

JANUARY 2024

INDOOR ENVIRONMENTS ASSOCIATION

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THE



# National Radon Action Month | NRPP Updates Radon in Concrete

FORMERLY AARST



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VICE PRESIDENT: George Schambach george@professionalho

SECRETARY: Jan Fisher jfisher@certi.us

**TREASURER: Dan Potter** danpotter@dupageradon.com

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#### Please submit content, comments, or questions to editor@aarst.org.

Indoor Environments Association<sup>™</sup> is a nonprofit, professional organization of members who are dedicated to the highest standard of excellence and ethical performance of hazard identification and abatement of radon, chemical vapor intrusion, and other contaminants of concern in the built environment. The organization primarily strives to advance the interests of its members through developing industry standards, certifying technical proficiency, enabling advancement of public policy, and communicating health risks to the public.





Happy New Year, and welcome to the next generation of your industry association the Indoor Environments Association! As we move forward into the new year, I want to thank our board members, IEA staff members, and countless others (you know who you are!) who have played a role in positioning our association for future growth and sustainability. Because of your efforts, our association is well positioned to thrive in 2024 and beyond.

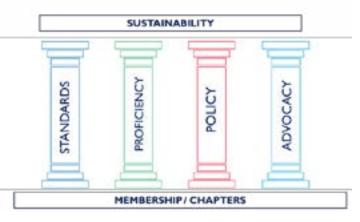
During the inaugural Indoor Environments<sup>™</sup> – Radon and Vapor Intrusion Symposium, which was held in Nashville, TN in late October of this past year, you elected the following members to serve or our board in leading our association into the new year:

- David Hill (President-Elect)
- David Gillav (Vice President)
- Jan Fisher (Secretary)
- Dan Potter (Treasurer)
- Nathaniel Burden (Director)

Please join me in congratulating our new board members, as well as thanking the following members stepping down from their service on our board: Dawn Goard; Dave Kapturowski; Eric Lewandowski; and, Jim Emanuels. I want to extend a special thank you to Dave Kapturowski, who has served continuously on our board since its inception many moons ago - thank you, Dave.

As I move into my final year as your president, I look forward to continuing to lead the execution of our strategic plan. We have accomplished many of the initiatives detailed within our plan over the past few years, but we have much more to achieve. Although we've freshened our brand to better align with the future of our association, the same pillars serve as our foundation:

## INDOOR ENVIRONMENTS ASSOCIATION Four Pillars



As always, our work is guided by the core principle of protecting the occupants of buildings from exposure to contaminants of concern within the built environment. As a member of our association, I encourage you to join our efforts by becoming active in your chapter or volunteering to join one of our national committees. Let's make 2024 our most positive and productive year yet!

# **Letter from the President**

- Zan Jones (Director)
- Terry Kerwin (Director)
- John Mallon (Director)
- Kevin Stewart (Director)

# **INDUSTRY NFWS**

# 2023 Survey of Measurement and **Mitigation Professionals**

The association reached out to industry members in October. The following results come from the 157 businesses that responded.

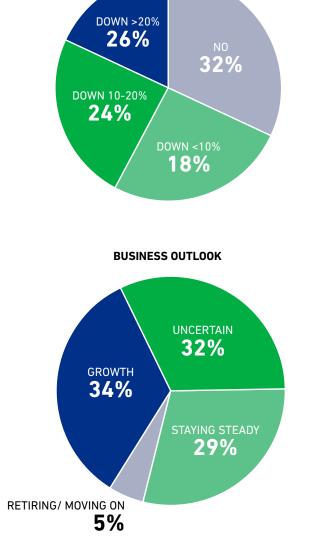
- Credentials: 87% are NRPP certified.
- Services: 42% measurement only, 15% mitigation only, 43% both measurement and mitigation.
- Type of Soil Gas Work: 3% 50-50 radon/VI, 25% radon/some VI, 71% radon only.
- Workforce Size: 35% one worker, 44% two to four workers, 13% five to ten, 8% eleven or more.
- Longevity of Business: 39% 20+ years, 25% 10-19 years, 17% five to nine years, 18% < five years.

#### Challenges.

The survey also asked about business challenges and prospects: "Have you experienced continued reduction in demand for services due to 'no contingency' / 'no inspection' home sales and/or other housing market issues?"

In response to this question,

- 26% stated that demand was down more than 20%
- 24% indicated demand was down 10-20%
- 18% said demand was down less than 10%
- 32% answered no to this guestion.



**CONTINUED REDUCED DEMAND FROM "NO** 

CONTINGENCY" / "NO INSPECTION" HOME

SALES OR OTHER MARKET ISSUES

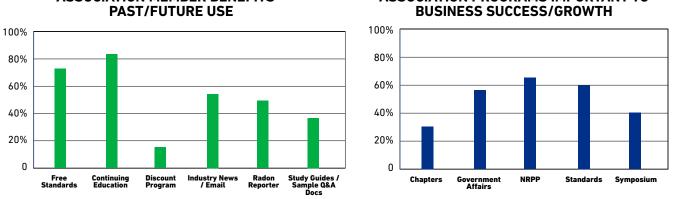
Regarding the question about their business outlook over the next year,

- 34% indicated growth
- 32% said it was uncertain
- 29% expected it to stay steady.



Benefits of Membership. Association members were queried about member benefits that they have used in the past or might use in the future. Free continuing education was cited by 83%, followed by free standards (73%), industry news/email (57%), Radon Reporter (50%), Study Guides and QA documents (38%) and discount programs (15%). They were also asked to identify association programs important to business success and growth: NRPP (64%), Standards (60%), Government Affairs (58%), Symposium (40%), and Chapter (32%).

### **ASSOCIATION MEMBER BENEFITS –** PAST/FUTURE USE

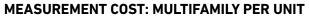


**Measurement Cost.** The survey asked about the typical amount the respondent's business charged for radon measurement services in 2023 using a range of dollar amounts. Nearly half (46%) charge \$151 or more for single family measurement services, 33% charge \$126-150 and 19% charge \$125 or less. For multifamily per unit measurement services the distribution is: 24% charge \$151 or more, 15% charge \$126-150, 12% charge \$101-125, 14% charge \$76-100, 25% charge \$51-75, and 11% charge \$50 or less.

### **MEASUREMENT COST: SINGLE-FAMILY**



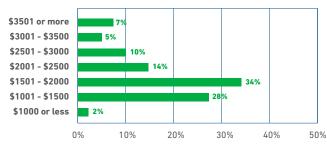
**ASSOCIATION PROGRAMS IMPORTANT TO** 



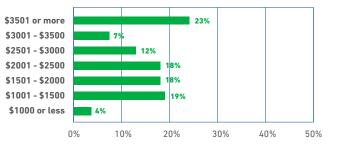
# **INDUSTRY NEWS**

Mitigation Cost. The survey also asked about the typical amount the respondent's business charged for soil gas mitigation services in 2023. While 22% charge \$2501 or more for single family mitigation services, 14% charge \$2001-2500, 34% charge \$1501-2000, 28% charge \$1001-1500, and 2% charge \$1000 or less. For multifamily per unit mitigation services, 23% charge \$3501 or more services, and 19% charge \$2501-3500, 18% charge \$2001-2500, 18% charge \$1501-2000, 19% charge \$1001-1500, and 4% charge \$1000 or less.

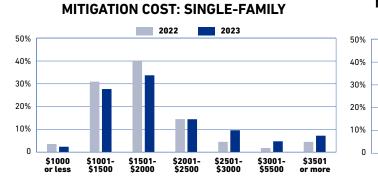




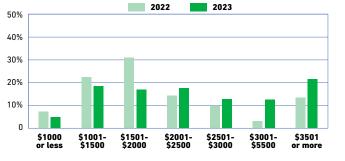
#### **MITIGATION COST: MULTIFAMILY PER UNIT**



Trends in Mitigation Cost. The association compared mitigation costs reported for 2022 and 2023. For both single family and multifamily, the percentage of businesses in the lower cost ranges is shifting down.



#### MITIGATION COST: MULTIFAMILY PER UNIT







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# **RADON FANS VAPOR INTRUSION TESTING PRODUCTS PROFESSIONAL TRAINING**





# **CHAPTER CORNER**

# **Indiana Radon Conference**

Indiana held its first Radon Conference this year in Indianapolis on December 6th at the Breeze Headquarters. Attendees were able to tour the facility to see how radon continuous monitors are manufactured and tour the radon chamber - which was a treat! The Indiana Conference had over 20 speaker presentations including an update from our state radon officer, Katie Etter.

Overall, attendance was a success! There were 57 attendees, of which 33 self-identified as testers, 20 as home inspectors, and 11 as mitigators. Also in attendance were 14 affiliates including three state staff, two Environmental Protection Agency staff, and one County Health Department representative. Support was generously provided by the host Breeze; the meeting was also sponsored by RadonAway, Fantech, Adept Plus, CERTI, and YES.



Dawn Coffee IN AARST Chapter President, welcomed attendees to the 1st Indiana Annual Radon Stakeholders Conference



A full room of attendees for the half day event



Greg Orr, IN AARST Chapter Secretary, sharing a technical presentation on mitigation.

IEA Chapters provide an excellent source of opportunities to meet other professionals, attend CE events, learn about the latest standards and advances in the field, and work together to change state legislation. Join your chapter of IEA today! <u>https://aarst.org/aarst-chapters/</u>



# • INDUSTRY NEWS

# January is National Radon Action Month!

National Radon Action Month (NRAM) is the crucial period dedicated to raising awareness about the hidden dangers of radon gas. Indoor Environments Association, chapters, and members play a pivotal role in spearheading this annual initiative.

Resources from Indoor Environments Association include:

- Updated imagery that can be downloaded and reposted on your social media pages, business pages, and personal pages
- Sample proclamation letters to send to government officials
- Printable templates for door hangers to put in your local community
- Resources for general information about raising awareness of what radon is and its implications

#### Why Participate in Promoting NRAM?

National Radon Action Month helps us tell the larger community how dangerous radon gas can be and encourage actions to reduce the risks associated with radon exposure.

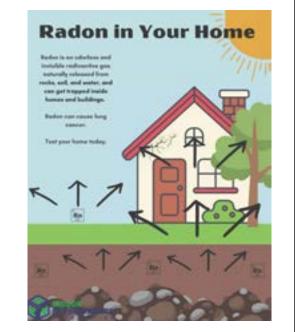
Since radon is a naturally occurring radioactive gas that can seep into homes and buildings through the ground and it is colorless, odorless, and tasteless, making it imperceptible to human senses, NRAM is essential in raising awareness to those who might not know or understand the radical implications radon can have in your everyday life. With Radon being the second leading cause of lung cancer, NRAM helps the community to be empowered to protect themselves, their homes, and their communities from the devastating effects of invisible radon gas.

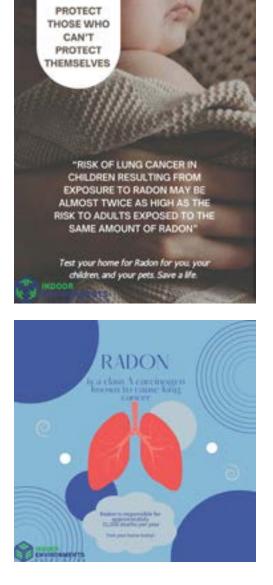
The goal of National Radon Action Month is to empower individuals, communities, and policymakers to take proactive steps in reducing radon exposure and minimizing the associated health risks. This can involve promoting testing and mitigation measures, advocating for radon-resistant construction practices in new buildings, and supporting policies that enhance public awareness and safety regarding radon. The possibilities are endless.

On the individual level, homeowners are encouraged to test their homes for radon, and if elevated levels are detected, implement mitigation measures to reduce radon concentrations and create a healthier living environment.









# NRPP News – Here's What's Happening in Certification

#### The RMP and RMFT exams are live!

Thank you for your patience as we wrap up the development of the new RMP & RMFT exams. NRPP had an overwhelmingly positive response to the pilottesting process and was able to wrap up testing by mid-December as planned. During the last few weeks of December NRPP evaluated the exam statistics, revised some of the questions, and set the passing scores for both exams. NRPP appreciates the feedback candidates provided and this feedback was used to make improvements to the test and testing process.

#### **Exam Delivery with Certiverse**

Certiverse, our new remote proctoring partner, is administering the Measurement Professional and Measurement Field Technician exams and within the upcoming months will be proctoring the Mitigation Installer, Mitigation Specialist, and SGM-CI exams as well.

Secure exam delivery through Certiverse is accomplished through utilizing a secure exam browser that candidates must install before taking the test. This prevents test-takers from opening additional browsers or their email during the test, taking screenshots, and copying and pasting test content. Certiverse's delivery platform allows candidates to comment on test questions as they move through the exam and all communication between candidates and proctors is accomplished through chat, which allows for clearer communication during the exam session.

#### New Course Approval Requirements Coming Soon

NRPP's Certification Management Committee and Certification Council have revised the NRPP Educational Course Approval and Recognition Handbook and Application, with a focus on clarifying the approval requirements and streamlining the application and renewal process. The new Handbook will be available in February.

#### On the Horizon for 2024

2024 will be a big year for exam development and NRPP is seeking qualified individuals to help in these endeavors.

This year NRPP will be revalidating the Measurement and Mitigation JTAs\* and finalizing the Commercial Mitigation Manager, Commercial Measurement Manager, and Vapor Intrusion JTAs. Once these are completed NRPP can begin writing test questions for the certification exams and establishing the requirements for these certification programs.

NRPP relies on the expertise of radon professionals to develop fair and valid programs. If you are interested in participating in one of the JTAs or volunteering as an item developer please contact exams@nrpp.info for additional information. You do not need any prior experience and you will earn continuing education credits for participating.

\*A Job Task Analysis or JTA is an outline of the essential tasks required for a given job or role. A JTA identifies the knowledge and skills required to perform a job competently and serves as the foundation to certification program development.

# • CERTIFICATION • SWhat's Happening

### NRPP New Certifications

#### **OCTOBER**

Abagail Willis (CO) Alan J Ramon Piloso (CT) Alexander M St.Clair (CO) Andrew K Larson (CO) Axel Asander (CO) David Hanley (NC) Edward Kolisar (OH) Gregory S Rush (UT) Joshua Estes (AR) Joshua Foote (KY) Kvle P Finlev (KY) Margaret Horton (CO) Michael J Lyons (IN) Nicholas Galloway (UT) Nick Jackel (TN) Ryan Lentz (CO) Shaun Wilson (MI) Shawn Brown (WY) Shawn Martinez (CO) Stephen N Ellis (NC) Steven Sisneros (CO) Tate B Coulter (CO) Taylor Moore (AR) Tyler Curlin-Dunda (CO) Zack Aiello (MO)

#### NOVEMBER

Aaron Marjala (WI) Benjamin J Traub (NM) Cameron Krogue (UT) James s Emanuels (IL) Justin Bahr (WI) Justin Kratochvil (CO) Lorane Lester (KS) Matthew G Emanuels (IL) Ryan I Shores (GA) Talmage A Rupert (UT)

#### DECEMBER

Amber Berry (AR) Giuliano Cuete (MD) Jason L Wiersma (IL) Jermaine Thomas (CO) Joseph Czak (CO) Joseph Westen (IL) Kevin Seise (NJ) Lisa K Henderson (CA) Robert Luckey (IL) Scott Baker (CO) Spencer Glenn (GA) Timothy Mattingly (KY)

# **Celebrating Leaders at Indoor Environments 2023**

We acknowledge and thank the leaders, allies, and heroes within our community and the places we live!

# **2023 AARST AWARDS**

#### **Chapter Leadership Award:**

### **BRIAN COY**



Enthusiastic and passionate about radon awareness; consumer protection; and equitable business practices, former RMAARST President, Brvan Cov started RMAARST's signature event: the golf tournament. Also oversaw several pieces of legislation get passed by the Colorado state government. When Brvan started as RMAARST President, the wheels for the first radon legislation in state history were already turning; however, no one expected him to lead through a second piece of landmark legislation the next year, while spearheading creating new member benefit programs (Lowe's Pro) and the most successful radon awareness fundraiser in our organization's history; the blueprint of which he has shared with other chapters.

**Chapter Leadership** Award:

**DAISY REZENDE** 



Daisy Rezende organized the Maryland Chapter in 2022 and serves as its President (as well as on the Indoor Environments Association's Membership Committee). She was integral in achieving implementation of a radon testing requirement

for rental properties in Montgomery County, MD and obtaining clarification by the county as well as replication in municipalities not covered by the county's policy. This same county has had radon

testing requirement for home sales since 2015. While leading the new chapter and running her business, Daisy is also providing leadership

in achieving state-wide implementation of testing and notification requirements of this county ordinance as well as gaining policy maker consideration of regulation through certification (RtC).

**Community Impact Award**, Journalist Ally:

### **KARA KENNEY**



Kara Kenney is an investigative reporter based in Indianapolis. She has been covering radon and sounding the alarm on public health issues for years. In 2018, she uncovered schools not following EPA testing recommendations and at least one case where high levels of radon were found. She has kept the issue in the public eye for years to strengthen protection for kids in the classroom. A bill requiring the state health department to distribute radon testing recommendations every 3 years passed in 2019. Kara has continued drawing attention to schools still not testing. She is a top-notch journalist who will continue to be a great ally for the industry.

More about Kara www.wrtv.com/kara-kenney

Citizen and Survivor Ally:

### LEAH PHILLIPS



Leah Phillips, a mother of three, was diagnosed with stage 4 lung cancer at age 43 in 2019. She has never smoked. Since being diagnosed, she has teamed up with lung health organizations to advocate for change. In 2023, she testified in front of Kentucky lawmakers which resulted in an early screening/biomarker testing state law. She has spoken to lawmakers about the

seriousness of radon in many other settings. Although she has very limited time with us, she always finds time to lend her voice as an advocate for issues surrounding radon.

She uses AARST talking points to give audiences an invaluable connection to radon-induced lung cancer. Here is more about her story - https://www.webmd.com/ lung-cancer/features/lungcancer-decisions

### **Radon Community** Impact Award:

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### **GLORIA LINNERTZ**

Gloria Linnertz, founder and President of Citizens for Radioactive Radon Reduction

(CR3) retired in 2023 and will assume the honorary title of CR3 Advocate Emeritus. After her husband. Joe's death died from radoninduced lung cancer, Gloria established CR3 as a 501 (c) (3) nonprofit organization that assisted, encouraged, and prepared advocates in making a difference with awareness, education and action against radioactive radon gas exposure. Gloria created an effective organization that educates the public and private sectors about the real danger of living, working, or attending school in environments with elevated levels of radon gas. She has dedicated over 10 years of her life to fighting for the testing and mitigation of radon gas.

# **2023 AARST AWARDS**

**Radon Community Impact** Award, Public Servant Ally:

### **CRYSTINE KELLEY**



Chrystine Kelley dutifully served as Radon Program Manager for the Colorado Dept of Public Health and Environment for many years. Nearly every contractor in the state knows her for her prompt, kind assistance on anything and everything radon-related. If she didn't know the answer to your question; she knew where to get it. She was always available to help as it pertained to her job duties at CDPHE; and when it fell outside of her duties. she volunteered her time because she clearly cared about radon awareness. If you had a radon question in the state of Colorado, you called Chrys. Her contributions, accolades, and resume speak for itself.

**Jack Bartholomew Award:** 

### **BRUCE SNEAD**



Bruce Snead has had a lifetime career in public service; his passion is helping communities create safe spaces, whether as a civil engineer or a master radon trainer. As the EPA **Region 7 Training Extension** Director at Kansas State University he and his team have spearheaded consumer assistance programs in promoting radon awareness, as well as training thousands of radon professionals. He is a phenomenal teacher: engaging, humorous, and intelligent. Physics, chemistry, and construction are not exciting subjects for every pupil, but when Bruce is at the lectern: you listen. Bruce's devotion to radon awareness; radon testing and mitigation standards and practices; and everything else this fledgling industry demanded are immeasurable.

# **CRCPD** Awards from the **Conference of Radiation Control Program Directors**



The CRCPD Radon Hero recognizes that exposure to indoor radon is a significant contributor to total radiation exposure received by the public and is the second leading cause of lung cancer. This award is intended to recognize an individual who has demonstrated leadership in reducing the health effects of radon exposure. The award is given based on the individual's contributions to this effort, on their breadth and scope of services, and commitment to sustained radon risk.



The CRCPD Public Servant Award recognizes a federal, state or local government official (other than a state or local radiation control program director) who has made significant contributions in support of state radiation control programs and/or the public in achieving a better understanding of, and protection from, radiation exposure. The award also is given in memory of public servants who contributed in an outstanding way to the support of state radiation control programs and the protection of people and their environment.

# The Indoor Environments Association's Harley-Fisenne Award

The Harley-Fisenne award was created by the association's Past President Dr. Phillip Jenkins to honor Naomi Harley and Sue Fisenne, two amazing radon pioneers who he regards as major influences and mentors in his own career. Both Harley and Fisenne demonstrated dedication to excellence in their careers through research, teaching others and dedication to quality.

In the spirit of these fine educator/researcher(s), the award was given to **BILL BRODHEAD** for his extensive career spanning research into and education regarding radon technology, methods and best practices.

In the spirit of these fine educator/researcher(s), the award was given to **BRUCE SNEAD** for his extensive career in radon education, passion and involvement in the standards creation process ertablishing best practices for radon testing, analysis, system designs and mitigation.

# Radon Hero Award: PHIL JENKINS

## Public Servant Award: BRUCE SNEAD



# • **CERTIFICATION**

# **NRPP Certified Professional Spotlight**

NRPP certification plays a vital role in the health of our communities as well as in the success of our radon professionals. But don't take our word for it! Let's hear from an NRPP-certified professional to learn about their own experience with certification.

Name: Glenn Steers

Location (city & state): Raleigh, North Carolina (Triangle area)

Title, Company: Director of Wake Home Services, LLC (https://wakehomeservices.com/)

What certification do you have? Radon Measurement Professional

How long have you been working in radon? Almost 6 years

Describe your professional experience and how you got into radon mitigation/

**measurement.** I started my company, Wake Radon, as a one man show in 2018 with five Sun Radon 1030 devices. We quickly grew to 60 CRMs, one office staff member and four field technicians doing almost 100 tests per week. Two years ago, we had an opportunity to buy the #1 company in the area, Raleigh Radon, and we did! We now have three office professionals; an Operations Manager (my wife) and each radon company (Wake Radon & Raleigh

Radon) has their own office managers (we kept them separate for marketing reasons). We currently have 133 Sun Radon 1030 monitors, seven field technicians and we are performing 35-40 radon tests on average a day.

**Describe what a typical workday looks like.** I have oversight on all the operations and usually join my other certified technicians in the field on a daily basis to place and pick up radon tests. I also do the ancillary services, like radon water tests, IAQ tests and mold air & swab sampling. In the evening, I review and send high test results and put the final touches on the next day's schedule. I perform Quality Control duties as well. Usually once or twice a month, we test a large multi-family development and will use Breeze LS (liquid scintillation) vials as CRMs are not practical for jobs of that size.

What do you like about working in the radon profession? I enjoy the fact that we are actually saving lives and helping people breathe easier about their home air. We also have a great honor and responsibility to educate everyone we encounter regarding the health issues posed by radon and its progeny.

**Any challenges so far?** If so, explain. Ignorance is the biggest challenge we face. Misconceptions or lack of information fostered by some real estate agents and home inspectors make our job more difficult. "Why was the device placed within 10 feet of a granite countertop?"

When did you first get certified? Unfortunately, I waited a couple of years to get certified through NRPP and did so in 2020. Our state doesn't require it, so I didn't think I needed it.

**Why did you get certified?** Many builders (and now some savvy homeowners) are requiring that we hold a national certification. This year, North Carolina passed a law requiring it, and that will go into effect this year.

Why NRPP? NRPP is the nationally recognized standard bearer.

What benefit(s) did certification bring? We mostly cater to home inspectors and real estate agents, both of which need to give their clients assurances as to our proficiency as radon testers. Most area builders are now requiring it.

Any advice for people who are considering a career in radon? As public awareness increases and more people work from home, radon awareness and action are needed now more than ever.

Any advice for people who are considering certification? Don't wait like I did!



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# Call for Abstracts for Indoor Environments 2024™

Radon and Vapor Intrusion Symposium September 15 - 18, 2024 | Orlando, Florida Submissions for proposals and short courses must be received by April 1, 2024.

The largest gathering of specialists, educators, manufacturers, researchers, and technicians in the field of soil gas contaminants in the US willconvene at the Hyatt Regency Grand Cypress. Join Indoor Environments for 4 days of education, social activities and a tradeshow.

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### RESEARCH

# **Radon In Concrete Passive Venting Mitigation**

At the 2022 International Radon and Vapor Intrusion Symposium in Bellevue, WA, Bill Brodhead and Omer Zevrek delivered a presentation and later authored a proceedings paper titled "RADON IN CONCRETE PASSIVE VENTING MITIGATION." The paper is focused on a study conducted on a six-story concrete condominium in Florida with identified radon levels ranging from 8-16 pCi/l and ventilation rates of 0.02-0.06 air changes per hour (ACH) of ventilation. considerably lower than ASHRAE recommendations of 0.35 ACH for residential homes. The study investigates the effectiveness of passive venting from the HVAC (Heating, Ventilation, and Air Conditioning) closet to the outside as a mitigation strategy. The research aims to determine the impact of introducing outdoor air on radon and humidity levels inside four condominium units, providing insights into the development of an efficient and cost-effective radon mitigation system.

Diagnostic testing and system design were conducted at the condo to implement an effective radon mitigation system with cost reduction, minimal occupant disruption, and reduced noise. The testing occurred in March and April in 2022. The diagnostic procedures involved using RadonEye Pro monitors and EcoTrackers for radon and ventilation measurements, including temperature and humidity. Additional radon testing was performed in the underground garage and the main office. Outdoor air was introduced into units. allowing measurement of ventilation needs to reduce radon levels. Direct flux measurements on exposed floors were challenging due to tile coverings, but significant radon emanation was found at grout joints and electrical closets. While specific contributions from walls and concrete ceiling couldn't be assessed, introducing outdoor air helped determine natural ventilation levels and additional ventilation requirements to meet EPA guidelines.

Elevated radon levels are attributed to radon emanation from the concrete. Flux measurements over grout lines and bare concrete suggest significant radon emanation, reinforcing the hypothesis that concrete is the primary radon source. Ventilation tests, introducing 30-40 cubic feet per minute (CFM) of outdoor air. prove effective in reducing radon levels to within acceptable limits. The study emphasizes the importance of considering outdoor air introduction carefully to prevent potential issues like increased humidity and mold growth.

In Florida, addressing elevated radon levels in multifamily buildings traditionally involves three methods. The first, Air to Air Exchanger, requires installing an energy recovery ventilator in each unit, posing challenges like space constraints, duct routing, noise, maintenance, and

costs. Unsuitable for Condos due to limited space. The second, Whole Building Ventilation, requires rooftop units conditioning outdoor air for nine units. facing challenges like roof weight, power requirements, duct routing, and high costs. The third, Individual Vent Fan Installation, uses a 20watt radon fan controlled by a timer but raises concerns about humidity and mold growth when the air handler is off. Condo challenges include limited HVAC closet space, requiring alternative installations.

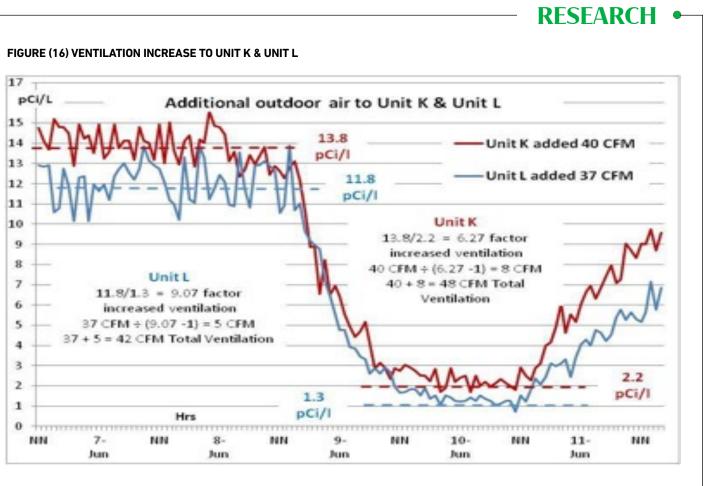
Challenges at the Condo include limited space in the HVAC closet, necessitating alternative installations with ductwork and power sources.

The study also proposes a Passive Outdoor Air Venting method. This alternative method to address elevated radon levels involves utilizing the negative pressure generated by the HVAC closet's air handler to introduce outdoor air into the unit. This setup capitalizes on the strong negative pressure induced by the HVAC unit. drawing outdoor air through a duct routed from the HVAC closet to the outside. The benefits include immediate conditioning of outdoor air by the running HVAC unit, minimizing excess humidity in the closet and reducing the risk of mold. Moreover, this approach eliminates the need for a dedicated closet radon fan and associated electrical wiring, reducing installation costs.

However, the success of this passive air duct method depends on adjusting dampers and considering the run time of the HVAC unit. A simple test involving a fourinch PVC pipe demonstrated that 33 pascals of negative pressure can induce 100 CFM of airflow, equivalent to the capacity of a radon fan at full operation. The proposed passive duct, measuring 4x6 inches, would be installed across the backside ceiling of the storage closet, routed through the entrance hallway to the outside. Adjusting the amount of incoming air would require an adjustable grill inside the HVAC closet and potential modifications to the smoke detector placement.

While this passive outdoor air venting method offers advantages such as minimized humidity buildup and reduced installation costs, challenges may arise in adjusting the system for optimal performance, including potential modifications to the smoke detector and considerations for the size of the return grill.

The research concludes that passive venting can effectively reduce radon levels, offering benefits such as simplified installation and lower costs. The passive system utilizes negative pressure induced by the HVAC system, eliminating the need for additional radon fans and electrical



wiring. The authors recommend further research and testing to validate the success of this passive approach. emphasizing its potential for simplified, cost-effective, and occupant-friendly radon mitigation.

The study recommends implementing the passive outdoor air venting approach, emphasizing its benefits in terms of simplicity, cost-effectiveness, and reduced impact on occupants. The research suggests adjusting the passive system with an adjustable damper and monitoring its effectiveness, with the possibility of incorporating a fan if needed in the future. Continuous research is encouraged to refine and optimize this passive venting strategy for wider application in mitigating radon in concreteconstructed buildings.

The research draws on previous work by Bill Brodhead, highlighting the author's expertise and contributions to the field of radon mitigation. Relevant references include studies on at-grade radon mitigation exhaust, whole-building ventilation in high-rise condominiums, and measurements of radon and thoron emanation from concrete and granite. These references provide a comprehensive background for the current study and contribute to the body of knowledge on effective radon mitigation strategies.

Read the proceedings paper at: https://aarst.org/proceedings/2022/Brodhead RADON IN CONCRETE PASSIVE VENTING MITIGATION.pdf







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### • **RESEARCH**

# Behaviourally-Informed Household Communications Increase Uptake of Radon Tests in a Randomised Controlled Trial

#### Shane Timmons & Peter D. Lunn

(Excerpt as published in Nature.com / Scientific Reports / November 21, 2023 For the full paper including letters used in the trial, please visit <u>https://rdcu.be/du5FN</u> Sci Rep 13, 20401 (2023). Received 17 August 2023. Accepted 19 November 2023. Published 21 November 2023.)

We report a pre-registered randomised controlled trial of communications to encourage test uptake. Households (N = 3500) in areas at high risk of radon exposure were randomly assigned to receive (i) a the control letter from the national Environmental Protection Agency; (ii) a behaviourally-informed version of the control letter that incorporated multiple nudges, including reciprocity messages and numeric frequencies of risk; (iii) this same behaviourally-informed letter in a re-designed envelope; (iv) the behaviourally-informed letter in the re-designed enveloped with a radon risk map of the household's county. The behaviourally-informed letter led to a large increase in test uptake, from 22% in the control condition to 33% (a 50% increase). There was no additional benefit of the re-designed envelope, which generated uptake of 30%. Including the map led some households to respond faster, but the overall uptake (26%) was weaker. The results have implications for public health communications with households and show the potential for techniques from behavioural science to help mitigate environmental risks.

As a result, most previous attempts to increase radon testing rates have had limited success. Taking randomised controlled trials (RCTs) as the best evidence, few tests of ways to communicate with householders have observed significant increases in testing rates and none have generated rates above 20% among those who hadn't already decided to order a test. Weinstein, Sandman and Roberts (1991) issued letters to householders and varied whether they contained general advice to test or specific information about high levels of radon in their area. Results showed no difference in test kit orders. Weinstein, Lyon, Sandman and Cuite (1998) issued videos to householders that either emphasised the risks of radon, how easy it is to test for radon, or both. Compared to a control group order rate of 5.1% among those who had not previously decided to test, 18.7% of those who received the combination video ordered a test kit. However, the authors note the length of the video and costs of production limit the scalability of the intervention. Another (non-randomised) evaluation of costly awareness campaigns showed positive effects, with approximately one quarter of households in participating areas having tested for radon versus less than 15% of those in non-participating areas. Other trials that have shown positive effects have relied on rating-scale intentions rather than measuring behaviour or on small, non-representative samples. Thus no trials to date have observed testing rates above 20% using low-cost, scalable interventions.

Our approach differs from previous trials and follows recent calls from experts to apply rigorous methods from social science to radon communications. The Potsdam Radon Communication Manifesto emphasises the need for science-based communication strategies that rely on theory and evidence in place of gut-feelings on what may work, for collaboration between policymakers and social scientists and the use of interactive risk maps to bolster



personalised communications. McLaughlin, Gutierrez-Villanueva and Perko (2022) stress the need to address deficits in radon risk communication as a priority for National Radon Control Strategies. A recent systematic review of radon communication campaigns highlights substantial deficits in the methods used to evaluate campaigns, the need to pretest communications and the absence of behaviourally-informed interventions (or hudges"). We worked collaboratively with Ireland's Environmental Protection Agency (EPA) to inform postal communications issued to householders using behavioural science and test these new communications via an RCT.

Read the full paper to better understand the author's approach which differs from previous trials and follows recent calls from experts to apply rigorous methods from social science to radon communications. Exposure to radon – and the associated risk of lung cancer – is increasing in multiple countries. Household testing is hence a public health priority, but the lack of sensory cues from radon means most people don't consider radon to be a risk. Indeed, previous RCTs of direct communications with householders have failed to generate testing rates above 20%. We therefore combined multiple behavioural interventions into one BI letter issued to householders in high radon areas.

The effect of combining interventions in this way was large. We observed an almost 50% (11%-point) increase in test uptake among those who received a BI letter, bringing the uptake rate to roughly 1-in-3. This effect is much larger than previous radon testing trials16 and the typical effect from interventions run by "Nudge Units". Although we can merely speculate, the size of the effect is perhaps driven by the combination of multiple behavioural levels into one intervention (e.g., reciprocity, numeric frequencies of risk, etc.) in a simple-to-read format, rather than relying on lengthy videos or singular levers. If all households in our 3500-home trial were issued our BI letter, 300 more homes in high radon areas would have ordered radon test kits over the trial period. The simplicity of the intervention – mere changes to a standard letter – means it is cheap to scale and is readily adaptable for testing in other countries.

While the strength of the effect for policymakers is encouraging, identifying the mechanism underlying it is not straightforward. The effect could have been driven by one feature (e.g., merely simplifying the text), two features (e.g., simplification and using numeric frequencies), three features, or all features (simplification, numeric frequencies, reciprocity, endowment and urgency). It's also possible that one or more features had a negative effect, and the effect size of combining fewer features would have been even larger.

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# RESEARCH



## • SYMPOSIUM



# **2023 Symposium in Review**

Indoor Environments 2023 offered five technical and educational tracks and an exhibit hall with over 50 booths presenting products and services for the soil gas professional attendee. The Symposium featured 90 speakers across five stages over two and a half days, as well as seven short courses on Sunday.

The Symposium officially began with the Opening Reception on Sunday evening, as more than 80 exhibitors' representatives promoted their new products and services while reconnecting with current customers. (4)

On Monday morning, the symposium sessions opened with updates from AARST, CRCPD, EPA, and HUD **(5)**, and attendees experienced the potential of creating personal branding and its positive effect on individual business goals as presented by internationally renowned keynote speaker Steve Diggs **(3)**. Concurrent technical tracks kicked off on Monday with Vapor Intrusion sessions as well as presentations on Standards, program and national policy updates, and in-the-field technical reports.

A special emphasis for Indoor Environments 2023 was the promotion and engagement of the next generation of radon professionals. Two panel discussions enabled young colleagues to address the attendees and share their early experiences and aspirations. See related story, next page.

Tuesday's agenda featured three concurrent tracks: Practice & Policy, Science & Research, and States & Tribes. Some sessions from these tracks that left attendees buzzing were; Geologically Based Correlation of Rock And Indoor Radon Levels In Eastern Pennsylvania, presented by Brian Yang, Lessons Learned in Mitigation (1) featuring a panel moderated by Duane West, featuring John Mallon, Dawn Oggier, Michael Smit and Jody Tropeano, and especially Radon - I Didn't Know presented by lung cancer survivor Kerri Robbins.

Wednesday's agenda focused on radon in water, presented by Dr. Michael Kitto and Dave Hill, as well as a session celebrating the ALA's annual poster and video contest and a presentation on EPA's plans for credentialing body oversight. (2)



# Young Radon Professionals – The Next Generation

The Indoor Environments 2023 Symposium panel session titled "Young Radon Professionals – The Next Generation" on the morning of October 30 featured four dynamic participants: Brian Giancola, Nick Jackal, Lauryn Oggier, and Kaber Robinson, each bringing their unique perspectives and skills to the forefront of the radon industry. These younger generation mitigators included owners or managers of radon mitigation businesses and a State radon program staff person. Guided by Josh Kerber, an Environmental Research Scientist for the Minnesota Department of Health, this session delved into the priorities and concerns of these emerging professionals, offering valuable insights into how they entered the radon world, how they see the appeal for older businesses to attract younger workers, and ideas on how to grow loyal young employees and market to the younger generation.

The goal of the session was to address the distinct perspectives and aspirations of younger individuals actively involved in radon-related industries. The panel aimed to provide a comprehensive understanding of the needs of emerging professionals in the radon sector. Through their discussions, these professionals created a platform that not only acknowledges but also supports the key priorities within the industry, fostering a dynamic and sustainable future for radon awareness and mitigation efforts.

Recognizing the significance of advancing in this industry is pivotal not only for the professionals themselves but also for the broader community. The collective efforts of these young radon professionals contribute to a shared vision of creating safer indoor environments, emphasizing the importance of their roles in shaping the future landscape of radon-related practices.

On the inaugural day of the Indoor Environments 2023 Symposium on October 30, the panel titled "How Youth Are Addressing Radon and Lung Cancer Advocacy" featured members of the Premier Youth Ambassadors for Radon Reduction (PYA). The engaging session showcased the insights of younger participants, including Kathryn Dixon, Joshua Keyes, David Trent, Mia Ray, and Tanya Yu. The symposium served as a platform to delve into the distinctive approach of the PYA program, which not only prepares youth for meaningful careers but also addresses critical issues related to radon exposure and its connection to lung cancer. Within low-income communities, the PYA program concurrently tackles core radon issues such as affordable housing, leadership development, education, employment opportunities in in-demand industries, and apprenticeship pathways. Serving as a vital link, the PYA program connects participants to essential radon testing and mitigation service training.

#### Impact beyond the Symposium

The results of the next-gen emphasis preceded the Symposium and will continue. The planning committee reached out locally to Tennessee's higher education institutions' deans with focus on environmental studies and invited promising students. One such graduate student attended and joined the Tennessee Chapter. Future symposium plans will factor in the assets brought by the next younger generation of radon professionals.

# **SYMPOSIUM**









### **SYMPOSIUM**



# **2023 Board Election and 2024 Board** and Committee Chairs

Voting for the 2023 Indoor Environment Association election opened on October 14 and concluded Monday, October 30 at 1 PM ET. During this period, members exercised their voting rights to choose the Association's future President Elect, several officers, and five National Directors. The election results were:

OFFICERS: Dave Hill (President-elect), David Gillay (Vice President), Jan Fisher (Secretary), and Dan Potter (Treasurer).

NATIONALLY ELECTED DIRECTORS: Nathaniel L. Burden, Jr., Bryan Coy, Terry Kerwin, Kevin Stewart, and Bill Sublette.

Update: Due to the resignations of two new Nationally Elected Directors (Bryan Coy and Bill Sublette) in November, per Section 4.04 of the bylaws, the Board appointed John Mallon and Zan Jones as Nationally Elected Directors,

**Continuing Current Terms:** Officers: Kyle Hoylman (President), George Schambach (Vice President) Nationally Elected Directors: Lila Beckley, Aaron Fisher, Aaron Friedrich, Dawn Oggier, Duane West Chapter Council Directors: Shad Evans, Phil McDonnell

#### 2024 Board of Directors



# **NEW MEMBERS**

#### **OCTOBER**

Andreas Johnsen (OH), Andrew F Barnes (CO), Andrew Alexander J Yelle (RI), Alexandra Papasavvas (NJ), Bonnie G Wilson (NC), Anthony Fresquez (WI), Brady M. Sexton Cassani-Brandt (RI), Daniel Ziobro (RI), Donald J. Bronson (ND), Brandon Goers (CO), Brandon Ruppenthal (CO), (CO), Duane A Younger (CO), Edward Hagstrom (OK), Julio Otazo (FL), Kevin Minto (CA), Sarah Fisher (NJ), Scott Brian C Folse (LA), Brian Eastman (CO), Chris Hank (CO), Coalan Gatts (OH), Cody J Jones (CO), Darriel Bratton Baker (CO), Troy Richardson (NC) (CO), Donna Grime (MO), Douglas Dunham (WI), Dustin Welch (WI), Dylan Strawser (OH), Eric Starszak (CO), DECEMBER James Evans (WI), James Ford (IA), James Sweeney (TX), Jimmy Nyassanga (WI), John Telesco (PA), Jordan Jessica Phillips (NC), Lewis W Wertz (PA), Robert W Archer (IA), Joseph Miller (GA), Justin Luker (UT), Lee Abram (CO) (CO), LEVI GROSS (CO), Mariah Ford (TX), Mark Seyfried (WI), Mendrake Savee (WI), Michael Bedwell (WI), Michael J Devir (IN), Nathan Wuerstle (PA), Nicholas Shed (CO), Nicholas Wlodarczyk (WI), Riley Patrick Doyle (TN), Robert Mauser (CO), Robert Seckerson (WI), Ronal M Thomas (LA), Ryan M Koble (ND), Shawn Elswick (MI), Terrence Traylor (WI), Victor Jaszczyk (CO), Zack Aiello (MO)

# **RENEWING MEMBERS**

#### **OCTOBER**

Aaron Fisher (PA), Aimee Kosor (PA), Albert Short (NH), Aarmond J Proctor (CO), Andrew C Noth (KY), Anthony Alexander H Watt (IN), Alisha Szews (WI), Avery Festa Lapov (SD), Betsie L. McAfee (IN), Brandon P Lussier (ME), (PA), Bill Sublette (TN), Brandon Brooks (IN), Brandon Chuck Crudele (IL), Clark Arana (MT), Daniel A. Proffitt (IN), Caldwell (MI), Brandon Spoerl (WI), Brian A Allen (PA), Daniel Hylland (MN), Daniel Tranter (MN), Darrell Waite Bruce Snead (KS), Casey J Bechler (MN), Christopher Ken (IL), Deanna French (IN), Deborah Madsen (MN), Donald Lewis (NM), Clyde R. Gould (CT), Craig M. Celmer (Veteran R Malone (NC), Greg Johns (TN), James C. Conrad (MA), Owned) (KS). Craig Paul Lennox (PA). Darrell W Steiger Jamie Adamski (MN), Jan Fisher (NJ), Jeffrey Brittingham (IN), Daryl Festa (PA), David Eide (WI), David Pali (CT), (KY), Joel A Migliaccio (OR), Jonathan Tapp (TN), Joshua Dominic Romagnoli (PA), Douglas Burford (CO), Edward Kerber (MN), Karen Froberg (NJ), Kelly Smeltzer (MN), Darcy (MD), Gary Nelson (WI), Gavin Kosek (WI), James Lawrence Belland (OR). Marc Katz (MN). Michael A. Kellev Richards, Jr. (MD), Jamile Applewhite (MD), Jennifer (IN), Michael Christophides (NY), Michael E Jezek (TN), Sims (KY), Jessica Petschauer (NJ), Jimmy Rogers (KY), Michael Smit (NM), Noelle Noth (KY), Paul Smith (NM), John A. Lewis (NM), John Doe (NC), Jonathan Martinez Rafael Colon Jr. (CT), Steve Nance (KY), Tim Fisher (NJ), (CO), Jonathan Runquist (WI), Jowhar Shaffer (GA), Juan Timothy D. Paino (IN), Tonya N Keen (TN) Jimenez (NJ), Justin Berard (MA), Karl Nilsson (SE), Kathryn O. Hubicki (NC), Loraine Holyfield (WI), Lynda DECEMBER King, Indiana Radon Manager (IN), Maurice L Childs (MI), Michael Green (WI), Michael Kitto (NY), Michelle Festa Amy Pierce (OH), Anthony Klaers (MN), Bradley Turk (NM), Brian D Notestein (CO), Bryan Coy (CO), Cory Schold (NE), (PA). Nataliva Cullen (IL). Neal B. Freuden (CT). Nicholas DAVID LEON WILSON JR (TN), David Powell (IN), Don Thelen (MI), Otis Hannigan (IL), Phil McDonnell (TN), Philip R. Ingram (TX), Dr. Leo Moorman (CO), George Nelson Coache (NJ), ReveAnn Ellrott (CA), Richard F. Pezzino, RMS (NY), Rick Martin (MI), Robert Bosch (MI), Ronald Brickley (AL), Gordon Gillespie (ON), Heather McKeever Melchior (MD), Ross Scharf (MI), Ryan Brown (MI), Ryan Porreca (NJ), James Evangelista (TN), Karen Ahearn Dilyard (OH), Ryan Petersen (GA), Samson Festa (PA), (MA), Khanrad J Wilson (IN), Leslie Cloonan (MN), Maria Shaun Keehma (IL), Shawn E Veith (CO), Shawn Martinez Moore (CO), Matthew A. Bednarz (CT), Morgan Cohen (MA), Patrick Pignataro (NJ), Robert W. Carlson (MN), (CO), Steven Dawson (PA), T. Eric Roberts (NC), Timothy Walker (MI), Tony R. Meredith (IN), Tryggve Ronngvist Ross W. Relyea (NY), Sarah Franco (TX), Stephen Saturno (), Tyler Leroy Cole (NM), Tyler Summitt (IN), Wallace O. (CA), Stuart Cotner (IL), Thomas Michel (MA), Tyler Huff Dorsey, Jr. (VA), William Allen (IN), Zachary Neideffer (CO) (CO). William R. Carlson (MN)

# ASSOCIATION NEWS

#### **NOVEMBER**



#### **NOVEMBER**

### AARST FOUNDATION



Dan Potter, Kyle Hoylman, Wes Hodgden



Gala Volunteers



Holly Tabano, Laryn Oggier, Dawn Oggier



Premier Youth Ambassadors

# **Boots & Bling Gala**

In October, the AARST Foundation hosted its first pre-symposium Fundraising Event. The Boots & Bling Gala brought out more than 125 attendees dressed in their finest cocktail western attire. The evening included a silent auction, live auction, and diamond bracelet raffle. Guests enjoyed live music performed by Nashville's Aly Cutter, networking with industry partners, and memorable moments from the live auction. Bruce Snead was the hosted auctioneer and did a legendary job in his efforts to raise money. Over \$16,000 was raised by the end of the night.

As with any event, many people were involved to make the Gala a success. Volunteers worked countless hours behind the scenes to make sure every detail was perfect. Thank you to Andika Susanti, Brandy Toft, Bruce Snead, Bryan Coy, Bobbi Jo Sauls, Jessi Bickes, Tod Boss and Paige Livingston.

A special thank you to the table sponsors, which included Fantech, Protect Environmental, RAData, Radonaway, and Tennessee Radon. The continued industry support from these companies is genuinely appreciated and instrumental for the work. In addition to our table sponsors, many items were donated Donors Bryan Coy & 5280 Radon, Brett Robson & Tim Petz, Bruce Snead & K State Engineering Extension Program, Dawn & Bob Coffee, DuPage Radon, Fantech, Jeff LeBlanc & Tod Boss, Jessi Bickes, Kendra Scott, Kevin Spight, Maya Niveya Design, Modern Christmas Trees, Protect Environmental, Radonaway, Ryman Auditorium, Starbucks, Sunradon, and Zan Jones & Radonova provided hours of bidding entertainment.

The most notable item of the evening was a radon t-shirt guilt made by Susan Eldredge, wife of Clark Eldredge of the FL Department of Health. The item sold for \$2,500 after a lively bidding war.

The goal of this event was to rally support and raise funds for the AARST Foundation Mission in advancing research, supporting environmental justice, and bolstering the radon industry with essential resources. The financial support of the AARST Foundation is monumental in backing a research agenda providing the evidence base for radon risk reduction and aiding underserved communities through Environmental Justice. Important research and projects including sidewall venting evaluation, Harvard University and University of Kentucky studies, and other Health Equity efforts are going to benefit from the money raised.

> For any guestions on how to donate or get involved with the AARST Foundation, please contact info@aarstfoundation.org.

# **2024 Membership Campaign**

The Indoor Environments Association is launching a membership campaign in 2024 to offer the benefits of membership to more individuals and grow the size of the network of dedicated individuals at both the national and state/regional chapter levels.

#### Why Join the Indoor Environments Association?

**PERSONAL BENEFIT.** Membership offers a myriad of benefits. By being a part of the Indoor Environments Association family, individuals gain access to the latest news and research, free access to standards, continuing education credits, association-endorsed insurance and marketing providers, and a broad network of experts dedicated to advancing radon and vapor intrusion science and technology. Members also receive a discounted rate for the annual Symposium, corporate discounts on a variety of products and services, including the Lowe's Partner Program, and numerous other tangible rewards.

**CHAPTER CONNECTIONS.** Whether a member first seeks to join a chapter or the national association, he or she automatically belongs to both. The chapters provide policy advocacy leadership in their states, offer CE and networking opportunities, and serve as a representative voice. As for any industry, the political and market power of IEA is in part determined by the size of the membership at the chapter level. Presently, IEA's 16 chapters cover 31 states.





**INDUSTRY SUCCESS:** IEA has a strong track record as the leader in the industry at the national level, as the home of the only ANSI-accredited standards development consortium for radon and soil gas standards, the only proficiency program accredited under ISO 17024 by ANAB for radon and soil gas credentials, and a Government Affairs program that makes legislative and regulatory policy focused on risk reduction happen. Members have a seat at the table to shape and contribute to these industry assets.

In a world where the importance of indoor air quality cannot be overstated, Indoor Environments Association's membership campaign strives to invite everyone in the profession to join the movement to assess and abate the silent threats of radon and vapor intrusion. Together, let's build a community dedicated to achieve health equity by joining in membership.

Visit the Member Benefits page to join us in committing to shaping a safer, healthier future for communities across the US.

#### **BUSINESS ADVANTAGE.** With the 5% or 10% discount (depending on the number of employees enrolled), a business can ensure that multiple employees are connected to the IEA family and have their own individual log-in to view and download standards and use other benefits.

MFMBFRSHIP

#### AND...if you are already a member, thank you for your loyal support! Please help your chapter and National by encouraging a colleague to join today!

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