

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

February 14, 2023

Moderator: Laureen Burton, U.S. Environmental Protection Agency

Meeting Overview

- Welcome, Announcements and Introductions
- Federal CIAQ Member Agency Updates (Pages 2–20)
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- Indoor Air Quality (IAQ) Area of Interest Presentation
 - The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) IAQ and COVID Guidance for Multifamily Buildings*
 - Amara Holder, Ph.D.**, Mechanical Engineer, EPA, Office of Research and Development
- Post-Meeting Updates and Announcements
 - The next CIAQ meeting is scheduled for June 2023.

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

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U.S. Department of Energy (DOE)

Agency Point of Contact: Chris Early, 202-586-0514, chris.early@ee.doe.gov

Webinar About Home Energy Upgrade Decision-Making

The DOE [Better Buildings Residential Network](#) conducted a webinar on January 26, 2023, about a study from the Pacific Northwest National Laboratory (PNNL) in which PNNL interviewed and surveyed thousands of individuals about their home upgrade decision-making. There were 7,024 homeowners and 10 responses to the survey. The number one response to the question “Of the home modifications you have made, which of the following factors were important?” was “Improve comfort and safety for children and pets,” with about 50% of respondents selecting this response. “Reduce harmful health impacts” was seventh, with about 15% indicating this response.

The Building Technologies Office (BTO) Will Hold a Peer Review of Its Research Projects With a Session on Healthy Buildings

At the peer review, BTO’s projects will be evaluated by other research project performers. In addition, on Monday, April 24, 2023, from 11:30 a.m. to 1:00 p.m., there will be a special two-part “Healthy Buildings Showcase,” which will cover BTO’s legacy in indoor air quality (IAQ), offer a historical perspective on lighting and health and efficient ventilation, and highlight BTO’s efforts in response to COVID-19. The first part will include an opening speaker followed by BTO staff covering the office’s legacy; the pandemic response; upcoming technology; and timely announcements in residential IAQ, commercial IAQ, and lighting and health. The second part will involve a moderated panel discussion that will be open to the audience. The panelists will comprise national laboratory researchers working in such areas as IAQ, IAQ sensors, germicidal UV and Healthy Schools.

Final Reports From Three Research Projects Touching on IAQ Are Available From Cedar Blazek at cedar.blazek@hq.doe.gov

Clean Air Management System, by Burch Energy

The Clean Air Management System includes software that can model airflow patterns and distributions within a space for optimal placement of IAQ sensors and necessary HVAC upgrades. Burch Energy, the company that is developing the Clean Air Management System, uses this model, in combination with environmental and public health data streams, to recommend building control strategies that optimize IAQ and energy efficiency. They are demonstrating its technology at a church building in Oregon and two other potential sites and is targeting small buildings.

Utilizing Live Sensor Data to Improve Indoor Air Quality via the Building Management System, by SYCLOPS

SYCLOPS has developed a digital-twin technology that can incorporate a variety of sensors for visualization and analysis of HVAC systems, occupancy levels and other variables that affect IAQ. The

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company is creating a protocol for particulate alarms that send an alert to building managers when the level of CO₂, TVOC, PM_{2.5} or PM_{0.5} is too high. SYCLOPS is using this to research and determine HVAC sequence updates based on the sensor notifications. The company currently is piloting its technology in two public schools in Washington, D.C., and schools are the first target market.

A New Membrane Air Filter to Efficiently Remove Viruses, Bacteria, Other Microbes and Fine Particles From Indoor Air, by Molecule Works Inc.

The filtration technology is based on a patented, ultra-thin, porous metal membrane. This membrane's structure permits high air permeance with low pressure drop while maintaining high filtration efficiency. In Phase I, the team evaluated filter performance in a laboratory. Properties of the thin, porous nickel metal sheet produced by Molecule Works Inc. are presented to make durable and reusable membrane filters for indoor air purification, such as filtration of PM_{2.5} and air disinfection. A filter prototype is built by 3-D printing of the membrane cassette frame and casing using polymer composites. Different from conventional HEPA filters, where the particulates are trapped inside the filtration media, the membrane filter blocks particulates on its exterior.

Pilot Study by Oak Ridge National Laboratory for Multifamily Building Ventilation and Indoor Air Quality

The purpose of this pilot study is to characterize the impact of weatherization and feasible ventilation improvements on the IAQ of large, multifamily buildings with centrally ventilated apartments, as currently performed under the Weatherization Assistance Program in the State of New York under its variance request (i.e., to implement ASHRAE Standard 62.2-2016 "to the greatest extent possible" in this type of multifamily building). A major goal is to determine if these practices improve or at least "do no harm" to the IAQ of the weatherized multifamily buildings and to the occupants themselves.

Oak Ridge National Laboratory conducted a pilot study on large multifamily buildings with centrally ventilated apartments in New York State, examining ventilation rates before and after weatherization. No evidence gathered in this study suggests that the weatherization work done on these sites had a detrimental impact on the IAQ in the units. This research does not support prohibiting weatherization work on these buildings, which, for the scope of this project largely consisted of building system improvements (external to the individual units) and plug load efficiency measures. In buildings where major changes are made to the envelopes in individual units, special attention should be paid to ensure that there is sufficient ventilation to avoid creating IAQ issues. (Zachary Merrin and Paul W. Francisco) 9/30/2022. <https://doi.org/10.2172/1897828>.

Researchers From the Lawrence Berkeley National Laboratory Attended the ASHRAE Buildings XV Conference and Presented the Paper "Compartmentalization and Ventilation System Impacts on Air and Contaminant Transport for a Multifamily Building"

Providing proper fresh air ventilation and avoiding cross-contamination in multifamily apartment dwellings has never been more critical than during the global COVID-19 pandemic. The airtightness of interior partitions and the design of ventilation systems in multifamily buildings determines the flows

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across the exterior envelope and interior partitions. These flows change the total ventilation rate for the building and individual units and also impact the mixing of air and contaminants between apartment units or within common spaces. These flow patterns can have important implications for HVAC energy use, IAQ, and occupant health and comfort. This study examined the changes in airflow and contaminant transport in multifamily buildings using a combined CONTAM/EnergyPlus modeling approach. Key parameters were systematically varied, including weather, apartment airtightness and type of mechanical ventilation system. Simulations were performed for a four-story, mid-rise building with an enclosed common corridor. Each case was simulated for a full year with three-minute time-steps that allowed scheduling of occupancy-related contaminant releases and operation of ventilation systems. Contaminants simulated in the analysis were PM_{2.5}, formaldehyde and water vapor, together with CO₂ as an indicator of bioeffluents and other human activity-related pollutants. The results of this work are intended to assist codes and standards bodies (e.g., ASHRAE 62.2) in setting appropriate air tightness limits and ventilation system design guidelines for multifamily buildings. (Walker, I., Less, B., Lorenzetti, D., Sohn, M. and Casquero Modrego, N.) August 2022.

<https://buildings.lbl.gov/publications/compartmentalization-and-ventilation>.

(Dillon, M.B., Sextro, R.G. and Delp, W.W.) "[Protecting building occupants against the inhalation of outdoor-origin aerosols](#)," Lawrence Berkeley National Laboratory. *Atmospheric Environment*. https://eta-publications.lbl.gov/sites/default/files/protecting_building_occupants_against_the_inhalation_of.pdf.

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

Federal Interagency Committee on Indoor Air Quality

OFFICE OF LEAD HAZARD CONTROL AND HEALTHY HOMES

Healthy Children | Healthy Families | Healthy Communities

1

What is the OLHCHH?

The Office of Lead Hazard Control and Healthy Homes (OLHCHH) is an office within HUD that protects children and families from health and safety hazards in housing.

In addition to the Immediate Office of the Director, the OLHCHH has 5 divisions:

- Programs Division
- Program and Regulatory Support Division
- Policy and Standards Division
- Grant Services Division
- Business Operations Division

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These Funds Transform Communities and Support Research

Reach Vulnerable Populations	Identify all health and safety hazards in each home	Assist in remediation of all hazards through this funding and partner programs
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- Lead Hazard Reduction Grant Program
- The Healthy Homes Production Program (HHP)
- Older Adult Home Modification (OAHMP)
- Lead and Healthy Homes Technical Studies grants programs. (LTS and HHTS)
- Healthy Homes and Weatherization grant program (HHWCD)
- Radon Testing and Mitigation grant program

BEFORE AFTER

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HUD: National Standards for the Physical Inspection of Real Estate (NSPIRE)

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

NSPIRE

NATIONAL STANDARDS FOR THE PHYSICAL INSPECTION OF REAL ESTATE

David Hewitt, Ph.D.
Environmental Health Scientist

CIAQ Meeting, 14 February 2023

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HUD is aligning its inspection protocols across its rental assistance programs

HUD has different programs, which have had different inspection standards, protocols, and processes; these programs include:

- Public Housing
- Multifamily Housing
- Housing Choice Vouchers (HCV)
- and other programs

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There are NSPIRE Standards that are directly relevant to Indoor Air Quality, such as:

Infestation of pests, including cockroaches, mice and rats

Mold – visual inspection, with different levels

And other Standards

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**Where is the inspection?
Inspectable areas: Unit, Inside, Outside**

Proposed and Previous Versions of NSPIRE Standards can be found at this URL:

https://www.hud.gov/program_offices/public_indian_housing/real/nspire/standards




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NSPIRE also will require smoke alarms following the Consolidated Appropriations Act for FY2023

This requires smoke alarm installation following NFPA 72.

Requires sealed smoke alarms, with ten-year battery or hardwired, in each bedroom and on each level




8

NSPIRE also will require smoke alarms following the Consolidated Appropriations Act for FY2023

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**CPD-22-15
Carbon Monoxide alarms or detectors in housing for persons with aids (HOPWA) – Assisted Housing.**

Effective Date:
December 27, 2022

J. Kofi Berko, Jr., Ph.D
Sr. Environmental Scientist

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**CPD-22-15
Carbon Monoxide alarms or detectors in housing for persons with aids (HOPWA)**

Purpose

HOPWA Grantees/Project Sponsors Responsibilities

Housing Affected

Financing

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CPD-22-15

Carbon Monoxide Alarms or Detectors in Housing Opportunities for Persons With AIDS (HOPWA)- Assisted Housing

Effective Date: December 27, 2022

Purpose: Addresses CO poisoning risks in housing, identifies resources for preventing and detecting CO exposure, and alerts grantees to a related and important new statutory requirement under the HOPWA program.

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HOPWA Grantees/Project Sponsors Responsibilities: Ensuring each dwelling unit assisted under the HOPWA program contains installed carbon monoxide alarms or detectors that meet or exceed the standards described in Chapters 9 and 11 of the 2018 publication of the International Fire Code, which is published by the International Code Council.

Housing Affected: HOPWA-assisted units, which includes units assisted with acquisition, rehabilitation, conversion, lease and repair of facilities to provide housing and services, new construction, project or tenant-based rental assistance, short-term rent, mortgage and utility payments, permanent housing placement, and assistance with operating costs.

This HOPWA requirement applies to single-family or multiple-unit buildings, single-room occupancy units, hotels and motels, master-leased units, and all types of facility-based housing under the HOPWA program.

CO alarms and detectors must be placed in HOPWA-assisted units with the following specifications:

- A unit containing a fuel-burning appliance or a fuel-burning fireplace
- A unit served by fuel-burning, forced-air furnaces (with one exception)
- A unit located in a building that contains a fuel-burning appliance or fuel-burning fireplace, even if outside of the unit (with some exceptions)
- A unit located in a building with an attached private garage (with some exceptions)

Enforcement: For housing activities subject to the HOPWA Housing Quality Standards (HQS), grantees and project sponsors should assess for CO alarms or detectors when completing HQS/habitability inspections. A question regarding the presence of functioning CO alarms or detectors should be added to HQS/habitability inspection forms utilized by grantee or project sponsor staff.

For housing activities not subject to HQS requirements (e.g., short-term rent, mortgage and utility payments, permanent housing placement [PHP]), grantees and project sponsors may rely on the self-certification of the tenant or owner that the dwelling unit meets the CO detector and alarm requirements.



Grantee or project sponsors are to develop and provide training, a standard checklist or other reasonable procedures to make sure the owner or tenant understands and applies the relevant criteria when making the self-certification that CO detectors or alarms are installed as required.

Financing: HOPWA grantees and project sponsors may bill staff time spent conducting landlord outreach and education on the CO detector and alarm requirements, performing HQS/habitability inspections to assess for compliance with the requirements, and/or assessing for and self-certifying compliance with the requirements to the applicable housing assistance line item.

HOPWA grantees and project sponsors may bill housing information services for staff time spent conducting outreach and educating HOPWA-assisted households on CO detectors and alarms.

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Presentation at Committee on Indoor Air Quality

Radon Highlights

February 14, 2023
Rhona Julien, Sc.D.

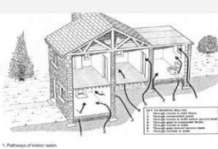


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Radon Facts...

- Radioactive, odorless, invisible, natural radioactive decay of Uranium.
- Becomes trapped indoors & accumulates in the air. 1/15 homes in the US have high radon levels.
- Chronic exposure can lead to lung cancer.
- Leading cause of lung cancer among non-smokers.
- The second leading cause of lung cancer among smokers.
- 21,000 lung cancer deaths/year.




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HUD OLHCHH – Radon Highlights

- Radon Testing & Mitigation (RTM) for public housing Demonstration Grant Program.
- Radon Testing and Mitigation requirements for all Lead Hazard Reduction and Healthy Homes Production grantees.
- Radon requirements updated in MAP Guide.
- Draft Radon Policy for addressing radon in Env Rev. (out for public comment)

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Radon Testing & Mitigation (RTM) for Public Housing Demonstration Grant Program

Provide funds to public housing agencies to test for and mitigate elevated radon levels (i.e., \geq the EPA action level of 4 pCi/L) in housing developments they manage.

- Support the development of a plan for future testing and mitigation.
- Provide important information on methods and costs for radon testing and mitigation in public housing.

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FY21 - \$4M available
Rec'd 29 applications. Nine awards ranging from \$151,000 to \$600,000, totaling 3,982,295

FY22 - \$5M available
Rec'd 24 applications
Reviews/Selections in progress.
Award announcements are expected 2nd quarter of FY'23.


FY23 NOFO in draft.
Expect to publish the NOFO by the 3rd quarter of FY 2023.

RTM FAQs posted on HUD Exchange.

ZONE	NAME	LEGAL	FUNDING RECEIVED	STATE
1	Lebanon County Housing Authority		\$600,000	PA
2	Cuyahoga Metropolitan Housing Authority		\$599,734	OH
1	Rockford Housing Authority		\$220,126	IL
1	Independence Housing Authority		\$509,444	MO
1	Rockville Housing Authority		\$157,870	MD
2	Inkster Housing Commission		\$504,797	MI
2	Rock Hill Housing Authority		\$600,000	SC
1	Albany Housing Authority		\$600,000	NY
1	Fort Wayne Housing Authority		\$190,324	IN

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Multifamily Accelerated Processing (MAP) Guide- 2020 Updates

MAP Guide: Streamlined method/set of national standards for approved lenders to prepare, process, and submit loan applications for HUD multifamily financing

- No Zone 3 exclusion for 223(f) projects (FHA mortgage insurance to refinance existing multifamily housing). Radon testing and mitigation are required for Section 223(f) projects located in Zone 3.
- Remove HUD variance from testing standards. Require 100% testing of ground floor units and 10% upper floors per ANSI/AARST radon standards.
- Radon professionals may present justification (based on both physical inspections/building characteristics AND language per ANSI/AARST radon standards).
Can no longer make conclusions about testing or mitigation based solely on physical inspection of the property, building characteristics of the buildings, etc.

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Draft Departmental Policy for Addressing Radon in the Env Rev Process (CPD-21-136)

PURPOSE

- Consider radon in the contamination analysis for 24 CFR Parts 50 or 58
- Provide guidance on recommended best practices for considering radon
- Identify HUD programs that have established specific radon guidance.

<https://www.federalregister.gov/d/2023-03004>

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

COVID-19

Important information on COVID-19 and indoor air is posted on EPA's COVID-19 website at <https://www.epa.gov/coronavirus>. Specific indoor air COVID-19 content can be found at <https://www.epa.gov/coronavirus/indoor-air-and-coronavirus-covid-19>. This website provides information on the evolving science related to transmission of COVID-19 and what can be done to maximize protection indoors. The indoor air COVID-19 content on this site is among the most visited of EPA web areas.

For multilingual web content on COVID-19 and IAQ (as well as other indoor air environmental health issues), visit <https://www.epa.gov/lep>.

Clean Air in Buildings Challenge

The [Clean Air in Buildings Challenge](#) is a call to action and a set of guiding principles and best practices to assist building owners and operators with reducing risks from airborne viruses and other contaminants indoors. The challenge highlights a range of recommendations and resources available for improving ventilation and IAQ, which can help to better protect the health of building occupants and reduce the risk of COVID-19 spread.

Key actions outlined in the Clean Air in Buildings Challenge include the following:

- Create a clean indoor air action plan.
- Optimize fresh air ventilation.
- Enhance air filtration and cleaning.
- Conduct community engagement, communication and education.

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White House Clean Air in Buildings Pledge Campaign

The White House is inviting building owners and operators across the country to join the administration's efforts to continue fighting the spread of COVID-19 by publicly pledging to meet the Clean Air in Buildings Challenge. Visit <https://www.whitehouse.gov/cleanindoorair/sign-the-pledge> to take and sign the pledge.

Request for Information (RFI) for the Clean Air in Buildings Challenge

Building on the Biden-Harris administration's [Clean Air in Buildings Challenge](#), a key component of the president's [National COVID-19 Preparedness Plan](#), EPA's IED issued an RFI in late 2022 (comment period ended on December 5, 2022), which sought public comment to inform efforts by EPA and others to support the widespread adoption of actions that lead to improvements in IAQ in the nation's building stock—with a particular emphasis on commercial buildings and schools—to help reduce disease transmission indoors and improve public health. More than 400 commentors provided input. IED will review and consider information received during this public comment period to support the potential development, improvement and implementation of technical assistance efforts, including tools, training, guidance and other strategies to support sustained ventilation, filtration, air cleaning and other IAQ improvements in buildings. For more information, see [FR Docket ID No. EPA-HQ-OAR-2022-0794](#).

Science

New Webpages Available: Indoor Air Sensor Technology

New web-based consumer guidance on the [indoor use of air sensor technology](#) and [indoor use of low-cost air pollution monitors](#) is now available on the EPA Indoor Air Quality website. The use of sensor technology as a complement to the traditional IAQ best practices of source control, ventilation and air filtration may help consumers improve and maintain good IAQ. The purpose of this guidance is to help inform and increase consumer understanding of the use of low-cost air pollution monitors indoors, their potential benefits and limitations, and how to apply the data they provide toward improving IAQ. View the new web content at [Air Sensor Technology and Indoor Air Quality](#) and [Low-Cost Air Pollution Monitors and Indoor Air Quality](#).

IED-Supported NASEM Publications on Indoor Chemistry and Indoor Particulate Matter Widely Downloaded

The National Academies of Sciences, Engineering, and Medicine (NASEM) released two high-impact publications with support from EPA in 2022. [Why Indoor Chemistry Matters](#), published in May 2022, was among the 15 most downloaded NASEM publications in 2022, with more than 3,300 downloads to 94 countries. [Indoor Exposure to Fine Particulate Matter and Practical Mitigation Approaches: Proceedings of a Workshop](#), published in January 2022, has been downloaded more than 2,345 times to 94 countries. NASEM continues work on a consensus study on the [Health Risks of Indoor Exposure to Fine Particulate Matter and Practical Mitigation Solutions](#), expected to be completed in Spring 2023.

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EPA Researchers Publish Study on Do-It-Yourself Air Cleaners

An EPA research team recently published the results of controlled chamber evaluations of a range of do-it-yourself (DIY) air cleaner designs. The research team tested several designs against simulated wildfire smoke and determined the clean air delivery rate (CADR) for each design using a method similar to a standard test method for commercial air cleaner performance—ANSI/AHAM AC-1. The simplest design, consisting of a 1-inch MERV-13 furnace filter taped to a box fan, had a CADR of 111.2 cfm. Compared to this design, the greatest increases in CADR were observed when using a cardboard shroud taped to the fan outlet, using a 4-inch filter and a design with multiple filters. The DIY air cleaner was nearly ineffective with dirty filters, demonstrating the need to change filters often during smoke events. The researchers also evaluated noise and power consumption from the DIY air cleaner designs and a comparable commercial air cleaner. Researchers found that DIY cleaners in the study have a lower material cost but were noisier and drew more power than the commercial air cleaner model. The study was published in the journal *Indoor Air* and is available at <https://doi.org/10.1111/ina.13163>.

IAQ Emergency Preparedness, Response and Recovery

EPA Grants for Wildfire Smoke Preparedness in Community Buildings

Through November 14, 2022, EPA collected feedback on the design of a new grant program for wildfire smoke preparedness in community buildings and related activities. Feedback was solicited and collected through listening session events and an open email mechanism. EPA received in excess of 200 comments from more than 90 commentors who responded to the request for public input.

Stakeholder feedback is being carefully considered in the development of the Notice of Funding Opportunity (NOFO) for this program to inform such elements as program priorities, eligible projects, and the expected number and size of awards. EPA is planning to publish the NOFO in February 2023, and grants are expected to be awarded by the end of summer 2023. For more information, visit [Wildfire Smoke Preparedness in Community Buildings Grant Program](#).

Support for Flood Response and Winter Weather Safety

In January 2023, IED conducted outreach via govDelivery mass email and Twitter to support flood recovery in California that highlighted safe flood cleanup resources and strategies for protecting IAQ and health, including the following:

- [Flood Cleanup to Protect Indoor Air and Your Health](#)
- [Flooded Homes Cleanup Guidance](#)

In February 2023, IED also conducted outreach to highlight important tips for protecting IAQ and occupant health during winter weather conditions and, specifically, for preventing carbon monoxide poisoning and fires, mold and water damage, and cold weather injuries.

To receive future updates on IAQ emergency preparedness response and recovery resources and activities, [subscribe to our mailing list](#) or follow [@EPAair on Twitter](#).

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IAQ and Tribal Communities

Tribal Indoor Air Quality Training & Resource Directory

In September 2022, IED announced the availability of the [Tribal Indoor Air Quality Training & Resource Directory](#). This resource directory, developed in collaboration with the National Tribal Air Association and the Institute for Tribal Environmental Professionals, is a comprehensive compilation of resources and information to help tribes identify and access various IAQ resources and funding to support the creation or expansion of tribal IAQ programs. The directory is divided into the following sections: Healthy Homes, Schools and Buildings; Asthma; Mold and Moisture; Radon; Commercial Tobacco and Secondhand Smoke; Home Heating, Cooking and Energy; Disaster Preparedness & Mitigation; Disaster Response & Recovery; COVID-19 and Other Pathogens; Funding; Alaska Resource Addendum; and Helpful IAQ Contacts.

In 2023, EPA, in collaboration with other stakeholders, will be conducting outreach and continue to promote the *Tribal Indoor Air Quality Training & Resource Directory* to other groups, including the Indoor Air Quality Alaska Tribal Air Workgroup and the Tribal Air Monitoring Support Center Workgroup.

Please visit the [Indoor Air Quality in Tribal Communities](#) website to learn more and to download the Resource Directory.

Indoor Air Sensor Technology Training for Tribal Communities

In May 2023, Tribal Indoor Air Sensor Training will be presented at the 2023 National Tribal Forum on Air Quality, to be held in Phoenix, Arizona. The goal of this training is to help tribal communities learn about IAQ science, gain an understanding of PM pollution and other common indoor pollutants in tribal communities and their health risks, and learn how to use and interpret air quality data from low-cost indoor air pollution monitors. Training modules will cover topics specific to and requested by tribal audiences, including sensor technology use in relation to radon, asthma and woodsmoke (PM); potential health impacts; and loan programs. Modules will also provide best practices and actions for improving IAQ.

Household Energy (Cooking, Heating and Lighting in Low- to Middle-Income Countries)

Biden Administration Engagement on Cookstoves/Household Energy

In April 2021, President Biden committed to rejoin the Paris Agreement and took executive action to tackle the climate crisis in the United States and around the world. In coordination with the president's action, Administrator Michael Regan announced that the Biden administration will resume and strengthen EPA's commitment to the United Nations Foundation's Clean Cooking Alliance and will work with the Alliance, foreign governments and partners at every level to reduce emissions from home cooking and heating that contribute to climate change and affect the health and livelihood of almost 40 percent of the world's population.

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Over the past year, EPA has continued leading an effort to broaden and strengthen a whole-of-government approach to addressing this issue. At the 27th meeting of the Council of Parties (COP27), in Sharm El-Sheikh, Egypt, in November 2022, EPA organized a key event with its consortium of partners (the Clean Cooking Alliance [CCA], the Climate and Clean Air Coalition, the Berkeley Air Monitoring Group, the Stockholm Environmental Institute, and the United Nations Framework Convention on Climate Change)—collectively called the Clean Cooking & Climate Consortium (4C)—at the U.S. pavilion titled “Reducing Emissions from Cooking to Achieve Nationally Determined Contribution (NDC) Goals.” To watch this event, please visit <https://www.epa.gov/indoor-air-quality-iaq/household-energy-and-clean-air>. During this event, Administrator Regan discussed the whole-of-government approach, in which EPA, the Centers for Disease Control (CDC), DOE, the National Institutes of Health (NIH), the State Department and the U.S. Agency for International Development are collaborating to implement this worldwide climate, health, gender and livelihood initiative.

Advancing Sustainable Household Energy Solutions Initiative at Colorado State University

EPA cooperative partner Colorado State University is collaborating with Berkeley Air Monitoring Group to implement a household energy solutions and air quality initiative called Advancing Sustainable Household Energy Solutions (ASHES). This work includes a webinar series that shares the latest household energy findings from numerous researchers and their organizations. ASHES webinars have highlighted the work of the World Health Organization’s household energy initiatives, EPA Science to Achieve Results (STAR) grantees, the World Bank and other research programs. For more information on ASHES or to watch ASHES webinars, please go to www.ashes-csu.org.

Working With Countries to Implement Their Nationally Determined Contributions (NDCs)

Every country in the world is required under the Paris Climate Agreement to submit a plan to reduce climate emissions—called its NDCs. Sixty-seven countries have now included references to reducing emissions from household energy in their NDCs.

EPA is working with 4C to support countries in meeting their climate goals by reducing CO₂, methane, black carbon and other short-lived climate pollutants. The Consortium has been hosting a series of expert consultations to facilitate more direct interaction and support to countries in the development of household energy components in their NDCs; organization of their measurement, reporting and verification activities; financing opportunities; and best practices for scaling clean cooking programs to meet their national climate goals. This support is facilitating progress in two groups of countries—large group consultations to any interested countries and stakeholders and small group consultations during which 4C offers one-on-one support to three countries leading in this sector: Rwanda, Uganda and Ghana.

Clean Cooking Forum 2022 and State of the Evidence Base Workshop Follow-up

The CCA and partners from around the world organized the Clean Cooking Forum 2022, October 11–13, in Accra, Ghana. At the forum, EPA, NIH and other U.S. government agencies helped organize a “State of the Evidence” workshop to showcase the advances made in the clean cooking evidence base. As a result of this workshop, EPA and its partners have committed to developing a State of the Evidence Base paper

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for the clean cooking sector, covering research on health, climate, gender, economics and more. This paper will collect existing knowledge about household energy, identify gaps in research, and help actors set priorities for their work moving forward.

NOFO: Cleaner Cooking and Reducing Household Energy Emissions

EPA recently announced the availability of funds and is seeking applications from eligible entities to improve climate, environment, health, gender equity and livelihoods by reducing emissions from household energy in low- to middle-income countries.

The purposes of this cooperative agreement are to advance the state of knowledge and increase the exchange of technical and programmatic information among organizations working in the global household energy and health sector and to facilitate the identification, promotion and implementation of effective approaches and government policy actions that result in the rapid uptake and sustained use of clean and cleaner household energy technologies and fuels.

Applications are due by February 28, 2023. View the [NOFO](#).

Radon

National Radon Action Plan (NRAP)

IED continues to support the growing national network of federal agencies, private sector entities, nongovernmental organizations and states to prevent lung cancer deaths through the NRAP. The NRAP presents a long-range strategy for eliminating avoidable radon-induced lung cancer in the United States. The NRAP Leadership Council invites leaders who are serious about saving lives, eliminating preventable diseases, realizing a high return on investment in a healthier future, and building in health protection where we live, work and learn to join the NRAP Leadership Council.

State and Tribal Indoor Radon Grants (SIRG)

EPA continues to support programs aimed at risk reduction through the SIRG Program. The SIRG Program was appropriated \$10.9 million (M) in fiscal year 2023 (FY23) for state and tribal indoor radon grants, an increase of \$2.7M from FY22. This is the first significant increase in annual SIRG appropriations since the program's inception in the late 1980s. In alignment with EPA's current strategic plan, IED is encouraging regional offices not only to increase funding to states, but also to direct additional funding to new tribal grantees, and is encouraging state grantees to assist underserved and low-income communities. EPA will work with states and tribes to update their spending plans and to make any necessary adjustments to work plans.

EPA is also working to finalize the 2022 Annual SIRG Activities Report. This report highlights the important work states, territories and tribes are undertaking across the country to advance risk reduction. The Annual SIRG Activities Report highlights many new success stories and a strong commitment to IAQ and radon risk reduction. A link to the report is available on EPA's [SIRG Resources webpage](#).

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Building Codes

EPA continues to collaborate with industry and states to actively engage in efforts to promote adoption of radon-resistant new construction practices through international, national, state and local building codes. These efforts are mandated by the Indoor Radon Abatement Act and are also a key component of the National Radon Action Plan. The International Code Council will be publishing the 2024 I-Codes, which include Appendix F, an optional piece of the residential code that can be adopted by local jurisdictions and provides guidance on radon testing and mitigation.

Radon Credentialing

As part of EPA's responsibility to promote and support the availability of quality radon services to the public, EPA has been working over the past several years, through consultation with states, the public and industry—and in response to congressional direction—to develop a contemporary framework to guide the credentialing of radon service providers going forward. Professionals who provide radon testing and mitigation services play a key role in public health protection efforts. Because of the substantial risk resulting from exposure to radon, it is critical for radon service providers to possess the necessary skills to provide quality services and ensure consumer protection. EPA remains committed to facilitating access to a qualified workforce through a national nonregulatory framework that will help establish a quality standard for state-run and independent programs that credential radon service providers. The Agency plans to post an updated proposal through the *Federal Register* that reflects stakeholder feedback and will hold an information session shortly thereafter. For more information about EPA's proposal, visit the EPA radon website at [EPA's Draft Criteria for Radon Credentialing Organizations](#), where we will post the most up-to-date information.

EPA's Radon Reference and Intercomparison Program (ERRIP)

There are annual requirements for secondary radon chambers to be certified to perform radon measurement and calibration services for the radon industry participating in the National Radon Safety Board, the American Association of Radon Scientists and Technologists' National Radon Proficiency Program, and state radon programs. The first step in these certifications is to participate in ERRIP, which is managed and operated by the EPA Office of Radiation and Indoor Air's National Analytical Radiation Environmental Laboratory (NAREL), located in Montgomery, Alabama. NAREL works with these secondary radon chambers by providing the only U.S. radon reference that is traceable to the National Institute of Standards and Technology (NIST). There are currently three industry-certified secondary radon chambers for use by the U.S. radon community: Bowser-Morner, Inc., Dayton, Ohio; TCS Industries, Inc., Harrisburg, Pennsylvania; and KSU Radon Chamber, Manhattan, Kansas.

Asthma

Federal Collaboration on Asthma Disparities

EPA staff continue to participate in the monthly Asthma Disparities Subcommittee of the President's Task Force (PTF) on Environmental Health and Safety Risks to Children. The task force includes 17 federal agencies and is the focal point for federal government agencies to coordinate for the

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betterment of children’s environmental health. The monthly meetings feature reporting from the PTF supporting subcommittees that address three priority areas: (1) climate, emergencies and disasters; (2) asthma disparities; and (3) lead exposures.

EPA also participates in the monthly Asthma Disparities Workgroup (ADWG) Leadership Meetings. The ADWG is an extension of the Federal Asthma Disparities Action Plan and is co-chaired by EPA, HUD and the U.S. Department of Health and Human Services. The goal of the ADWG is to help minimize the inequities in comprehensive asthma care. During the meetings, members discuss strategies to advance the three major priority areas of the Asthma Disparities Subcommittee: (1) expanding sustainable financing for in-home asthma interventions, (2) closing research gaps, and (3) creating equitable expectations for asthma outcomes for all patients and caregivers.

On January 30, EPA—in collaboration with the CDC, HUD and NIH—hosted the ADWG Full Subcommittee meeting. The ADWG full subcommittee comprises more than 60 federal stakeholders committed to coordinating activities and leveraging resources to address nationwide disparities in asthma health outcomes. Discussion topics for this meeting included ADWG priority areas of sustainable financing (EPA), research gaps (CDC) and expectations/equitable outcomes (National Heart, Lung and Blood Institute [NHLBI]). The discussion also included Agency updates on the President’s Task Force on Environmental Health Risks and Safety Risks to Children (NHLBI), healthy indoor environments in schools (EPA), NIH–HUD healthy housing collaboration (NHLBI) and a recently issued Healthy Homes and Weatherization NOFO (HUD).

National Environmental Leadership Award in Asthma Management

EPA recently completed hosting the [application process](#) for the 2023 National Environmental Leadership Award in Asthma Management, which opened on December 12, 2022, and closed on February 12, 2023. This award is the highest federal recognition a program and its leaders can receive for delivering excellent environmental asthma management as part of their comprehensive asthma care services. Each year, EPA honors exceptional community-based programs that are addressing asthma disparities by integrating sound science into effective public health efforts. Applicants undergo a two-tiered review process by leaders in asthma management, and winners are announced in May to kick off Asthma Awareness Month. In addition to honoring the programs’ achievements, the goal of the awards program is to showcase the highest standards in asthma care. Winners will be announced during Asthma Awareness Month in May.

Asthma Community of Practice

On December 13, 2022, EPA hosted the second of a series of three webinars on asthma disparities and community health, titled “Population Health Situational Awareness: Getting the Data You Need to Build Equity in Child Asthma Outcomes.” This webinar showcased solutions to help communities reduce indoor environmental risks to improve asthma disparities and community health. Experts from the Cincinnati Children’s Hospital Medical Center, University of Cincinnati and Cincinnati Health Department explored data and analysis solutions that communities can use to identify where indoor environmental factors may be contributing disproportionately to asthma health burden and determine population health solutions designed to proactively identify at-risk children, connect them to clinical services, and

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reduce their household exposures to asthma triggers and air pollution indoors. The on-demand video is available at [AsthmaCommunityNetwork.org](https://www.AsthmaCommunityNetwork.org).

[AsthmaCommunityNetwork.org](https://www.AsthmaCommunityNetwork.org)

An important component of EPA's asthma program is equipping stakeholders with ongoing technical knowledge and capacity building. This is accomplished through [AsthmaCommunityNetwork.org](https://www.AsthmaCommunityNetwork.org), an online resource that facilitates peer-to-peer engagement and action learning events. Currently, almost 4,700 members are registered. EPA hosts technical webinars throughout the year, which are archived on this website. In addition, [AsthmaCommunityNetwork.org](https://www.AsthmaCommunityNetwork.org) features more than 600 asthma educational materials in the Resource Bank and offers mentoring opportunities for registered members. You can also find more information on our asthma award winners and sustainable financing. If you are not a member, join today!

Comprehensive IAQ Interventions in Homes

Indoor airPLUS: New Homes

IED's Indoor airPLUS (IAP) is a voluntary partnership and labeling program that helps new home builders address customer health concerns through construction practices and product specifications that minimize exposure to airborne pollutants and contaminants. IAP continues to see sustained growth, welcoming more than 130 new builder and rater partners to the program over the last quarter. By the end of FY22, EPA had recorded more than 52,000 total IAP-labeled homes, with roughly 10 percent of them reported in the 4th quarter—the highest quarter yet—so growth continues in a very positive direction.

Indoor airPLUS: Program Updates

In February 2023, EPA proposed updates to IAP, including a two-tiered certification program and other changes to strengthen and update program specifications and requirements. The 60-day comment period on the proposed updates will close on April 30, 2023. The proposed updates to the program take into consideration the broad range of feedback EPA received in response to a December 2020 opportunity for public comment on revised IAP Indoor airPLUS Construction Specifications proposed at that time. This 2023 proposal is designed to address feedback received on the 2020 proposal and to encourage broad industry participation to advance IAQ protections while strengthening program integrity with an improved verification and quality assurance framework.

Under this proposed program update (Version 2), builders will have an opportunity to choose between two IAP labels: Indoor airPLUS Certification and Indoor airPLUS Gold. The proposed Indoor airPLUS Certification specifications focus on strategies to improve IAQ without a prerequisite of ENERGY STAR certification. The proposed Indoor airPLUS Gold specifications include more advanced protections for improved IAQ in conjunction with ENERGY STAR certification.

Other features of the proposed Version 2 program update include changes to the training requirements for verifiers, a Home Certification Organization model to improve quality assurance, and a 5-year

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expiration date to the new IAP labels and specifications for voluntary recertification by the home/building owner after the 5-year expiration.

Following the 60-day comment period that closes on April 3, 2023, EPA expects to release the final Version 2 Indoor airPLUS Certification and Gold specifications in January 2024. During the first 12 months of implementation, beginning January 2024, partners may continue to use Indoor airPLUS Construction Specifications Version 1, Rev. 4 or begin to use one of the new two-tier specifications, if finalized. EPA anticipates that the Indoor airPLUS Construction Specifications Version 1, Rev. 4 will be sunsetted by January 2025. These dates are subject to change.

Comprehensive IAQ Interventions in Schools

Indoor Air Quality, Healthy Green Cleaning and Preventive Maintenance in Schools

As a result of the COVID-19 pandemic, EPA's Schools Program is focused on the increased interest in healthy indoor environments in schools, increased urgency to respond to IAQ issues in schools and leveraging key partnerships to expand our network of stakeholders.

Inflation Reduction Act—Schools Air Quality Grants

Provision 60106 of the Inflation Reduction Act includes a new \$50M program to improve school air quality and reduce greenhouse gas emissions, with a particular focus on schools serving low-income and disadvantaged communities. This program will include funding for grants and other activities to monitor and reduce air pollution and greenhouse gas emissions at schools, as well as technical assistance to schools in low-income and disadvantaged communities to address environmental issues; develop school environmental quality plans that include standards for school building, design, construction and renovation; and identify and mitigate ongoing air pollution hazards. The NOFO for this program is expected to be available in November 2023 and will be posted on <https://www.grants.gov>.

EPA Engagements and Webinars on Schools

EPA continues to support healthy indoor environments in schools during the COVID-19 pandemic. View IED-hosted webinars in the series [Healthy Indoor Environments in Schools: Plans, Practices and Principles for Maintaining Healthy Learning Environment](#).

On November 16, 2022, EPA participated in the Association for the Advancement of Sustainability in Higher Education Webinar. The webinar titled "[An Accessible Roadmap to Healthy Indoor Air Quality](#)" provided guidance on specific measures that can make a significant difference on IAQ without major capital investments. The measures include actions related to cleaning and disinfecting, sustainable purchasing, HVAC and electric maintenance, and IAQ testing and monitoring.

On December 8, 2022, EPA hosted a webinar titled "Navigating Mature and Emerging IAQ Technologies in Your Schools for COVID and Beyond." This webinar featured experts from NIST, EPA's Office of Research and Development, and the University of Colorado Boulder. The speakers discussed how improving IAQ through ventilation, filtration and air cleaning is vital to student health and performance.

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Presenters also provided information on how school staff can use available science to navigate and evaluate mature and emerging IAQ technologies to find the best option for their school districts. The [recording is available on demand](#).

Collaboration With Federal Partners to Promote School Environmental Health

EPA and the U.S. Department of Education are working to sustain and expand a collaborative partnership on healthy infrastructure, IAQ investments, and health and learning in schools. This collaboration is prioritizing good IAQ in schools as essential for achieving learning outcomes, health and well-being and has a special focus on schools serving low-income communities.

EPA continues to collaborate with DOE's Efficient and Healthy Schools campaign. The campaign aims to help K–12 schools—especially those serving low-income student populations—identify practical HVAC solutions and upgrades to improve energy efficiency while promoting healthier spaces for teaching and learning. This campaign will promote peer-to-peer learning among school participants and will recognize schools for their best practices and exemplary solutions. The campaign will also engage such supporters as designers, engineers, consultants and program implementers to better support schools that are investing in efficient and healthy school buildings.

Expanding the Reach for School IAQ Training

EPA also continues to promote the *IAQ Tools for Schools: Preventive Maintenance Guidance* documents to help school personnel take a holistic, proactive approach to IAQ issues. The guidance leads school personnel through the steps for developing and implementing an IAQ preventive maintenance plan and offers a framework to make the case using a value proposition for an IAQ preventive maintenance plan and gain buy-in from the school community.

EPA continues to actively deliver technical assistance to school communities through two professional training webinar series: the [IAQ Master Class Professional Training Webinar Series](#) and the [IAQ Knowledge-to-Action Professional Training Webinar Series](#). Since 2015, both series have had more than 22,000 views from live webinars and on-demand recordings online. EPA is eager to drive even more action in school districts through spreading the IAQ Master Class Professional Training Webinar Series across more networks and platforms. Please contact us at iaqschools@epa.gov if your organization would like to use your existing training platforms and vehicles to host or link to the webinar series.

Consider Subscribing to Email Alerts on IAQ Topics

EPA offers a free subscription service for information on more than 20 indoor air topics—opt-in at <https://public.govdelivery.com/accounts/usepaiaq/subscriber/new> to receive email updates on IAQ. More than 200,000 subscribers regularly receive announcements of upcoming trainings, webinars and events, as well as practical tips and information resources to improve IAQ. Subscribers can choose among 20 topics, such as mold, air cleaners, radon, environmental asthma, air quality in schools, and IAQ emergency preparedness and response. Many topics are also presented in Spanish. Subscriptions can be canceled easily at any time.

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