

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

Minutes of the Wednesday, June 8th 2016 Webinar-Meeting

[The *next* CIAQ Webinar-Meeting will be held on Wednesday, *October 12th* 2016]

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Moderator: Philip Jalbert

Attendance: 153 persons (Registered: 235)

Duration: 207 minutes (3hr, 27m)

Teleconference operator: Melissa

A-Agenda

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

C-Presentations and Guest Update

A-Agenda

Welcome, introductions and announcements, *Phil Jalbert, EPA*

* **E-cigarettes regulated:** On May 5th the FDA issued a news release about its final rule extending its authority to all tobacco products, including e-cigarettes, cigars, hookah and pipe tobacco. The rule implements the bipartisan *Family Smoking Prevention and Tobacco Control Act of 2009*. See the full news release here: <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm499234.htm>.

* **Indoor Environmental Quality: Exposures and Occupant Health;** a special issue of the International Journal of Environmental Research and Public Health (IJERPH). See the special issue here: http://www.mdpi.com/journal/ijerph/special_issues/exposures-occupant-health.

Agency Updates on IAQ and IEQ activities

1-DOE-Department of Energy, Building Technologies Program, *Chris Early*

2-NIST-National Institute of Standards and Technology, *Dr 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-NIOSH-National Institute for Occupational Safety and Health, *Dr Ju-Hyeong Park*

6-EPA-Environmental Protection Agency, Indoor Environments Division (IED), *David Rowson, Director*

Q&A (on CDC, NIOSH and EPA updates)

[See section C (p.15) for details on accessing the presentation audio recordings.]

Presentations and Guest Update:

Guest Update: *National IAQ Needs Assessment for Indian Country*, by Andy Bessler, National Tribal Air Association (NTAA) Project Director, Institute for Tribal Environmental Professionals (ITEP), N. Arizona University, Flagstaff, AZ.

Presentation: "Smoke-free: Clearing the Air in Public Housing". Dr Brian King, Deputy Director for Research Translation in the CDC's Office on Smoking and Health (OSH) will give a brief introduction. Dr Douglas Levy will give the presentation; Dr Levy is an Assistant Professor of Medicine, Harvard Medical School (Boston, MA). Second-hand smoke causes lung cancer, heart disease, and stroke in adults and exacerbates asthma in children. Dr Levy will discuss the results of his research regarding the Boston Housing Authority's 2012 adoption of a smoke-free policy, and the changes in indoor air quality and the impact on occupants/residents.

Presentation: “IAQ and Green Building Alliance (GBA)/Pittsburgh 2030 District”. Dr Melissa Bilec (right), LEED AP, Deputy Director, Mascaro Center for Sustainable Innovation, U. Pittsburgh, and Dr Anna Siefken (left), VP Strategic Engagement, Green Building Alliance. The presentation will review efforts to establish an IAQ baseline for individual buildings, the impacts of energy reductions on IAQ, and efforts to develop a scalable IAQ protocol.

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 - Small Business-Led Building Technology Projects: The Department of Energy (DOE) recently announced nearly \$2 million for 13 new building technology projects led by small businesses with a strong potential for commercialization and job creation. These awards are for \$150,000 each and will help small businesses with promising ideas to boost the efficiency of buildings. These four businesses were selected to develop technologies for sensing and managing indoor air quality in buildings:

- Dioxide Materials (Boca Raton, FL) will develop a technology for low-cost, high-accuracy whole-building carbon dioxide monitoring for demand control ventilation.
- Intelligent Optical Systems Inc. (Torrance, CA) will develop optical sensors for relative humidity that have unprecedented long-term stability at costs comparable to those of existing sensors.
- KWJ Engineering Inc. (Newark, CA) will develop a novel CO₂ air quality sensor for use with energy-efficient commercial and residential green building ventilation control systems.
- Mechanical Solutions Inc. (Whippany, NJ) will develop an innovative, high-efficiency radon fan to replace current highly inefficient fans. The more cost-efficient fan will encourage more homeowners to protect themselves from radon.

1.2 - Department of Energy's Health and Home Performance Initiative for 2016:

Demonstrate associations between home performance services and health benefits leading to: expanded lead generation for qualified home improvement contractors, improved physician performance, increased homeowner accessibility for home performance services, and sustained positive health outcomes for consumers. Major Tasks / Investments:

- Prepare and publish a health and home performance literature review that helps DOE and its stakeholders understand the level of research that has been conducted thus far, as well as identify gaps that should be filled to develop stronger associations
- Develop a roadmap with engaged stakeholders from the energy efficiency, housing, and health sectors that sets a path for DOE and its partners to take advantage of the health market channel to grow residential energy efficiency
- Develop consumer marketing to be used by DOE, EPA, program partners, and home performance contractors conveying credible, proven messages encouraging growth in home performance based on health benefits.

1.3 - Commercial Building Technology Demonstration by enVerid Systems Inc.:

Start date: Oct 1st 2014

Planned end date: Sep 30th 2017

<http://energy.gov/eere/buildings/downloads/enverid-systems-hvac-load-reduction>

The objective is to install and operate modular HVAC Load Reduction (HLR) retrofits in multiple and diverse buildings, monitor their performance, analyze the energy savings and overall economics, and verify IEQ/IAQ with specific tests for CO₂ and other contaminants of concern. The set of buildings selected for demonstration should collectively represent target markets based on market and commercialization analyses and strategies. The demonstrations will result in the creation of a body of validating case studies and data to encourage and enable widespread adoption around the country.

A unique and innovative approach has been conceived, developed, and demonstrated to reduce the energy consumption in HVAC systems in commercial and public buildings by up to 50% at peak loads. The concept involves selective removal of gas contaminants from indoor air as a practical substitute for outside air ventilation, as is the normal practice today. This enables recycling of most of the indoor air, greatly reduces the amount of makeup air, thereby resulting in a reduced HVAC load and significant energy savings for the facility. Key to our approach is low-cost removal of all gas contaminants from indoor air using novel, efficient and regenerable sorbent materials. The total solution is implemented by means of compact modules that can be retrofitted onto virtually any building, and utilizes novel sorbents.

1.4 - DOE Building America Program, Recently Published Report: “Expert Meeting Report: HVAC Fault Detection, Diagnosis, and Repair/Replacement,” David Springer, Alliance for Residential Building Innovation, May 2016.

http://apps1.eere.energy.gov/buildings/publications/pdfs/building_america/emr-hvac-fault-detection-diagnosis-repair.pdf.

To take maximum advantage of the broad range of experience represented by the presenters and attendees it was important to clearly identify the meeting objectives, which were as follows:

- Review laboratory and field research results to identify the magnitude of the problem and potential areas to target
- Learn what FDD and replacement practices are currently applied by HVAC and home performance contractors and where they see the problems
- Identify and discuss key areas that need to be addressed, including:
 - o Programmatic approaches
 - o Codes and standards
 - o Training and quality assurance.

1.5 - Healthy Efficient Homes Research & Standards:

Lead Performer: Lawrence Berkeley National Laboratory (LBNL) – Berkeley, CA.

Partners:

- ASHRAE
- ASTM- West Conshohocken, PA
- RESNET
- Building Performance Institute (BPI) - Washington, D.C.
- ACCA – Arlington, VA
- International Code Council – Washington, D.C.
- Bonneville Power Administration – Portland, OR

-- California Energy Commission – Sacramento, CA

PROJECT OBJECTIVE

LBNL, along with project partners, are working to address several indoor air quality challenges for high-performance homes through experimental, analytical, and modeling efforts. Industry will participate in several of the project tasks, particularly in the areas of technology development and codes and standards development. Industry will also contribute to project tasks associated with smart ventilation to minimize energy impacts and kitchen ventilation to improve health. This project addresses three topic areas identified in the Building America Technology-to-Market Roadmap on optimal ventilation and indoor air quality solutions, including 1) Targeted pollutant solutions, 2) Smart ventilation, and 3) Indoor air quality valuation.

2 – NIST, National Institute for 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>.

The indoor air quality design specification is written in a manner so that it can be applied to any project and is now available for download in Word format at the NIST NZERTF web page:

<http://www.nist.gov/el/nzertf/>

The report describing the specification in detail (GCR 14-980) can be found at:

<http://nvlpubs.nist.gov/nistpubs/gcr/2015/NIST.GCR.14-980.pdf>

Tracer gas measurements of air change rates in the summers and winters of 2014 and 2015, and winter of 2016, were performed in order to characterize the ventilation of the building as well as to validate the infiltration rates calculated by multizone airflow modeling. In spring 2016 a small duct, high velocity distribution system was installed. Testing starting in June 2016 will examine the systems energy use and impacts on thermal comfort compared to the air-to-air heat pump.

POC: Lisa Ng, 301-975-4853, lisa.ng@nist.gov.

2.2-CONTAM Multizone Airflow and IAQ Model: A recently-developed, coupled building energy and airflow/indoor air quality model (TRNSYS/CONTAM) was used to simulate formaldehyde concentrations in the NZERTF. The simulated concentrations were compared to real time measured formaldehyde concentrations. In most zones in the NZERTF the measured and simulated concentrations were within 3 ppbv and followed similar temporal trends. During the 15 minutes the heat recovery ventilator was off each hour, the measured concentration in an unoccupied bedroom increased by 1 ppbv. The results highlight the need for effective ventilation (both outdoor air intake and air distribution) to reduce the concentration of indoor pollutants, particularly in tighter buildings. Results will be presented at Indoor Air 2016 in July 2016 (http://www.nist.gov/customcf/get_pdf.cfm?pub_id=920271).

POC: W. Stuart Dols, 301-975-5860.

2.3 - Improving the Reliability of Product Emissions Testing: EPA has proposed rulemaking 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 late 2016. **POC:** Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov.

2.4 - ASHRAE Standard 62.2

The committee responsible for Standard 62.2 on residential ventilation and IAQ will meet in June in St. Louis 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. The new 2016 version of the standard is now available from ASHRAE. **POC:** Steven Emmerich, 301 975-6459, steven.emmerich@nist.gov.

2.5 - ASHRAE Position Documents

The IAQ Position Document Committee will meet in June in St. Louis 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 2016. **POC:** 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.

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

2.6 - ASHRAE IAQ 2016

ASHRAE is planning its triennial indoor air quality conference with the theme Defining Indoor Air Quality: Policy, Standards and Best Practice. The conference will provide 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 will include a workshop on IAQ metrics with participants from Lawrence Berkeley Laboratory, NIST and EPA. For more information on the conference, visit www.ashrae.org/iaq2013.

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

2.7 - ASHRAE Standard 189.1

The committee responsible for ASHRAE/USGBC/IES SSSC 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 is meeting in late June in St. Louis. In the area of indoor environmental quality, revisions are being discussed to restrict the indoor use of unvented combustion devices. Other addenda are in process to require occupant surveys to assess satisfaction with indoor environmental quality as well as to improve lighting quality through daylighting, glare control and improved views.

An MOU between AIA, ASHRAE, ICC, IESNA, and USGBC is in place to align the development of Standard 189.1, the International Green Construction Code (IgCC) and the LEED Green Building Rating System. Part of this agreement is to have Standard 189.1 serve as the technical content of the IgCC, with the ICC developing the administrative and enforcement structure around the technical requirements.

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>.
POC: Andy Persily (301-975-6418, andyp@nist.gov)

2.8 - ASTM: D22.05 Subcommittee on Indoor Air

ASTM D22.05 Subcommittee on Indoor Air met in San Antonio in April, 2016. There is an ongoing effort to harmonize definitions (such as air change rate) across all D22 standards. These definitions will be moved from individual standards into D1356 Standard Terminology Relating to Sampling and Analysis of Atmospheres. One of the most used D22.05 standards, D5166 Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials, is currently undergoing revisions to the facilities and equipment section. There will be a workshop on determining SVOC emission parameters in fall 2017 or spring 2018. The committee is actively seeking speakers.

There is also a strong effort within the subcommittee 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. Recent NIST efforts to support modeling of SPF emissions have focused on determining proper extraction procedures to determine the initial concentration and partition coefficient of flame retardants in the SPF. These values will make SPF emission models more accurate and reliable.

POC: Dustin Poppendieck (301-975-8423, dustin.poppendieck@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. Additional interagency projects evaluating the presence and potential release of nanomaterials from consumer products are also continuing, including work at NIST quantifying nanomaterial release from various matrices in the indoor environment, distinguishing engineered nanoparticles from those produced incidentally. Other interagency work involves the development of inhalation models as well as indoor air modeling for nanomaterials. Dr. Li Piin Sung and Andy Persily are working on the NIST studies. POC: Treye Thomas (301.987.2560, tthomas@cpsc.gov); Joanna Matheson (301.987.2564, jmatheson@cpsc.gov)

3.2 - Portable generator safety: 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 pgma@pgmaonline.com.

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

3.3 - Spray Polyurethane Foam (SPF) activities: In 2009, EPA established a multi-agency working group to address several issues relating to SPF emissions. The agencies have received complaints regarding health effects including severe respiratory irritation, breathing difficulties, dizziness and nausea, resulting from the installation of SPF in homes. The working group has been working with industry on addressing issues, such as the availability of consistent and accurate hazard communication on diisocyanates and other chemicals in the SPF insulation products; implementation of best practices that protect spray applicators, others in the work site, and occupants of residences, schools and other buildings; accurate marketing claims, and outlining of data gaps.

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 to eliminate or adequately reduce toxic off-gassing. 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 was signed with NIST to conduct chamber testing of SPF samples. The study is 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 - Emerging Technologies/3D Printers: staff is interested in 3D printing and potential air contaminant release. Staff is participating in activities that seek to address health and safety questions, including the development of studies to quantify emissions. 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

POC: Chew, Ginger L. (CDC/ONDIEH/NCEH); gjc0@cdc.gov

4.1 - Thunderstorm asthma manuscript: This is a collaboration among NIOSH and NCEH investigators at CDC, plus NOAA (the National Oceanic and Atmospheric Administration), and an academic partner from West Virginia University. The working title of manuscript is "Effect of thunderstorm-related climate parameters on emergency department visits and hospitalizations for asthma in the United States. There are several case reports or publications that examined the associations of cross-sectional thunderstorm events with asthma-related emergency department (ED) visits in several countries; however, we are unaware of any report that examines effects of spatial and temporal changes in thunderstorm-related climate parameters on asthma in multiple states of the U.S. Thus, the proposed study will explore climate change data including thunderstorm-related parameters (e.g. lightning strikes, wind speed/direction, temperature) over the last 30+ years and asthma-related ED visit/hospitalization data (health outcomes) for the last 15+ years in the different states/cities, and examine associations between spatiotemporal patterns in the climate and the health outcomes.

4.2 - Co-branded (CDC, EPA, and HUD) home assessment questionnaire: As reported in last CIAQ meeting, the three agencies have undertaken a project to harmonize messages for asthma trigger reduction in the home and co-brand a home assessment questionnaire that can be used by home visit staff to initiate a dialogue with household members to address these triggers. We have bi-weekly phone calls to discuss new and existing recommendations and the ease/difficulty of describing such

5 - NIOSH, National Institute of Occupational Safety and Health

5.1 - Public School Study

NIOSH has conducted a Public School Study in Philadelphia. Using our previous assessment data, we selected 50 elementary schools in the school district for the study. We updated floor maps and room IDs of all 50 schools to prepare environmental and health surveys. We used NIOSH dampness and mold assessment tool (DMAT) and data entry software to assess dampness and mold conditions in about 7,000 rooms in all of the 50 schools. From April to June 2015 and in January 2016, we also conducted web-based health questionnaire surveys. We have 58% participation among all staff and 69% participation among teachers in the survey. We collected floor dust samples from 500 classrooms that were selected based on teachers' participation in health survey (10 samples per school). The collected 500 dust samples are being analyzed for endotoxin, microbial metabolites, allergens, and

fungal and bacterial DNA for microbial diversity. We also collected CO₂/Temperature/RH for 8 hours (from 8:00am to 4:00pm) from the classrooms where the dust samples were collected.

NIOSH has been working together with several academic institutes for a public school study in another city. The purpose of the study is to compare school indoor environmental conditions and students' health before and after renovation that is currently undergoing. NIOSH was invited to assess dampness and mold using NIOSH DMAT and analyze air samples for VOCs. During the first phase of the study, we completed dampness and mold assessment in all accessible rooms of 16 schools in the school district. The assessment will be continued in remaining schools of the district this fall and next year. **POC:** Dr Ju-Hyeong Park (gzp8@cdc.gov)

5.2 - Thunderstorm Asthma Study (see also CDC entry 3.1 herein)

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

6.1 - Schools

6.1.1 - 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.
- The latest resource EPA has launched is the IAQ Knowledge to Action Professional Training Webinar Series. The webinar series is comprised of four 1-hour technical, web-based trainings designed to demonstrate 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.

Those who participate in the webinar series will learn how to implement a successful organizational and programmatic framework for comprehensive and proactive IAQ management using EPA's Framework for Effective School IAQ Management: Key Drivers. In addition, the series will cover the critical actions needed to address building-related environmental health issues (Technical Solutions) and how to use the detailed walkthrough assessment checklists in the School IAQ Assessment Mobile App to identify and prioritize IAQ improvements. This new webinar series features technical experts, industry leaders and model school districts.

The first webinar in the series resulted in training over 250 attendees. Information on the webinar series can be found at <https://www.epa.gov/iaq-schools/iaq-knowledge-action-professional-training-webinar-series>. Take advantage of this comprehensive training series and register for the latest webinar today.

- Other tools and resources available which aid the institutionalization of IAQ management programs include the following:
 - o IAQ Master Class Webinar Series. The training series provides schools with the latest knowledge on maintaining a healthy school indoor environment. To date over 3000 school district, state and industry representatives have completed the training. These numbers continue to grow. Anyone can take advantage of this free resource and view the entire IAQ Master Class Professional

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

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.

- o The School IAQ Assessment Mobile App. The free mobile app is designed to assist schools with conducting comprehensive IAQ walkthroughs of their facilities providing them an easy to use resource they can use to track, manage and prioritize their efforts. The app uses guidance from EPA’s IAQ Tools for Schools Action Kit, Framework for Effective School IAQ Management and Technical Solutions. Since its launch the mobile app has been downloaded by 1121 users, including employees from school districts, universities, state agencies and NGOs. We are eager to collaborate with you to promote the use of this tool in schools across the country. Please link to the School IAQ Assessment Mobile app on your website at <https://www.epa.gov/iaq-schools/school-iaq-assessment-mobile-app> and contact us for promotional materials for your newsletters.

- o Indoor Air Quality and Energy Efficiency Guidance for Schools. Schools carrying out renovations and retrofits can use the Energy Savings Plus Health: Indoor Air Quality Guidelines for School Building Upgrades guidance to ensure protecting IAQ is part of the process. You can download the guidance, Checklist Generator, and other resources, including quarterly webinar trainings at EPA’s website at <https://www.epa.gov/iaq-schools/iaq-guidelines-school-building-upgrades-energy-savings-plus-health>. Please share this information with your stakeholders, and remember, linking the benefits of integrating IAQ management with energy efficiency upgrades is a win-win for all.
POC: Michele Curreri at curreri.michele@epa.gov

6.2 - Asthma

IED’s Asthma Update & Advances since February 2016

Since the February CIAQ meeting, IED announced the *2016 Environmental Leadership Awards in Asthma Management*. The award review panel was comprised of federal agency members of the Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities, and representatives from Children’s National Medical Center, Allergy and Asthma Network, and America’s Health Insurance Plans.

The four award winners were: AmeriHealth Caritas of Philadelphia; Urban Health Plan of Bronx, NY; New England Asthma Innovation Collaborative of Boston; and Public Health-Seattle King County of Seattle. The award winners were honored at an Asthma and Allergy Network (AAN) ceremony May 12. Asthma Award Winners of EPA’s serve as national models and mentors to share their successful strategies and help lead innovations. For more information <https://www.epa.gov/asthma/national-environmental-leadership-award-asthma-management>

Each year, May is designated National Asthma Awareness Month. The Indoor Environments Division (IED) supported many activities to draw attention to and reduce racial and ethnic asthma disparities with a press release and hundreds of local, regional and state public events that aim to improve the lives of people with asthma. A full social media plan was launched featuring award winning programs, national experts and other champions. It included blogs and podcasts, as well as Facebook and Twitter posts.

Check out asthma community efforts at: www.AsthmaCommunityNetwork.org.

On World Asthma Day, May 3 and on May 5, IED contributed to Twitter Chats in collaboration with the Centers for Disease Control and Prevention (CDC), and EPA's Air Office. These Twitter Chats were incredibly popular with metrics of 20,000 asthma conversations and a high of 19 tweets per minute.

Check out the hashtags #AsthmaChat and #AirQualityChat

OAR Acting Asst. Administrator, Janet McCabe, offered remarks at the Asthma Leadership Roundtable with America's Health Insurance Plans (AHIP) that included 20 health plan leaders and decision makers. They discussed strategies for incorporating or expanding tailored home-based environmental interventions into comprehensive asthma management programs.

In support of sustainable financing for in-home asthma inventions, EPA's Region 4 held the Southeast Asthma Summit, in collaboration with HUD, CDC, and the Georgia Dept. of Health, on May 17-18 in Atlanta, Georgia with 120 attendees. The asthma summits focus on in-home asthma assessments with model programs presentations that provide evidence-based data supporting the health benefits and cost-effectiveness of education, environmental assessments and interventions. As an outcome, a new regional coalition is forthcoming and will focus on sustainable financing. On June 7, a similar asthma sustainability summit is planned in Region 5, Chicago.

These asthma summits build on the community-based assessment model and provide an in-depth look at certain asthma triggers in the home environment. Both meetings emphasize prevention, reduction, or control of triggers in the home.

In June, there will be an Asthma Disparities Workgroup meeting led by National Heart, Lung and Blood Institute (NHLBI).

6.3 - Radon

6.3.1 - Federal Radon Action Plan (FRAP)

Since launching the Federal Radon Action Plan (FRAP) in 2010, EPA continues to push for more action on radon risk reduction by federal agencies and looks for ways to encourage state and local actions. This past February we formally closed-out the FRAP and celebrated its accomplishments, which includes reaching an estimated 1.6M homes, schools and childcare facilities with federal guidance and incentives and, in 12.5% of those units, testing and mitigating when necessary. We believe that testing and mitigations will continue to be generated as a result of FRAP actions.

6.3.2 - National Radon Action Plan (NRAP)

We are continuing our focus on accelerating radon risk reduction through the recently launched National Radon Action Plan (NRAP). Through this initiative, 11 key players across the government (including HUD and HHS), industry and nonprofit sectors led by the American Lung Association began coordinating strategy aimed at incorporating radon testing, radon mitigation and radon-resistant construction into the systems that govern purchasing, financing, constructing and renovating homes and other buildings. To pace action and measure success, the group set a goal to reduce radon risk in 5

million homes and to save 3,200 lives annually by 2020. Impacts generated from the FRAP will continue to be tracked and attributed towards this goal.

6.4 - Science

6.4.1 - Update to Wildfire Smoke Guide for Public Health Officials

EPA's Indoor Environments Division (EPA-IED) has been participating in an effort led by EPA's Office of Air Quality Planning and Standards (EPA OAQPS) to update the document "Wildfire Smoke: A Guide for Public Health Officials." The document was originally developed in 2001, coauthored by the Washington State Department of Health, the California Department of Public Health and California Air Resources Board. The last revision of the guide was in 2008, authored primarily by the California Department of Public Health and California Air Resources Board with input from EPA and other government agencies.

The current effort that EPA-OAQPS has been leading involves several government agencies, including EPA, CDC, NIOSH and the U.S. Forest Service. Each group reviewed, edited and updated the sections of the guide that apply to their areas of responsibility and expertise. EPA-IED worked primarily on the section "Specific strategies to reduce smoke exposure," which includes a discussion of indoor protective measures such as improved filtration and air cleaning that can be taken during a wildfire event. Other sections of the guide updated by EPA, CDC, NIOSH and the U.S. Forest Service include the health effects of wildfire smoke; outdoor air quality information, forecasting and communication; and the use of respirators.

EPA-OAQPS plans to post the draft wildfires guide update on the AirNow website in early June for use by public health officials during the 2016 wildfire season. EPA-OAQPS plans to use the feedback it receives from the 2016 wildfires season to update and finalize the guide in early 2017, prior to the start of the 2017 wildfire season.

6.4.2 - Indoor Air Quality Scientific Findings Resource Bank - EPA-LBNL Interagency Agreement

EPA's Indoor Environments Division is continuing its interagency agreement with the Lawrence Berkeley National Lab (LBNL) entitled "Indoor Air Quality Scientific Findings Resource Bank." The goal of the project is to develop and provide information that summarizes, quantifies and documents relationships between indoor environmental parameters and health and performance impacts for building occupants. Several peer reviewed journal articles have been published over the past decade.

The Scientific Findings Resource Bank's website facilitates dissemination of results from the project. Recent website (<https://www.iaqscience.lbl.gov>) enhancements include:

- A new structure with improved graphics and layout, including the addition of a section on frequently asked questions (FAQs).
- A new section on Climate Change, Indoor Environmental Quality, and Health, including a downloadable paper by William Fisk, "Review of some effects of climate change on indoor environmental quality and health and associated no-regrets mitigation measures", published in the journal Building and Environment. This influential journal article was cited in the recently released assessment by the U.S. Global Change Research Program, The Impacts of Climate Change on Human Health in the United States (April 2016).

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

- The addition of a summary of findings, and a downloadable paper by William Fisk and Rengie Chan, “Health benefits and costs of filtration interventions that reduce indoor exposure to PM_{2.5} during wildfires,” recently published in the journal Indoor Air.

Feel free to visit the web site for this and other useful information, <https://www.iaqscience.lbl.gov>.

6.4.3 - Cognitive Function and Green Buildings

On May 11th, the Indoor Environments Division hosted the “Knowledge in the Air” webinar on the topic “The Impact of Green Buildings on Cognitive Function.” More than 800 people attended virtually; attendees represented government, academia, and NGOs from organizations and agencies around the globe. Recent research findings and recognizing IAQ factors in buildings that lead to optimal conditions for health and productivity were presented. This research contributes to our understanding of how the quality of indoor environments affects human health. The CogFX Study website contains links to their articles and highlights from their research (www.thecogfxstudy.com).

6.4.4 - National Academies of Sciences, Engineering and Medicine (NASEM) 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 at 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. Presentations and video recordings are posted at the NASEM web site, www.nationalacademies.org/hmd/Activities/PublicHealth/Health-Risks-Indoor-Exposure-ParticulateMatter/2016-FEB-10.aspx. A workshop summary report is being developed by NASEM with an estimated release in early July.

6.4.5 - Microbiomes of the Built Environment Study Webinar/June 20-21, 2016

The study, Microbiomes of the Built Environment: From Research to Application, began in October 2016 and is expected to be completed in 2017. This new study by the National Academies of Sciences, Engineering, and Medicine (NASEM) is being co-funded by EPA/ORIA and EPA/ORD, the Sloan Foundation, and the National Institutes of Health (NIH). The study will assess the current base of knowledge on the microbiome/built environment interface and identify key research gaps and priorities to guide actionable knowledge to improve the microbiome/built environment interface. The next meeting for this study will include a webinar featuring expert speakers. Please see the NAS website for additional details and to register for the Webinar.

This meeting will include breakout sessions to discuss the questions above in depth. The breakout sessions will not be webcast, so consider attending the meeting in person if you can! Seating is limited, so register today to attend in person or via webcast: <http://nas-sites.org/builtmicrobiome/meetings-2/>
Questions or comments? Please email the NASEM at: builtmicrobiome@nas.edu.

6.5 - Second-hand Smoke (SHS)

In collaboration with HUD and CDC, EPA continues to work to advance adoption of smoke-free policies in low-income and affordable multi-unit housing. In particular, we are supporting HUD on the proposed rule mandating smoke-free public housing, and continue to lead the interagency workgroup that serves in a coordinating role. EPA is reaching out to our networks and regions to provide technical assistance to ensure a successful implementation of the smoke-free public housing rule, while promoting similar action in the broader multi-unit housing community.

6.6 - Tribal Indoor Air Quality

6.1 - National Tribal Air Association (NTAA) Annual National Tribal Forum (NTF) on Air Quality

This year's NTF was held in Niagara Falls, NY from May 16-19, 2016. Several IAQ training sessions were held. The principal focus was on how Tribes can reduce indoor environmental risks regarding radon, asthma and mold, by applying measures that lessen exposure and improve health and safety. A record number of nearly 300 participants attended the NTF, which was hosted by the Seneca Nation and St. Regis Mohawk Tribe. HUD and USDA along with non-governmental agencies and other leading professionals in the fields of environmental health, architecture, housing and safety helped deliver the IAQ sessions..

6.2 - Federal Tribal Collaboration (FTC) on IAQ and Healthy Tribal Housing

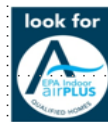
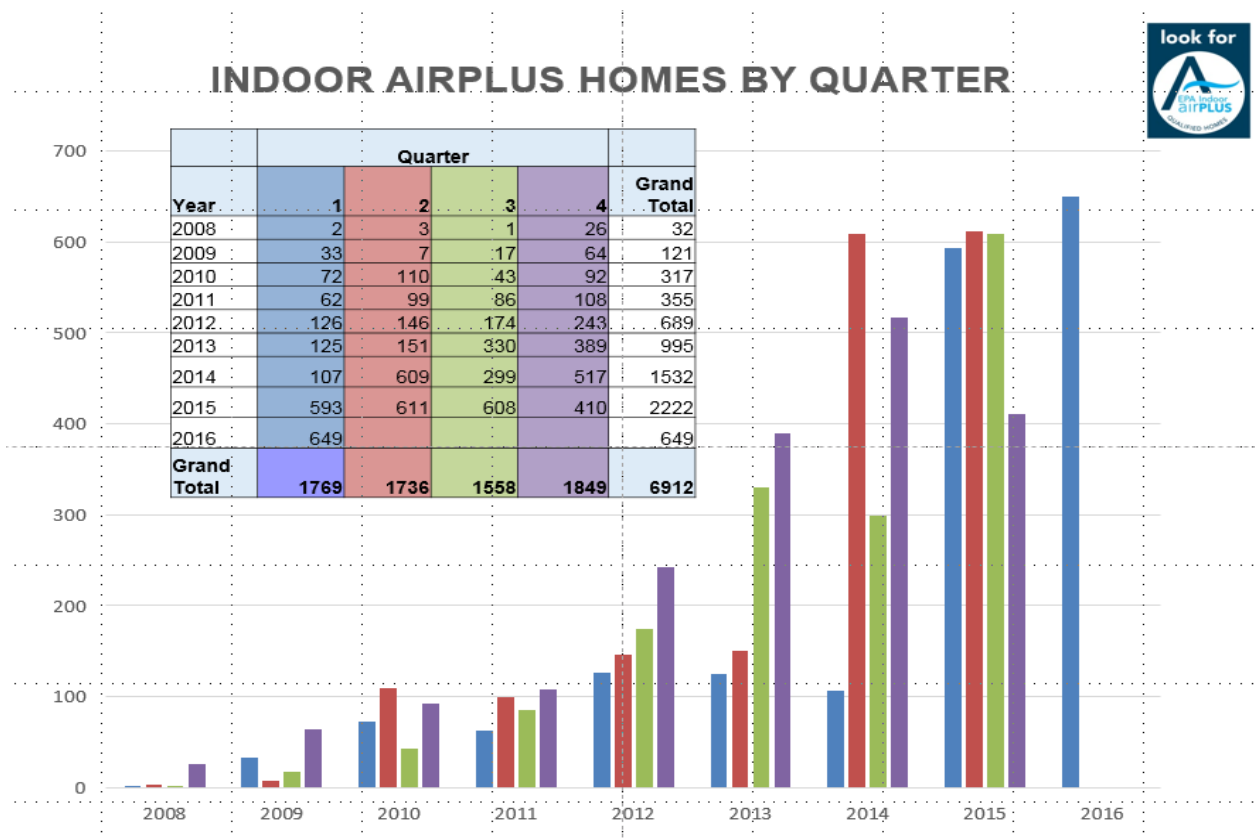
IED is continuing its collaborative efforts with the goal of improving IAQ in Tribal housing. Our collaboration includes working with Tribal stakeholders, non-profits and several Federal agencies (e.g., HUD, Office of Native American Programs (ONAP); IHS, HHS, USDA).

The collaborative policy approach is two-pronged:

- Enhance collaboration and leverage resources among Federal Tribal programs by:
 - Collaborating and leveraging resources among Federal Tribal programs at the national level to support tribal healthy housing and IAQ.
 - Disseminating best practices and collaborating at the Federal regional level to support tribal healthy housing and IAQ.
- Build Tribal capacity to access Federal resources and carry out effective IAQ interventions:
 - Educate and equip the Tribes to build their capacity to effectively apply and receive IAQ support from Federal funding and technical assistance programs.
 - Build Tribal capacity to carry out, or access, appropriate and effective IAQ interventions and solutions.

6.7 - Indoor airPLUS Label (IAP)

IED's Indoor airPLUS program has added over 350 new builder partners in the last five (5) Quarters and the first Quarter of 2016 was its 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>.



C - Guest Update and Presentations

Guest Update: *National IAQ Needs Assessment for Indian Country*, by Andy Bessler, National Tribal Air Association (NTAA) Project Director, Institute for Tribal Environmental Professionals (ITEP), N. Arizona University, Flagstaff, AZ.

Listen to the audio file here: https://www.scgcorp.com/IED/CIAQ_meeting_6816_Section1.mp3

Instructions: Right click the link to save the audio file to your computer.



Mr Bessler Biography. Andy Bessler joined the Institute for Tribal Environmental Professionals at Northern Arizona University in March, 2013. Andy serves as ITEP's Project Director for the National Tribal Air Association (NTAA). Andy provides NTAA air quality policy analysis and logistical support in order to empower tribes around the country with a strong voice in air quality and climate change policy. He previously worked for ITEP's Tribal Clean Energy Center organizing solar energy workshops and writing clean energy grants for tribes. Prior to coming to ITEP, Andy worked over a decade with tribal communities as a organizer for the Sierra Club coordinating campaigns to protect sacred lands and curb climate change. He has served on the Paatuwaqatsi Run Committee, helping the Hopi community organize a powerful annual ultra-marathon on Hopi called the Paatuwaqatsi (Water is Life) Run. Andy holds a

MA in Applied Cultural Anthropology from NAU and has traveled extensively in West Africa, Mexico, Europe and the US.

When not working, Andy enjoys trail running, biking and spending time with his family including his children Noah and Ruby and his wife and best friend Erin Widman, proud owner of Flagstaff's best yoga studio, The Yoga Experience.

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www.ntatribalair.org; www4.nau.edu/itep.

Presentation: "Smoke-free: Clearing the Air in Public Housing". Dr Brian King, Deputy Director for Research Translation in the CDC's Office on Smoking and Health (OSH) gave a brief overview of the issue and an introduction to Dr Levy.



Listen to the audio file here: https://www.scgcorp.com/IED/CIAQ_meeting_6816_Section2.mp3
Instructions: Right click the link to save the audio file to your computer.

Dr Douglas Levy gave the presentation. He is an Assistant Professor of Medicine, Harvard Medical School (Boston, MA). Second-hand smoke causes lung cancer, heart disease, and stroke in adults and exacerbates asthma in children. Dr Levy will discuss the results of his research regarding the Boston Housing Authority's 2012 adoption of a smoke-free policy, and the changes in indoor air quality and the impact on occupants/residents.

Dr Levy Biography. Dr. Levy is an Assistant Professor of Medicine at Harvard Medical School and Massachusetts General Hospital where he is a faculty member at the Mongan Institute Health Policy Center and the Tobacco Research and Treatment Center. He received his PhD in Health Policy from Harvard University and completed a post-doctoral fellowship in health services research at the Harvard School of Public Health prior to joining MGH. Dr. Levy's research interests focus on studying how policies in the spheres of public health, healthcare finance, and health services can improve prevention and population health. A principal application of this work is the study of policies to reduce the harms of tobacco use. He has been studying smoke-free policies in public housing in and around Boston since 2010.

Presentation: "IAQ and Green Building Alliance (GBA)/Pittsburgh 2030 District".



The presentation was given by Dr Melissa Bilec (right), LEED AP, Deputy Director, Mascaro Center for Sustainable Innovation, U. Pittsburgh, and Dr Anna Siefken (left), VP Strategic Engagement, Green Building Alliance. The presentation reviewed efforts to establish an IAQ baseline for individual buildings, impacts of energy reductions on IAQ, and the idea of a scalable IAQ protocol.



Listen to the audio file here: https://www.scgcorp.com/IED/CIAQ_meeting_6816_Section3.mp3
Instructions: Right click the link to save the audio file to your computer.

Dr Bilec Biography. Dr. Bilec is an associate professor in the Swanson School of Engineering's Department of Civil and Environmental Engineering; she is the Deputy Director of the Mascaro Center for Sustainable Innovation. Dr. Bilec's research program focuses on the built environment, life cycle assessment, sustainable healthcare, and indoor air impacts. She is interested in improving system-level environmental performance of buildings, while developing a deeper understanding of indoor environmental quality, occupant impacts, and

energy use. She is the Principal Investigator of a multi-disciplinary and multi-institutional research project, NSF EFRI-Barriers, Understanding Integration – Life cycle Development (BUILD). Dr. Bilec has over 50 journal publications and has secured over \$6 million in funding, including 8 National Science Foundation grants. She has received four education excellence awards. Dr. Bilec’s work prior to academia included tenure at the Urban Redevelopment Authority of Pittsburgh where she worked on green infrastructure projects, including the conversion of a 100-year bridge into a pedestrian bridge. Dr. Bilec serves on the Green Building Alliance board.

Ms Siefken Biography. Anna J. Siefken, LEED AP BD+C, has extensive experience fostering internationally-recognized brands in partnership with corporations, non-profits and the government sector. Ms. Siefken currently serves as Vice President of Strategic Engagement and the Pittsburgh 2030 District Director at Green Building Alliance (GBA), where she leads the largest 2030 District in North America via its two boundaries in Downtown Pittsburgh and nearby Oakland. In early 2016, Ms. Siefken announced that the initiative had surpassed its three primary incremental milestone reduction goals for energy, water, and transportation emissions; Pittsburgh was the first of 12 international 2030 District cities to achieve the aggressive targets. In her current role, Ms. Siefken was awarded the Pittsburgh Business Time’s 2015 Energy Leadership Award for Corporate Social Engagement. The Pittsburgh 2030 District received the 2015 International Downtown Association’s (IDA) Achievement Award for Economic and Business Development. In 2016, the initiative received both the Pennsylvania Governor’s Award for Environmental Excellence, and the Pennsylvania Environmental Council’s Western Pennsylvania Environmental Award.

Prior to joining GBA, Ms. Siefken was Principal Consultant at ICF International in Washington, DC, where she designed programs and recruited strategic partners to participate in the Energy Star products and home improvement programs on behalf of EPA and DOE. She led engagement and outreach to lighting, appliances, consumer electronics and home improvement product manufacturers via a matrix-based team. Ms. Siefken was previously employed at The Home Depot headquarters in Atlanta, GA, where she held positions in product purchasing, advertising and marketing, consumer education, e-commerce, community affairs and environmental programming. Ms. Siefken is a graduate of Duke University.

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