.5.7-EPA's asthma program remains committed to providing access to technical assistance, best practices and resources through www.asthmacommunitynetwork.org. We encourage you to join today, if you are not already a member, and engage with over 3400 stakeholders through this platform as well as to share your expertise. POC: Tracey Mitchell (Mitchell.Tracey@epa.gov)

6.6-Second-hand Smoke (SHS): EPA continues its effort to promote smoke-free multi-unit housing, including our inter-agency activities with respect to the pending smoke-free public housing rule. We participated in the recent national conference of resident leaders (NAR-SAAH-National Alliance of Resident Services in Affordable and Assisted Housing) and also the national conference of federally assisted and public housing authority officials (NAHRO-National Association of Housing and Redevelopment Officials). We are working with our regions, partners and networks to provide technical assistance to public housing authorities and are exploring other opportunities to advance smoke-free environments in other low-income and affordable multi-unit housing.
POC: Alison Freeman (Freeman.Alison@epa.gov)

6.7-TRIBES

IED is continuing to carry forward its *Federal Tribal IAQ Healthy Homes Collaboration (FTC)*; the FTC was developed in support of ORIA's 2013 IAQ Tribal Strategy. IED has been collaborating with Tribal stakeholders and several Federal agencies to promote improved IAQ in Tribal housing and communities.
*HUD's - Office of Native American Programs (ONAP);
*Indian Health Service (IHS);
*Health& Human Services (HHS), LIHEAP
*Department of Agriculture, Rural Housing Program

The FTC is taking a two-pronged approach to collaborating on federal funding activities:
1. Promoting collaboration across Federal agencies to include IAQ in Federal Tribal grant programs and others.
2. Building Tribal capacity to access Federal programs and carry out effective IAQ interventions.

Upcoming and Recent activities include:
- **Webinar:** On October 18th the Indoor Environments Division (IED) and the Institute of Tribal Environmental Professionals (ITEP) will host the first healthy homes webinar of the fiscal year.

Preparing for FY17 Tribal Housing Funding Opportunities
Tuesday, October 18, 2016, from 11:30 AM to 2:30 PM EDT.

https://attendee.gotowebinar.com/register/3930531246212488451.
You will receive a confirmation email with information about joining the webinar.

Objective: Learn about innovative, green, and sustainable building design and projects from tribal building experts. Learn how to be effective in gaining support from your Tribal Council and Tribal members. Also, participants will hear from key federal tribal housing grant program coordinators about how to prepare for upcoming fiscal year 2017 opportunities in Federal Tribal Housing funding.

Intended Audience: Healthy Housing, Public Health and Tribal Environmental, professionals, interested in IAQ measures to improve tribal housing.

- **Office of Research and Development (ORD) Tribal IAQ Research Grants:** On Sep. 20-21, 2016, IED co-led sessions with EPA's Office of Research and Development's (ORD), Science to Achieve Results (STAR) grant recipients. Grantees shared two current IAQ Tribal research efforts:

(1) Assessing tribal children's elevated asthma levels from home to school (Univ. of Tulsa);

(2) Monitor indoor smoke exposure at seasonal hunting cabins (Univ. of Mass-Amherst).

Future planned Tribal IAQ related research efforts will assess potential indoor pollutants of (45) Day Care Centers in the Pacific NW. IED and ORD anticipate these efforts will yield positive results.

- Recruited as a partner Agriculture's Rural Housing Division, with an annual budget of $1B for Tribal housing, including a $29M Housing Repair Loan/Grant program.

- Coordinated the "first" IAQ plenary session at the National Tribal Forum's (NTF) in May, along with six IAQ training sessions for tribal members.

- IED contributed to several deliverables produced by the IAQ Workgroup of the National Tribal Air Association (NTAA), including: the NTAA/National Tribal Forum and listening sessions; the first and second *IAQ Needs Assessment in Indian Country* reports; and the NTAA Executive Committee meeting of August 2016. POC: Chris Griffin (Griffin.Chris@epa.gov)

C – Presentations. Our thanks and appreciation to the three presenters for sharing their findings/presentations:

(1) Healthy Homes Evaluator Certification credential (HH training network), by *Larry Zarker* (BPI). Given as part of the HUD-Department of Housing and Urban Development update, Available as an audio file under the link below for "Agency-audio".

(2) Towards Healthy Schools: Reducing Risks to Children", by Claire Barnett, Executive Director, Healthy Schools Network (HSN). Ms Barnett presented on the 4th triennial state of the states' data and policy report, researched and published by HSN, and its state and national partners. This report finds fewer public schools and more children enrolled in those schools; more children with asthma and with special education needs; and fewer dollars and fewer staff in schools -- a combination which will result in more problems in children's attendance and ability to learn. New information on climate and schools, "fence line" schools, and new research indicating the lack of public health services for children at risk or with exposures is also presented. Also noted: Healthy People 2020 findings of a decline in reported activities in school IAQ, IPM, chemical management, and water quality.

and,

(3) Well Living Lab (Rochester, MN), by Dr Nicholas Clements, a Director of Delos Labs. Dr Clements presented on the collaborative research facility known as the Well Living Lab, which is dedicated to investigating how indoor environmental quality impacts occupant health and wellness by utilizing six reconfigurable modules to create a variety of indoor space-types. Pilot studies to explore potential future research that incorporate O3, PM and VOC measurements were briefly discussed.

The audio recording for all three presentations can be found/heard here:
https://youtu.be/taXNwdCRDlA

The audio file is also available for download from an FTP site:
1. Click Here to access the FTP Site.
2. Log-in using the following: User: **scgviduser**, and Password: **scg810!**

To access the files, open the folder named **CIAQ Oct 2016**

The video files are labeled as "**Presentations**" and "**Agency**".
The audio file links are these:

http://www.scgcorp.com/IED/EPA_CIAQ_October_12_2016-Agency-Audio.mp3

http://www.scgcorp.com/IED/EPA_CIAQ_October_12_2016-Presentations-Audio.mp3

Download the files for your use. Some files are larger than others. Please allow ample time to download.

Send your presentation proposals to: CIAQ@epa.gov.

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