

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

March 20, 2024

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

Meeting Overview

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 - The next CIAQ meeting will be held in June 2024.

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

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U.S. Department of Energy (DOE)

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The Federal Energy Management Program

Background

The Federal Energy Management Program (FEMP) focuses on key services that help federal agencies meet energy and water reduction requirements and goals. For energy efficiency and indoor environmental quality, [FEMP](#) offers resources to help federal agencies plan and assessments and upgrades. FEMP offers tools, trainings, case studies, and publications. In particular, FEMP, in partnership with the General Services Administration and with support from the Pacific Northwest National Laboratory, developed the [Healthy Buildings Toolkit](#) to support the identification of energy efficiency and indoor environmental quality (IEQ) upgrades, leveraging savings from productivity gains and reductions in utility expenditures to improve business cases. The toolkit provides customized estimates for the financial savings and non-monetary benefits related to improving IEQ and occupant productivity.

New Updates

Most recently, FEMP published two documents.

- Recent Research Publication. Lauren Esaki-Kua, Kevin Keene, Kieren McCord, Max Martell, Pacific Northwest National Laboratory. February 2024. *The Energy Efficiency and IEQ Assessment Guide*. <https://energy.gov/femp/articles/energy-efficiency-and-indoor-environmental-quality-assessment-guide>. This report provides thorough guidance when preparing for an energy and IEQ assessment. It includes step-by-step instructions, detailed insights, and practical examples for the various phases of an energy and IEQ assessment. IEQ encompasses indoor building conditions—such as air quality, thermal comfort, acoustics, and lighting—and is a growing field of interest among a diverse range of stakeholders (e.g., building owners and managers) due to the effects it has on occupant health and productivity.
- Recent Fact Sheet. Pacific Northwest National Laboratory. January 2024. *Making the Most Out of an Indoor Environmental Quality Assessment*. <https://www.energy.gov/sites/default/files/2024-02/femp-indoor-environmental-quality-assessment.pdf>.

The Weatherization Assistance Program

Background

The DOE Weatherization Assistance Program reduces energy costs for low-income households by increasing the energy efficiency of their homes while ensuring their health and safety. The program supports 8,500 jobs and provides weatherization services to approximately 35,000 homes every year using DOE funds.

New Updates

Pilot Study for Multifamily Building Ventilation and Indoor Air Quality. The Weatherization Assistance Program requires that buildings have ventilation in accordance with ASHRAE Standard 62.2-2016 in

dwelling units weatherized under the program. However, this resulted in concerns for multifamily buildings where installing ventilation in individual units is costly or otherwise logistically difficult. A field study conducted in nine centrally ventilated multifamily buildings in New York State investigated the impact of weatherization and feasible ventilation improvements (i.e., to implement ASHRAE Standard 62.2-2016 “to the greatest extent possible” in this type of multifamily building) on indoor air quality (IAQ) in the apartments. A primary objective was to determine if these practices improve or at least “do no harm” to both IAQ and occupants' well-being.

The study concluded that the attempts made to comply with ASHRAE Standard 62.2-2016 were generally sufficient at achieving the desired ventilation rates. There was no evidence to suggest that weatherization work had a detrimental impact on IAQ, supporting the “do-no-harm” philosophy of the weatherization program. The research findings do not support prohibiting weatherization work in these buildings. However, in cases where significant envelope alterations occur in individual units, it is crucial to ensure adequate ventilation. Nonetheless, the results support interventions at the scale implemented in these buildings, rather than require individual-unit ventilation installations.

Citation: Merrin, Zachary, and Francisco, Paul W. Oak Ridge National Laboratory, Oak Ridge, TN. September 2022. *Pilot Study for Multifamily Building Ventilation and Indoor Air Quality*. <https://doi.org/10.2172/1897828>

The Building Technologies Office’s Building America Program

Background

Elevating a clean energy economy and skilled workforce, this world-class research program partners with industry to leverage cutting-edge science and deployment opportunities to reduce home energy use and help mitigate climate change.

New Research Report

Eric Martin, Tanvir Khan, Dave Chasar, Jeff Sonne, and Charles Withers, Jr. Florida Solar Energy Center. February 2024. *Ventilation and Indoor Air Quality in Recently Constructed U.S. Homes: Measured Data from Select Southeastern States*. <https://www.nrel.gov/docs/fy24osti/83356.pdf>. This report presents and discusses the study protocol and high-level results obtained from data collection efforts to characterize IAQ in homes constructed since 2013 in Florida, Georgia, and South Carolina. Few data are available that quantify IAQ or associated contaminant levels with air exchange in U.S. homes. To address this gap, the DOE Building America Program conducted a study to characterize IAQ in U.S. homes constructed since 2013, along with presence, functionality, and occupant use of control measures. A total of 51 homes were recruited and participated in the study. Researchers made multiple visits to each home to: install instrumentation to measure indoor and outdoor concentrations of pollutants of interest—formaldehyde, carbon dioxide, particulate matter with diameter of 2.5 microns or less (PM_{2.5}), radon, and nitrogen dioxide; install instrumentation to monitor use/operation of home features and equipment that affect air quality and air exchange with the outdoors including whole house mechanical ventilation systems (WHMV); and characterize the airflow of mechanical devices inducing air exchange with the outdoors and quantify building envelope and duct leakage. Most homes were monitored for one week, some with an operating WHMV system, and some without. Select homes with functioning, ASHRAE 62.2-compliant ventilation systems were monitored for two weeks—one week with the WHMV system operating, and one without. Homeowners were asked to complete an activity log for each day of the monitoring period designed to capture actual occupancy, as well as routine and intermittent

activities that could affect IAQ. The findings suggest that proper training of heating, ventilating, and air conditioning (HVAC) technicians, electricians, code inspectors, and home energy auditors with regard to installation and commissioning is critical to ensuring the IAQ benefits of WHMV are realized. Another priority is improved labeling and training on identification of controls for homeowners to overcome the issue of nonoperating systems.

New Magazine Article

Juliet Grable. January 10, 2024. “Mechanical Ventilation in Homes Works—If You Use It” *Pro-Builder*. <https://www.probuilder.com/mechanical-ventilation-field-studies>. The [Pacific Northwest National Laboratory](#) tested homes in cold and marine climates in Colorado and Oregon, while [Florida Solar Energy Center](#) investigated homes in mixed-humid and hot-humid climates in the Southeast. These Building America field studies show a disconnect between intended and actual use of mechanical ventilation systems in newer homes.

New Research Report

Joe Nebbia, Newport Partners LLC. February 2024. *Development of Laboratory Test Methods for Low-Cost Indoor Air Quality Sensors*. <https://www.nrel.gov/docs/fy24osti/82914.pdf>. A primary barrier to using low-cost IAQ sensors to improve air quality, or to provide reliable information on IAQ status in indoor environments, is that there has been no established method for determining how well low-cost sensors work. Manufacturers perform their own testing, but this testing varies across private organizations and does not carry with it the credibility of testing performed to a standard that can be repeated by other organizations and compared to other manufacturer results using the same test method. Without any way of reliably evaluating low-cost sensors, the ability to use them to improve IAQ may be limited. A standardized method of testing allows for the evaluation of sensors and sensor units in a way that is reliable and comparable to other sensors. One research questions was “Can test methods be published for sensors of one aerosol-type pollutant (PM_{2.5}) and one gas-type pollutant (CO₂) that can then be used as models for future test methods for sensors of other aerosol/gas pollutants?” The project team was able to develop two test methods—PM_{2.5} sensors and CO₂ sensors—that were technically feasible and resulted in a high level of testing rigor (recognized by members of the ASTM D22.05 Subcommittee). ASTM published the approved test method, *ASTM D8405-21 Standard Test Method for Evaluating PM2.5 Sensors or Sensor Systems Used in Indoor Air Applications*, in September 2021. The draft CO₂ test method was well-received by the ASTM D22.05 Subcommittee and received more than 90% affirmative ballots during the first subcommittee ballot and represents a step toward broad market adoption of low-cost indoor air quality sensors.

Lawrence Berkeley National Laboratory (LBNL)

New Internet Article

New internet article by Rocky Mountain Institute with contributions from LBNL. Prescott, N., Henschmen, M., Hines, E. and Seals, B. The Rocky Mountain Institute. 2023. *The Need for US Indoor Air Quality Guidelines. Advancing Policy for Healthy Buildings at the Federal and State Level*. October 11, 2023. https://rmi.org/the-need-for-us-indoor-air-quality-guidelines/?utm_campaign=organic&utm_source=linkedin,twitter&utm_medium=social&utm_content=1696975966. RMI provides a comprehensive, novel review of IAQ guidelines, summarizes their real-world applications, and provides recommended actions for policymakers. Guidelines can inform standards, regulations, and policies to ensure that indoor environments are safe and healthy.

LBNL participates in the Consumer Products Safety Commission’s working group on Indoor Air Quality and Oven Ranges. It is working on test methods to evaluate emissions from cooking with a strong focus on appliance emissions using standardized test chambers. This is seen as a prerequisite for rating/certification of products. Progress is continuing on the joint ASTM/IEC range hood test method. LBNL is preparing replies to comments on the test method.

For ASHRAE 62.2, LBNL presented the results of multifamily compartmentalization work. This may lead to a future change proposal that would allow more flexibility in ventilation system selection. Currently, the standard does not allow any exhaust for buildings with common corridors, and LBNL found this to not be an issue if there is reasonable compartmentalization (as required in 62.2). One challenge is that these unit exhaust systems (that use corridor make up air) are no longer allowed by mechanical codes. So addressing the building codes on this topic might be necessary. Other ASHRAE 62.2 issues relevant to LBNL work are mostly about kitchen ventilation and range hood operation. There are discussions about the effectiveness of general kitchen ventilation (i.e. no hood just a vent in the wall) and how capture efficiency might get adopted in 62.2.

LBNL participated in several ASHRAE 241 (Airborne Infectious Aerosol Control) standards meetings. For the standard itself, LBNL is now working on developing an FAQ with Steve Emmerich (National Institute of Science and Technology [NIST]) and Chandra Sekhar (National University of Singapore) on the residential guidance.

LBNL presented its kitchen ventilation paper (Performance and usage of mechanical residential kitchen ventilation) in an ASHRAE technical session. There was much discussion about range hood effectiveness and ideas about automation of operation, but a general consensus that everyone's work on this topic is definitely a key factor in reducing exposure to harmful cooking contaminants.

Progress is being made on Planning for the IAQ2025 conference (the scope is expanding to be IEQ to include sound, comfort, and other ventilation-related topics). It will be in Montreal in September 2025. LBNL is working on keynote speakers and topics of interest.

Pacific Northwest National Laboratory

New Journal Article. Prussin A., Z. Cheng, W. Leng, S. China, and L. Marr. 2023. “Size-Resolved Elemental Composition of Respiratory Particles in Three Healthy Subjects”. *Environmental Science & Technology Letters* 10, no. 4:356–362. The chemical composition of respiratory particles is of interest because the viability of any viruses and bacteria in the particles has been shown to depend on this factor. This study advances understanding of the chemical microenvironment to which pathogens are exposed while transmitting between hosts. <https://www.pnnl.gov/publications/size-resolved-elemental-composition-respiratory-particles-three-healthy-subjects>.

The Building Technologies Office’s Efficient and Healthy Schools Program

On November 30, DOE announced the launch of the [Efficient and Healthy Schools Program](#), an evolution of the past work of the Building Technologies Office’s (BTO) Efficient and Healthy Schools Campaign. Beginning in the 2023–2024 school year, the Efficient and Healthy Schools Program is introducing four categories for both technical assistance and recognition. These categories align with the year-round expert support offered to school districts and provide annual opportunities to honor schools through the progression of activities leading to sustained school improvements in energy and health.

This program is an interagency effort spearheaded by BTO with the U.S. Department of Education and U.S. Environmental Protection Agency.

In parallel to launching the Efficient and Healthy Schools Program, BTO has formalized an in-kind collaboration with the [Center for Green Schools at the U.S. Green Building Council](#) to support improved IAQ in schools. This collaboration will provide training, technical assistance, and field research opportunities to support school districts and their staff in implementing practical solutions and ensuring safe and healthy schools.

National Institute of Science and Technology (NIST)

Chemical Assessment of Surface and Air (CASA)

Project Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov

In spring 2022, NIST hosted the Chemical Assessment of Surface and Air (CASA) research campaign. A team of 12 external research groups used environmental and chemical perturbations in the Net-Zero Energy Residential Test Facility (NZERTF) to investigate the chemistry of indoor environments. Chemical transformation induced by ozone, smoke, ammonia, carbon dioxide, insecticides, and VOCs were investigated. Since the conclusion of empirical testing, environmental and chemical data collected throughout the campaign have fueled an ongoing effort between NIST and several external research groups to create digital twins of the NZERTF and model the chemistry observed within the indoor environment.

Two articles have been published (<https://doi.org/10.1126/sciadv.adh8263> and <https://doi.org/10.1021/acs.est.3c04816>) reporting on the persistence of smoke VOCs indoors and intrusion of outdoor NO_x indoors, respectively. Articles relating to water-soluble gases and acid/base chemistry have been recently submitted to peer-reviewed journals and should be available this summer. A number of other journal articles are being prepared and should be published over the next year. For those interested in CO₂ measurements, it was measured throughout the campaign. It was used to calculate the acid/base chemistry of surfaces, along with ammonia. A paper on this topic has been submitted by CASA team members.

NASEM Workshop: Why Indoor Air Chemistry Matters

Project Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov

NIST researchers helped organize the February 8, 2024, Why Indoor Chemistry Matters Workshop 2: Prioritizing Indoor Chemistry Research, hosted by the National Academies. This workshop was attended by federal agencies, foundations, and institutions to strengthen investment in indoor chemistry research. NIST led two panel discussions and contributed to a panel discussing far-UVC air filtration. For more information, visit <https://www.nationalacademies.org/event/10-18-2023/why-indoor-chemistry-matters-workshop-2-prioritizing-indoor-chemistry-research>.

ASHRAE Standard 62.1

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

The 2022 version of Standard 62.1, Ventilation and Acceptable Indoor Air Quality, was published last year by ASHRAE. Among many other changes, the new version of the standard contains the following: a reorganization of Section 5, "Systems and Equipment," to better reflect the path of airflow and the relationship of buildings, systems, and equipment; improvements to the performance-based IAQ Procedure; requirements for a maximum dew-point temperature in mechanically cooled buildings; clarified air density adjustments; and removal of items related to transient occupancies that now fall under Standard 62.2. The committee will be meeting at the ASHRAE Annual Meeting in Indianapolis <https://www.ashrae.org/conferences/2024-annual-conference-indianapolis>.

The April issue of the ASHRAE Journal will include the airflow and contaminant simulations supporting the writing of the approved [ANSI/ASHRAE Addendum a to ANSI/ASHRAE Standard 62.1-2022](#) on adding a new “Corridor” space type under “Educational Facilities” that requires a per-area ventilation rate that is double the current rate for a “General” corridor. By using the ventilation rate for this space type, schools could reduce annualized CO₂ exposure in the corridors by 11% and exposure to a generic TVOC by 41%. Check out the [Hot Air](#) podcast episode on the article airing on March 24.

ASHRAE Standard 62.2

Project Contact: Steven Emmerich, sjemmeri@nist.gov

The SSPC 62.2 committee will be meeting during the ASHRAE Annual Meeting in Indianapolis on June 21 and 22. Topics to be discussed include environmental tobacco smoke, an IAQ performance procedure, and control of infectious aerosols. More information is available at <https://www.ashrae.org/conferences/2024-annual-conference-indianapolis>

ASHRAE Standard 189.1

Project Contact: Andrew Persily, andyp@nist.gov

The committee responsible for the ASHRAE/ICC/IESUSGBC SSPC 189.1, *Standard for High-Performance Green Buildings Except Low-Rise Residential Buildings*, published an update of the 2020 version of the standard in 2023. This standard will constitute the technical content of the *2024 International Green Construction Code*. The committee holds monthly web meetings, which are open to all interested parties. The committee will be meeting at the ASHRAE Annual Meeting in Indianapolis <https://www.ashrae.org/conferences/2024-annual-conference-indianapolis>. 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>.

ASHRAE Guideline 44P

Project Contact: Steven Emmerich, steven.emmerich@nist.gov

Proposed ASHRAE Guideline 44P *Protecting Building Occupants from Smoke During Wildfire and Prescribed Burn Events* completed a first public review in the fall of 2023. The GPC 44P is now working on addressing the public review comments and will meet June 24 in Indianapolis <https://www.ashrae.org/conferences/2024-annual-conference-indianapolis>.

ASHRAE Guideline 45P

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

The ASHRAE committee developing a guideline titled *Measurement of Whole Building Performance for Occupied Buildings Except Low-Rise Residential Buildings* has been meeting by webinar every **three weeks**. The committee is rewriting the ASHRAE 2010 *Performance Measurement Protocols for Commercial Buildings* into a guideline.

ASHRAE Guideline 241P

Project Contact: Steven Emmerich, steven.emmerich@nist.gov

ASHRAE has published Standard 241 *Control of Infectious Aerosols*. The standard establishes minimum requirements for ventilation, filtration, and air-cleaning system design, installation, commissioning, operation, and maintenance to reduce exposure to infectious aerosols. SSPC 241 has been established as a standing committee to maintain and revise the standard.

ASHRAE Handbook: Indoor Environmental Health

The *ASHRAE Handbook—Fundamentals* “Indoor Environmental Health” chapter is currently being updated. If you would like to serve as reviewer, please contact Lisa Ng, lisa.ng@nist.gov.

CO₂ Monitoring Outreach

Project Contact: Andrew Persily, andyp@nist.gov

The use of CO₂ monitoring in schools and other buildings has increased in efforts to identify poorly ventilated spaces. In support of these and other activities, Andrew Persily published a paper entitled “Development and Application of an Indoor Carbon Dioxide Metric” in the *Indoor Air* journal, available as open access (<https://doi.org/10.1111/ina.13059>). The paper refers to an online tool, QICO₂, that can be used to estimate a space-specific CO₂ concentration based on the target ventilation rate of the space and its occupancy, which can serve as a ventilation rate metric. That tool is available at <https://pages.nist.gov/CONTAM-apps/webapps/CO2Tool/#/> and is described in NIST Technical Note 2213 Indoor Carbon Dioxide Metric Analysis Tool, which is available at <https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2213.pdf>.

ASTM: D22.05 Subcommittee on Indoor Air

Project Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov

The subcommittee has produced a guide (ASTM WK81752 *Guide for Determination of Airborne PFAS in the Indoor Environment*) on analytical methods for the analysis of PFAS in indoor air. The intent of the guide is to help the user understand the range of chemical properties of PFAS found in air, the applicability of various sampling media and extraction methods, and the applicability of various analytical equipment used for detection. This Guide has been approved by the committee will be published in the upcoming months.

The subcommittee has also started a workgroup to produce a standard test method for the testing of air cleaning technologies (ASTM WK81750 *Standard Test Method for Chemical Assessment of Air Cleaning Technologies*). This method is designed to be agnostic to the air cleaning technology, quantify the removal performance of multiple target chemicals, and investigate a range of potential byproducts. NIST has conducted the experiments to support method development and provide precision and bias data for the method. A journal article summarizing the NIST data has been submitted. This method was balloted for the first time in the summer of 2023. Several negatives are currently being addressed. The item will be re-balloted in summer 2024.

Project Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov

The subcommittee has started a workgroup to produce a standard test method for the testing of air cleaning technologies (ASTM *WK81750 Standard Test Method for Chemical Assessment of Air Cleaning Technologies*). This method is designed to be agnostic to the air cleaning technology, quantify the removal performance of multiple target chemicals, and investigate a range of potential byproducts. NIST has conducted the experiments to support method development and provide precision and bias data for the method. This method was balloted for the first time in the summer of 2023. Several negatives are currently being addressed. The item will be re-balloted in winter 2024.

Project Contact: Andrew Persily, andyp@nist.gov

The subcommittee is revising *D6245 Standard Guide for Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation*. A revision of this standard was balloted at the subcommittee level in July 2023. The comments received during that ballot will be discussed at the D22.05 subcommittee meeting in late October, after which the standard will presumably be revised for another ballot early in 2024.

Project Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov

Other existing standards are continually undergoing review and revision on a 5-year rotation.

International Society of Indoor Air Quality and Climate (ISIAQ) Scientific and Technical Committee (STC34)

Project Contact: Steven Emmerich, steven.emmerich@nist.gov

ISIAQ STC34 aims to continuously monitor, collect, and organize information about IEQ guidelines worldwide. In 2021, STC34 created an open integrated IEQ database that is freely accessible at www.ieqguidelines.org. Currently, the database is focused on IAQ parameters. Based on feedback and discussions, STC34 has decided to extend the database by adding outdoor air regulations and guidelines related to ventilation, comfort, acoustics, and lighting.

Germicidal UV (222 nm) Ozone Formation

Project Contacts: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov and Michael Link, Michael.f.link@nist.gov

In-room germicidal UV (GUV) using 222 nm wavelengths has recently gained traction as method to inactivate airborne pathogens. The technology directs 222 nm light onto occupied spaces to minimize the near-field bioaerosol transmission. Since this wavelength creates ozone in the stratosphere, there were questions if significant ozone was formed in using this technology indoors. NIST tested a GUV 222 nm lamp in a stainless steel chamber and demonstrated the lamp produced ozone (<https://doi.org/10.1021/acs.estlett.3c00318>). Dustin Poppendieck and Michael Link attended The John Hopkins University–organized workshop Evaluating the Health and Policy Implications of Far UV Technology on February 28, 2024. A new journal article on the IAQ impacts of using 222 nm lights in a public bathroom has been submitted to a peer-reviewed journal, and results will be shared at Indoor Air 2024 (July 7–11, 2024) and the Second International Congress on Far-UVC Science and Technology

(ICFUST) 2024 (June 18–24, 2024). The impacts of the ozone produced by GUV on IAQ remains a subject of future NIST studies.

American Council for an Energy-Efficient Economy (ACEEE) Hot Water Forum: Optimizing Hot Water Distribution Systems

Project Contact: Stephen Zimmerman, stephen.zimmerman@nist.gov


Reference buildings, previously developed for energy analyses to support the development of commercial/institutional building energy efficiency standards, had been further developed to support airflow and indoor air quality analysis. In recent years, NIST undertook an effort to develop premise plumbing system designs for three residential reference buildings and four commercial reference buildings to support more consistent modeling efforts and has made the designs available for researchers and industry to analyze system performance, new technologies, and design and operation strategies. On March 14, 2024, these designs were presented and discussed with plumbing system professionals at the Hot Water Forum in Atlanta, Georgia. More information can be found at: <https://www.aceee.org/2024-hot-water-forum-hot-air-forum>.

Household and Commercial Products Association

Project Contact: Dustin Poppendieck, 301-975-8423, dustin.poppendieck@nist.gov

After publishing a paper comparing chemical emission from Christmas trees (<https://doi.org/10.1016/j.indenv.2023.100002>) to emissions of common consumer products, the Household and Consumer Products Association (HCPA) reached out to learn more about how indoor chemistry to benefit their members, who represent a \$170 billion industry. Dustin Poppendieck will present “Primary and Secondary Impacts of Consumer Products on Indoor Air Quality” on May 9, 2024 at the HCPA’s midyear convention in Washington, D.C. <https://www.thehcpa.org/open-events/events-overview/>.

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



**OFFICE OF
LEAD HAZARD CONTROL
AND HEALTHY HOMES**

Healthy Children | Healthy Families | Healthy Communities

**Federal Interagency
Committee on Indoor Air
Quality (CIAQ) Meeting**
March 20, 2024

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

Office of Lead Hazard Control and
Healthy Homes (OLHCHH), Policy
& Standards Division (PSD)

Presenters:
Dr. Rhona Julien, ARP Chair, GTR
Larry Byrd, MHA, GTR
Michelle Roberts, GTR

What is the OLHCHH?

- The Office of Lead Hazard Control and Healthy Homes (OLHCHH) is an office within the Department of Housing and Urban Development (HUD) that protects children and families from health and safety hazards in housing.
- The Office was established in 1991 as the Office of Lead Based Paint Poisoning Prevention.
- 5 Divisions:
 - Programs Division
 - Business Operations Division
 - Program and Regulatory Support Division
 - Grant Services Division
 - Policy and Standards Division

Radon Testing and Mitigation Demonstration for Public Housing Grant Program Overview

- HUD has awarded approximately \$14M since FY21 to public housing agencies to conduct testing and mitigation of radon in the units they manage and to help build capacity for future radon testing and mitigation
- Funding to date will protect at least 22,394 residents including children residing in public housing from radon exposure
- HUD will continue to use this grant program to obtain information on methods and costs for radon testing and mitigation in public housing

HUD Radon Testing and Mitigation Demonstration for Public Housing Grant Program

- For FY23, HUD had **\$5.1M** available
- HUD made 6 awards, ranging from \$442,858 to \$600,000, totaling about \$3.1M
- These awards are expected to protect at least 3,000 residents, including children

ZONE	NAME	LEGAL	STATE	FY23 FUNDING RECEIVED
2	Housing Authority of Prince George's		MD	\$450,678
1	Blair Housing Authority		NE	\$442,858
1	Warron County Housing Authority		IL	\$600,000
1	The Housing Authority of Kansas City		MO	\$508,274
1	Columbiana Metropolitan Housing Authority		OH	\$600,000
1	Maryville Housing Authority		TN	\$446,122

Lead and Healthy Homes Technical Studies (LHHTS) Program Overview

LHHTS program aims to improve the knowledge of housing-related health and safety hazards to develop new hazard assessment and control methods

Lead Technical Studies (LTS) program goal is to improve the efficacy and cost-effectiveness of methods for evaluation and control of residential lead-based paint hazards

Healthy Homes Technical Studies (HHTS) program goal is to advance the recognition of residential health and safety hazards and more closely examine the link between housing and health

How does the LHHTS Program Support Indoor Air Quality (IAQ)?

- The LHHTS program started in FY2010
- HUD has funded over 90 grantees over the past 12 years across all HUD regions
- 20 grantees of the HHTS program focus on improving air quality
- Some crosscutting areas of focus include:
 - Electrification & Decarbonization
 - Weatherization
 - Older Adults
 - COPD
 - Cost-effective measures

Examples of Research Studies:

Evaluating residential weatherization measures and indoor environment quality (IEQ) conditions

Improving residential indoor air quality of older adults diagnosed with COPD

Researching units with gas stoves to improve IAQ to reduce asthma symptoms

Empowering residents to effectively manage individual-specific triggers of respiratory ailments associated with IAQ

Week-by-Week Overview



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

Clean Air in Buildings Challenge

The [Clean Air in Buildings Challenge](#) is a call to action by the Biden administration to encourage and assist building owners and operators with reducing risks from airborne viruses and other contaminants indoors. The Clean Air in Buildings Challenge includes a set of guiding principles and best practices that highlight a range of recommendations and available resources for improving ventilation and IAQ in buildings, which can help 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:

- Creating a clean indoor air action plan
- Optimizing fresh air ventilation
- Enhancing air filtration and cleaning
- Conducting community engagement, communication and education

The White House has invited building owners and operators across the country to join the administration's efforts to help fight against the spread of infectious disease 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!

Science

NASEM released EPA/IED sponsored consensus study report *Health Risks of Indoor Exposure to Fine Particulate Matter and Practical Mitigation Solutions*

On January 19, 2024, the National Academies of Sciences, Engineering, and Medicine (NASEM) released the consensus study report *Health Risks of Indoor Exposure to Fine Particulate Matter and Practical Mitigation Solutions*. The report considers the state-of-the science on the health impacts of exposure to PM_{2.5} indoors, including practical mitigation solutions to reduce exposure in residential settings. The report highlights important research needs and key implications of the scientific research, including potential near-term opportunities for incorporating what is known into practice. EPA IED commissioned this study. For more information about the study and to download a copy of the report or view the public release webinar recording, visit [the NASEM's study website](#).

NASEM workshop: *Why Indoor Chemistry Matters Workshop 2: Prioritizing Indoor Chemistry Research*

On February 8, 2024, NASEM held the workshop *Why Indoor Chemistry Matters Workshop 2: Prioritizing Indoor Chemistry Research*. This hybrid workshop aimed to foster discussions around recommendations for prioritizing indoor chemistry from the National Academies consensus report, [Why Indoor Chemistry Matters](#), which was co-sponsored by EPA. For more information about the workshop, visit [NASEM's webpage for Workshop 2](#).

NASEM will hold *Why Indoor Chemistry Matters Workshop 3: Reaching Communities for Action* on April 10. Learn more on [NASEM's webpage for Workshop 3](#).

IAQ Emergency Preparedness, Response, and Recovery

Raising Awareness of IAQ in Emergencies at National Conferences

EPA will present on “Promoting Building Occupant Safety and Indoor Air Quality During and Following Emergencies” at two national conferences in March 2024, including the [National Air Quality Conference 2024](#) and the national [2024 Preparedness Summit](#). The presentations will describe EPA’s IAQ Emergency Preparedness, Response, and Recovery (EPRR) Program, a voluntary program for promoting healthier indoor air before, during, and after emergencies. These presentations will highlight strategies for mitigating impacts to indoor environments from emergencies, such as wildfires, severe weather, floods, and power outages, and provide resources for emergency managers and responders to promote healthier indoor air in homes, schools, and commercial buildings. Guidance from EPA and activities to reduce wildfire smoke indoors, safely cleaning and remediating a home following a flood, and safely using a fuel-powered portable generator during a power outage will also be described.

Support for Preparedness, Response and Recovery to Winter Weather

In December 2023, EPA conducted outreach via govDelivery mass email and social media (i.e., X formerly known as Twitter) to help guide community preparation for, response to, and recovery from IAQ impacts stemming from winter storms and extreme cold temperatures. Winter weather can create potentially dangerous conditions in and around the home that can affect indoor air quality. Extreme cold and icy conditions can also lead to burst pipes, and power outages can leave individuals with limited options to heat their home.

EPA Grants for Wildfire Smoke Preparedness in Community Buildings

In January 2024, EPA announced nine selected grant recipients under a new Wildfire Smoke Preparedness in Community Buildings grant program. This is a new federal program to enhance community wildfire smoke preparedness by providing grants to states, federally recognized tribes, public preschools, local educational agencies, and non-profit organizations. Projects are designed to assess, prevent, control, or abate wildfire smoke hazards in community buildings that serve the public and that serve disadvantaged communities or vulnerable populations. EPA anticipates award of nine grants, ranging from approximately \$350,000 to \$2 million—totaling over \$10 million.

The following entities have been selected for awards, which are contingent on completion of all legal and administrative requirements relating to the grant:

- **Arizona Board of Regents, Arizona State University, AZ**—to engage diverse communities in Arizona to develop resilient solutions to the challenges that are posed by wildfires. The project is expected to (1) engage community members with knowledge of indoor air pollution control and associated health fields, (2) evaluate the resilient capacity of facilities to handle the air pollution and heat impacts of wildfires, and (3) implement sustainable solutions in facilities to enhance resiliency toward the air quality and heat impacts of wildfires.
- **Esperanza Community Housing Corporation, CA**—to protect the people of South Los Angeles from wildfire smoke by strengthening wildfire smoke preparedness infrastructure in the Mercado La Paloma building and using the site as the launch pad for a grassroots education and outreach campaign.

- **Colorado Department of Public Health and Environment, CO**—to design and implement a state-wide program to provide outreach, education, and training for local community partners on how to prepare for, and respond to, the public health threat of wildfire smoke.
- **Nez Perce Tribe, tribal land within boundaries of Idaho**—to improve public health protection against smoke from wildfires by strengthening preparedness in community buildings. The project will (1) enhance smoke readiness planning, outreach, and training; (2) deploy portable air cleaners; (3) conduct indoor/outdoor air monitoring; (4) complete weatherization; and (5) upgrade HVAC systems. Three community centers, nine public libraries, and four youth centers will be upgraded to provide cleaner air spaces to the public during wildfire smoke events for effective reduction of occupants' exposure.
- **Montana Department of Public Health and Human Services, MT**—to engage a variety of partners to increase wildfire smoke awareness, create and pilot a clean air shelter recognition program in six communities for easy replication in other high need areas, create culturally appropriate and tailored messaging on wildfire smoke and air quality, and provide training to building and facility managers on HVAC maintenance and importance of good IAQ.
- **Oregon State University, OR**—to develop a set of interventions that includes tailored toolkits and resources that can be used by schools, preschools, and daycares to reduce wildfire smoke exposures and increase community resilience across Oregon.
- **Utah Department of Environmental Quality, UT**—to enhance communities' resilience to wildfire smoke by (1) deploying indoor/outdoor low-cost PM_{2.5} and CO₂ sensors at public schools, (2) developing air quality alerts, and (3) distributing air cleaners and filters to public schools/preschools and residents in target underserved areas.
- **Bellingham School District No.501, WA**—to focus on smoke readiness assessment and planning, as well as indoor and outdoor air quality monitoring.
- **Gonzaga University, WA**—for activities that will reduce indoor exposure to pollutants in wildfire smoke in the City of Spokane and in three community centers serving disadvantaged communities.

For more information, visit our webpage for the [Wildfire Smoke Preparedness in Community Buildings Grant Program](#).

IAQ and Tribal Communities

Tribal Indoor Air Quality Training & Resource Directory

EPA's [Tribal Indoor Air Quality Training and Resource Directory](#) 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. This resource directory, developed in collaboration with the National Tribal Air Association (NTAA) and Institute for Tribal Environmental Professionals (ITEP), 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.

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

State and Tribal Indoor Radon Grants (SIRG) Program

For more than 30 years, EPA has provided critical funding to support state, territory, and tribal efforts to reduce radon-related health risks through the SIRG Program. **For additional information on SIRG funding and tribes see Radon section below.**

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

Leadership on Cookstoves/Household Energy

Over the past 3 years, EPA has continued to lead an effort to broaden and strengthen a whole-of-government approach to addressing the global issue of 3.2 million deaths annually from exposure to polluting emissions from cookstoves and fuels. If you or your organization are interested in joining the USG Household Energy Interagency Working Group, please reach out to John Mitchell at mitchell.john@epa.gov.

In January 2024, EPA Administrator Michael Regan traveled to Mozambique and Ghana for his first mission to the African continent, and IED's household energy and cookstove work played a central role in the trip. In Ghana, Administrator Regan conducted several site visits focused on clean cooking and highlighted Ghana's leadership in advancing clean cooking policies and research. This included a visit to Ghana's Council for Scientific and Industrial Research Cookstove laboratory/Regional Testing and Knowledge Center, a visit to a community in Accra to see first-hand how people cook with charcoal and wood (high-emission fuels) and liquified petroleum gas (LPG; a clean fuel), a visit to an LPG bottling facility to discuss Ghana's new Cylinder Recirculation Model that promotes safety and access to LPG, and lunch with the Second Lady of Ghana, with whom he had a fireside chat about clean cooking at COP28. The Administrator's mission signals the significant ongoing cooperation on clean cooking priorities between EPA and the government of Ghana.

Cleaner Cooking for Household Energy Emission Reductions With the Clean Cooking Alliance

The EPA works closely with the [Clean Cooking Alliance](#) (CCA) through a cooperative agreement to improve climate, environment, health, gender equity, and livelihoods by reducing emissions from household energy in low- to middle-income countries. CCA's core mission is the expansion of clean cooking access to the 2.4 billion people worldwide who lack it. No other intervention has the potential to simultaneously improve human health, reduce emissions of CO₂ and short-lived climate pollutants, reduce forest degradation, save women time and drudgery, and improve livelihoods and quality of life. Coordinated national programs are an essential way to achieve significant, sustained expansion of clean cooking at scale. Through this cooperative agreement, CCA will accelerate access to clean cooking through standards-based national policies and country-level climate action, resulting in increased awareness, capacity, and action to increase the sustained use of clean fuels and technologies, as well as emissions reductions in low- to middle-income countries from household energy use.

Two primary CCA initiatives, Nationally Determined Contributions work and developing a cooking and carbon methodology are discussed in detail below. Additionally, the EPA and CCA continue to support country governments in elaborating national clean cooking priorities and strengthening the capacity of cookstove testing labs to test to the ISO standard, ensuring the effectiveness and safety of stoves promoted around the world.

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

To date, 98 countries have now included references to reducing emissions from household energy in their [Nationally Determined Contributions](#) to the Paris Climate Agreement. EPA is working with its partners in [the Clean Cooking & Climate Consortium \(4C\)](#) (which includes the CCA, Climate and Clean Air Coalition, Berkeley Air Monitoring Group, Stockholm Environment Institute, and United Nations Framework Convention on Climate Change) to support countries in meeting their climate goals through clean cooking initiatives. 4C 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 Nationally Determined Contributions; organizing their measurement, reporting, and verification activities; financing opportunities; and identifying best practices for scaling clean cooking programs to meet their national climate goals.

Developing a New Clean Cooking and Carbon Methodology

EPA is working with 4C on an initiative to drive integrity, credibility, and trust in the cooking and carbon markets by developing a new methodology in line with the latest science for crediting emissions reductions from cookstove projects. Carbon markets play a key role in the pursuit of net-zero greenhouse gas emissions and have the potential to provide funding at the scale necessary to bring about substantive transitions in the world's energy systems and economies. To realize this potential, these markets must be able to channel funding toward the most essential solutions to meet the world's global climate goals, including clean cooking. This funding could make clean cooking technologies and clean fuels more affordable and accessible for customers, enabling companies to grow faster and deliver the widespread benefits of clean cooking to new markets.

To take full advantage of the opportunities provided by carbon finance, clean cooking projects must be grounded in sound scientific methodologies, realistic parameters, and conservative assumptions that increase integrity, transparency, and accountability. Building integrity in the cooking and carbon market supports a virtuous cycle wherein credits with higher integrity drive better technologies and incentives for sustained use. This is why EPA is working with 4C to develop a new methodology for crediting emissions reductions from cooking projects for use under the Paris Agreement and in the voluntary carbon market. This effort will enhance transparency, consistency, and scientific integrity in clean cooking carbon markets, helping deliver affordable clean cooking solutions to the billions currently cooking with inefficient stoves or open fires. By harnessing the power of carbon finance in tandem with gender-responsive approaches, we can ensure that women and children, who today are disproportionately impacted by energy poverty, are not left behind in the energy transition.

State of the Evidence Base Paper

EPA and its partners are developing a State of the Evidence Base paper for the clean cooking sector, covering research on health, climate, gender, economics, and more. This paper, which is targeted to be completed in 2024, will collect existing knowledge about household energy, identify gaps in research and help actors set priorities for future efforts in this sector.

Radon

National Radon Action Month

In January, EPA observed National Radon Action Month with a robust outreach and communications campaign. This year's theme was Test Your Nest—EPA encouraged the public to test radon levels in their homes through a multipronged social media campaign. EPA social media posted a video from Deputy Administrator Janet McCabe about the importance of radon testing. To close out the month, IED hosted a webinar on Radon Mitigation Funding Assistance.

National Radon Action Plan (NRAP)

EPA continues to support the growing national network of federal agencies, private sector, nongovernmental organizations (NGOs), and states to prevent lung cancer deaths through the NRAP. 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; building in health protection where we live, work, and learn; eliminating preventable disease; and realizing a high return on investment in a healthier future to join the NRAP Leadership Council.

Leadership Council members meet monthly to share updates and progress toward the goals outlined in the NRAP. Twice a year, the NRAP holds a longer and more in-depth meeting with all members to evaluate the collective impact of our work and identify continued actions needed to reinforce priority strategies and activities. The Leadership Council held its virtual assessment meeting January 17, 2024. The next in-person strategy meeting of the NRAP Leader Council will take place June 2024 in Washington, D.C.

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 in fiscal year (FY) 2023 for state and tribal indoor radon grants. There were seven new tribal grants awarded in 2023, and the total FY23 grant funding awarded to tribes was approximately \$600,000 to 15 or more Tribes.

FY23 regional allotments and reports are posted on the [EPA's SIRG Resources webpage](#).

The SIRG Program FY24 appropriation is \$9.13 million for SIRG grants. IED is working with EPA's regional offices to direct funding to states and to also direct additional funding to new tribal grantees and encourage 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.

Building Codes and Standards

EPA continues to collaborate with industry and states to actively engage in efforts to promote adoption of radon-resistant new construction (RRNC) practices through international, national, state, and local building codes. EPA works with other radon advocates to present common sense code changes and work toward consensus. These efforts are mandated by the Indoor Radon Abatement Act and are also a key component of the NRAP. Model codes and standards for RRNC exist in single family, multifamily, and large buildings through ANSI/AARST Voluntary Consensus Standards, IED programs, and green standards for single family buildings. This includes programs like EPA's Indoor airPLUS, NAHB 700, and ASHRAE 189.

The International Residential Code (IRC) is the most widely used national building code for residential new construction in the United States that comes from the International Code Council's (ICC) family of national building codes. Appendix F in the IRC was adopted in 1995 to provide RRNC optional requirements if someone were to build a radon-resistant home. An important opportunity for code improvement for Appendix F and the rest of the IRC will happen in 2025 where EPA will pursue bringing RRNC and testing requirements for radon into the main body of the code.

2024 marks the first year in a new 3-year code cycle for the ICC I-codes. The work and interest for introducing new code changes in the residential codes will occur in years 2 and 3 of this cycle.

Radon Credentialing

EPA's work on radon credentialing is part of the Agency's responsibility to promote and support the availability of quality radon services to the public. Professionals who provide radon testing and mitigation services play a key role in public health protection efforts. In March 2023, EPA released Proposed Radon Credentialing Criteria to help align and encourage consistency across radon credentialing programs. The non-regulatory criteria are designed to provide a national quality standard for state-run and independent programs that credential radon service providers. The public comment period closed in June 2023, and EPA continues to analyze feedback received, which will inform the final criteria. For more information about EPA's proposed criteria and to access materials from an April information session, visit the EPA's Draft Criteria for Radon Credentialing Organizations (<https://www.epa.gov/radon/epas-draft-criteria-radon-credentialing-organizations>) at the EPA radon website.

EPA's Radon Reference and Intercomparison Program (ERRIP)

As part of annual requirements for secondary radon chambers to be certified to perform radon measurements and calibrations services for the radon industry participating in the National Radon Safety Board (NRSB), American Association of Radon Scientists and Technologist's National Radon Proficiency Program (AARST-NRPP), and state radon programs, secondary radon chambers participate in EPA's Radon Reference and Intercomparison Program (ERRIP), managed and operated by the EPA's Office of Radiation and Indoor Air, National Analytical Radiation Environmental Laboratory (NAREL) located in Montgomery, Alabama. NAREL provides the only U.S. radon reference that is NIST-traceable. There are currently four industry certified secondary radon chambers for use by the U.S. radon community. These radon chambers are as follows: Bowser-Morner, Inc., Dayton, Ohio; TCS Industries, Inc., Harrisburg, Pennsylvania; KSU Radon Chamber, Manhattan, Kansas; and Spruce Environmental Technologies, Ward Hill, Massachusetts.

Asthma

National Environmental Leadership Award in Asthma Management

The 2024 EPA National Environmental Leadership Award in Asthma Management winners will be announced in May during Asthma Awareness Month. This is the only national award for excellence in comprehensive asthma management with a focus on environmental interventions for asthma triggers. Eligible organizations are addressing asthma disparities in their community and have an integrated approach featuring partnerships between public health, housing, health care, and community organizations. In May, you can find more information on the winners on www.epa.gov/asthma.

Technical Assistance and Resources

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, there are over 5,000 members registered. EPA hosts [technical webinars](#) throughout the year, and they are archived on this website. In addition, AsthmaCommunityNetwork.org features over 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](#). This online network is a great way to engage around Asthma Awareness Month! If you are not a member, join today!

On March 7, 2024, EPA hosted a webinar titled, “Weatherization’s Effects on Pediatric Asthma: Evidence from a Natural Experiment.” This webinar was the second in a series of three webinars on Solving for the Indoor Environmental Determinants of Health (or IEDOH) in Asthma. The webinar showcased evidence from a natural experiment in Kansas City, Missouri, on effects of weatherization and improved thermal comfort in homes on pediatric asthma outcomes. Following this presentation, a panel of EPA’s Community of Practice members discussed how to maximize impact with limited funds by partnering with weatherization programs, whose primary interventions (i.e., air sealing and insulating homes) are not common in asthma home visits but may be widely beneficial for asthma. A recording of this webinar will be posted [here](#).

The [Asthma Publications Resource One-Pager](#) has QR codes to several asthma resources—including guides for asthma triggers, tips for controlling asthma, and a home visit checklist for health care professionals. Learn how good indoor air quality contributes to a favorable environment for individuals with asthma. Simply scan the QR codes to access the resources (See [Asthma Resources One-Pager PDF](#)).

Federal Collaboration on Asthma Disparities

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

EPA also serves on the Asthma Disparities Workgroup (ADWG). 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 close the gap in inequities in comprehensive asthma care. During monthly meetings, members discuss strategies to advance the three major priority areas of the Asthma Disparities Subcommittee, which are focused on expanding sustainable financing for in-home asthma interventions, closing research gaps, and creating equitable expectations for asthma outcomes for all patients and caregivers.

Comprehensive IAQ Interventions in Homes

Indoor airPLUS: New Homes

IED's Indoor airPLUS Program (IAP) is a voluntary partnership and labeling program that provides builders with an opportunity to earn a home certification for enhanced IAQ features. IAP certification is also an important prerequisite to achieve both DOE's Zero Energy Ready Home (ZERH) label, as well as PHIUS+ certification. The advent of revised tax credits, which include incentives for DOE's ZERH certification, has prompted a renewed interest from homebuilders and verifiers across the United States, with over 650 new IAP partnerships in the last 12 months. As a result, IAP certifications in the market have also continued to grow, with over a 20% increase in IAP labeled homes from FY22 to FY23. The IAP team continues to engage regularly with DOE staff, technical support contractors, and leading industry partners to coordinate important program updates among the suite of federal home certifications and to help facilitate the program adoption that EPA and DOE are expecting from the incentives in the years ahead.

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 comment period on the proposed updates closed in April 2023. The 2023 proposal was designed to address feedback received on a previous 2020 proposal and to encourage broad industry participation to advance indoor air quality protections while strengthening program integrity with an improved verification and quality assurance framework and more training opportunities for partners.

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

Following the comment period that closed in April 2023, EPA is processing feedback received from program stakeholders and partners, as well as on-going feedback from other programs within EPA and DOE, to inform the path forward. EPA expects to release the final Indoor airPLUS and Indoor airPLUS Gold specifications in 2024. During the initial phase of implementation, partners may continue to use Indoor airPLUS Construction Specifications Version 1, Rev.4 or begin to use one of the new two-tier specifications. EPA anticipates that the Indoor airPLUS Version 1 Construction Specifications will be sunset in early 2026. These dates were chosen to give Indoor airPLUS partners ample time to implement the program changes in Version 2 into their building plans and are subject to change.

Indoor airPLUS: Leader Award Winners

IED will announce the winners of the 2024 Indoor airPLUS Leader Awards in August 2024. The awards recognize market-leading homebuilder and rater partners who construct and verify Indoor airPLUS homes, which are designed and built for improved indoor air quality. Winners have demonstrated exemplary approaches to promote safer, healthier, and more comfortable indoor environments by offering enhanced indoor air quality protections and long-term value for new homebuyers with the Indoor airPLUS label. The winners will be formally recognized in October at the Energy and Environmental Building Alliance High Performance Home Builder Summit. During this event, EPA will

also announce the Indoor airPLUS Leaders of the Year—awarded to just one builder and one rater—for outstanding program participation and promotion.

Comprehensive IAQ Interventions in Schools

Inflation Reduction Act—Schools Air Quality Grants and Technical Assistance

Provision 60106 of the Inflation Reduction Act includes a new \$50 million program to improve school air quality and reduce greenhouse gas emissions, with a particular focus on schools serving low-income, disadvantaged and tribal communities. This program will include funding for grants and other activities to monitor and reduce indoor air pollution and greenhouse gas emissions at schools, as well as technical assistance to schools in low-income, disadvantaged, and tribal communities to address environmental issues; develop school indoor air quality plans that include standards for school building, design, construction, renovation, and maintenance; and identify and mitigate ongoing air pollution hazards.

In 2023, EPA completed a 6-month outreach effort to solicit feedback from the public, nonprofits, industry, tribes, and across the federal government on how to make the best use of the IAQ school funding provided by the Inflation Reduction Act. The feedback provided by well over 500 individuals and organizations has heavily influenced the design of the IAQ grant program and technical assistance activities.

In January 2024, EPA posted a Notice of Funding Opportunity on <https://www.grants.gov/> and posted additional [information on this webpage](#). States, tribes, territories, local governments/educational agencies, and nongovernmental organizations were able to submit applications for grant funding to address indoor air pollution in low-income, disadvantaged, and tribal K–12 schools until March 19, 2024. EPA is now beginning review of applications. It is anticipated that the grant program selections will be announced in May 2024, and awards are anticipated to occur in October 2024.

EPA Engagements and Webinars on Schools

EPA continues to support healthy indoor environments in schools, including after the COVID-19 public health emergency, which ended in May 2023. View IED-hosted webinars in the series, [Healthy Indoor Environments in Schools: Plans, Practices and Principles for Maintaining Healthy Learning Environments](#).

EPA continues to actively deliver technical assistance to the schools' community through two professional training webinar series: [IAQ Master Class Professional Training Webinar Series](#) and [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 working 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.

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 supporters—such 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

[Resources for Healthy IAQ in Schools One-Pager](#): This one-pager has QR codes to several IAQ in schools resources, including guides for parents, teachers, school administrators, and school maintenance professionals. Learn how good IAQ contributes to a favorable environment for students, improved teacher and staff performance, and a sense of comfort, health, and well-being. In combination, these elements empower schools in meeting their core mission—educating children. Simply scan the QR codes to access the resources. (See the [Resources for Healthy Indoor Air Quality in Schools PDF](#)).

EPA also continues to promote the *Indoor Air Quality 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 to develop and implement 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.

COVID-19

Updated information on COVID-19 and indoor air continues to be posted on the EPA's COVID-19 website at: <https://www.epa.gov/coronavirus>. Specific indoor air COVID-19 content can be found within this site by going directly to <https://www.epa.gov/coronavirus/indoor-air-and-coronavirus-covid-19>.

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

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 from 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.