



## IAQ RADIO+

Show Number: 738

[Kevin Kennedy, MPH, CIEC](#)

**The Healthy Homes Initiative: Where has it been? Where is it going?**

Good day and welcome to the IAQ Radio+ episode 738 blog. This week we welcomed Kevin Kennedy to talk about The Healthy Homes Initiative: Where has it been? Where is it going? Kevin Kennedy is a legend in the healthy homes movement and continues to educate people around the country on the importance of healthy housing!

**Kevin Kennedy** has over 30 years' experience as an environmental health scientist, including 21 years' working at Children's Mercy Kansas City (CMKC), where he retired in 2023. At CMKC he led the establishment of the Environmental Health Program (EHP). The program has assessed thousands of homes and schools, providing patient families, childcares, and schools with resources to assist them in identifying and reducing indoor environmental exposures that may result in health problems for children.

**Nuggets mined from today's episode:**

*Let's catch our audience up on your current activities. You retired from Children's Mercy but are now doing consulting and teaching healthy housing classes.* Kevin retired in 2023; he commented that once retired he found people came out of the woodwork looking for him. While he no longer has a formal schedule; Kevin is teaching and training folks in healthy homes and environmental assessment. He works with Kate Hastings consulting on EPA projects and is an adviser to HUD. Kevin has learned that the work he has been doing isn't a job and rather a career; doing whatever is needed to make work the best it can be.

*How have things changed?* Kevin began his career as an analytical chemist where he met and worked with Luke Gard. He then stepped into working with Dr. Jay Portnoy, MD (Children's Mercy Hospital, Kansas City, MO). Dr Portnoy facilitated Kevin attending and presenting at medical conferences on environmental health and healthy homes. At that time, only 20% of allergists believed the indoor environment was related to allergy. Dr. Portnoy's research and evidence-based presentations hinted about mechanisms by which environmental exposure affects people and

having Kevin present on home environmental health provided a broad perspective. Kevin's early presentations on environmental health were sparsely attended (10 people) while in later years after more research made the role of indoor environments clearer presentations were attended by as many as 1,000 people. Kevin mentioned surveys of physicians found pediatricians were much more receptive to the role of the home and the indoor environment on a child's life and health. Until recently less than half of general practitioner physicians believed that the indoor combination of biological and chemical agents ("environmental soup") played a role in human health.

***The indoor generation.*** People under 40 are the "indoor generation" spending at least 70% of their time indoors. For kids their health is directly dependent on the inside of the home (chemicals, biologicals, etc.) they grow up in.

Kevin mentioned a specific article from Dr. Steven Platts-Mills, (MD UVA Health, Charlottesville, VA) where he suggests one of the key reasons for the rise of asthma was the introduction of indoor entertainment (TV) geared towards children. This seems to have changed things like their breathing patterns. (Thomas A.E. Platts-Mills, MD, PhD, FRS, The Allergy Epidemics: 1870–2010, J Allergy Clin Immunol. 2015 July ; 136(1): 3–13. doi:10.1016/j.jaci.2015.03.048.)

***The "OGs"***-We're old, we entered the field before building science was a science and Building Scientists Joe Lstiburek & Terry Brennan became influential. We have institutional knowledge and we're retiring. The science is much clearer now than ever before. A huge opportunity exists to take advantage of funding made available under the Inflation Reduction Act to improve the indoor environment of homes.

***What are you doing these days?*** There are 1,000s of new professionals who are entering the field of healthy housing with little to no knowledge about indoor environment, building science and building systems (airflows, pathways and moisture dynamics). Kevin is passionate about bringing new and interesting information to these people in our field who are excited and enlightened by it. Positively influencing these young people is important as they will be the policymakers of the future. HUD has significantly increased their research grants. The EPA has new focus on Environmental Justice with a huge amount of new funding (billions) to support programs in low income-high risk areas to improve long term health effects and reduce the impact of historical environmental injustice.

***Last time we talked we spent some time on the BPI HHE certification program. Please tell our audience how that is going and if there is anything else in the pipeline?***

Building Performance Institute (BPI.org) was historically more energy focused and has expanded to provide Healthy Home training. BPI's visionary leader; Larry Zarker, CEO is retiring this fall. Kevin, whose career began more in industrial hygiene where the focus is on workplace and worker safety, opined that BPI is geared to a more common workforce and thereby better positioned to provide the needed training for future Healthy Home Assessors than AIHA (American Industrial Hygiene Association) which is more focused on commercial.

***What do you think about the national strategy for IAQ and decarbonization?***

Kevin emphasized that we have to consider the impact of these efforts on kids.

*Combustion byproducts-* Carbon monoxide, nitrogen dioxide, are not totally removed by ventilation and buildup in homes.

*Decarbonization-* immediate benefits. Less exposure should lead to fewer premature births or low birth weights, cognitive or behavioral disorders, mental health problems, risks of asthma, or respiratory problems, long term cardiovascular disease, risk of cancer. These health benefits translate into improving kids' ability to learn and contribute productively to society.

***I remember when you presented at our Healthy Buildings Summit here on the "mountain" a few years back on your work using mapping of large health and housing data sets to develop predictive indices of indoor environmental health impacts on children. How is that work coming along?***

Kevin said successful programs like in Kansas City Missouri (KCMO) have remediated 5K homes over 20+ years, but the reality is in places like KCMO there are many thousands more in need of remediation. We have to be smarter about identifying risks. Their research group is working on ways to use outside conditions of homes to try to understand inside exposure risks. For mapping to be sufficiently accurate Kevin said you have to analyze conditions at the individual home level using individual street addresses. As a hospital they had access to decades of historic health data. Published studies on the geocoding of health data. Then connect health data to street address, connect to location on map, and create heat maps. Found sufficient association to apply for grants from HUD to do more mapping. Developed a lead prediction index which combined age of dwelling + outside inspection to determine likelihood of lead contamination. Reliance upon data not kids to predict lead contamination.

***You have a new report on the impact of weatherization on acute care visits for asthma that is getting a lot of attention, please tell our audience more about that.***

We matched data from a weatherization program in KC to asthma acute care visits

and looked at the impact of having a house weatherized on the children with asthma who lived there. We found a 40% drop in asthma acute care visits from before the house was weatherized to after. (<https://metroenergy.org/health-report>)

### Key Points from Kevin's Slides:

***"The Chasm"***- Kevin learned from others and translated that knowledge into practical protocols and coursework to help others. Kevin works in the chasm between Building Research and Building Practice, his focus is improving and protecting children's health. His goal is preventing children from being canaries. He chooses research to guide the environment not the kids.

***"Big Jeremy-Little Jeremy"***- There are big differences between young children and adults. Little kids- eat more, drink more, breathe faster, have higher metabolisms and are more susceptible to exposures because their natural defenses are underdeveloped. They crawl and play close to the ground, breathe from a different breathing zone, put hands in mouths.

***"Young Jeremy"***- also accumulates risks and stressors: poverty, lead paint, roaches, squalid neighborhood, lacks access to fresh produce, mom works multiple jobs, nearest park is 5 miles away.

***"Poison 2020"***- 50% more calls to poison centers in 2020 due to exposures to antimicrobial products used to *battle* the Covid virus.

***"Jeremy Comfort"***- thermal comfort is important for adults, children's comfort is more complicated involving multiple factors.

***"Healthy Housing Principles"***; Keep it principles: clean, dry, pest-free, contaminant free, safe, ventilated, comfortable and maintained. (BPI uses the term comfortable instead of thermal control)

***"Thermal Comfort for Seniors"***- seniors suffer mortality due to insufficient thermal comfort. The inability of senior adults to maintain body temperature or release heat result in tragic losses of life during severe weather events.

***"40%"***- of school kids and adolescents have at least 1 chronic health condition: asthma, diabetes, obesity, behavior or learning problem.

***"Cell Danger Response"***- (CDR) we have seen 2-100 times increase in chronic disease since the 1980's. A newer theory about how humans are impacted by the

environment is CDR. Inside our cells the mitochondria use ATP (adenosine triphosphate) as the primary energy currency of cells. They also defend the cell using the same ATP molecule. However, when cells are exposed to various conditions (environmental chemicals, stress, disease development), they can “Freeze”- decision making stalled due to exposures. The theory suggests that sometimes the health impact isn’t the actual exposure to a contaminant, but the impact of our on-body’s response to the exposure. With the latest estimates reporting as many as 30,000 chemicals having been identified in homes, there are entire classes of chemicals found in homes that haven’t been counted in the total impact on children. Kids are consuming 1 teaspoon-1 tablespoon of house dust containing these chemicals every day.

***“Preliminary assessment of health impacts of indoor contaminants using daily adjusted life years (DALY) metric”***- The sum of years of life lost and time lived with a disability attributable to a cause. Estimated value is \$700K by EPA and HHS: particles (10 and 2.5). formaldehyde, nitrogen dioxide, radon, ozone, sulfur dioxide, acrolein. These chemicals are rarely tested for in homes.

## **ROUND UP**

- The US DOE (Dept. of Energy) is heavily invested and provide Community Action Funding for low-income weatherization funding. The initial program performed poorly and has been revised and improved to address lessons previously learned.
- Kevin was involved for more than a decade in trying to get Health Insurance Companies to reduce healthcare claim costs through preemptive investment invest in fixing environmental health and safety problems in homes. Health Insurance carriers are reluctant to invest in preemptive home repairs. This is referred to as the “wrong pockets problem”; the investment isn’t movable when occupants move. There has been some success in Healthcare Insurance Carriers willingness to invest in “mobile” interventions; products such as HEPA vacuums and air cleaners, cleaning supplies, dehumidifiers, allergen bed covers, etc..
- Kevin is working with BPI to develop new national certifications for healthy home evaluators and assessors and educators. Kevin indicated that BPI and IAQA are talking about working together and he finds this to be an exciting opportunity.

## **KEVIN’S FINAL THOUGHTS:**

- WE are not doing a good job of training our replacements.

- WE should be working with younger people to train the trainers.
- BPI has a large testing network. 100 testing (training) centers
- Becoming an Indoor Air Professional, industrial hygiene is focused on work and worker exposures. Residential Indoor Air Professionals need building science /building systems knowledge and people skills; BPI and IAQA are better positioned to recruit and train them.
- Collaboration with technical high schools and community colleges. Healthy Home principle should be taught in high schools.
- A national program is needed to oversee these programs: who will oversee, who will implement, where will they get training.
- Building managers (with children’s occupants) and school facility managers are often resistant to recommendations made by building assessors.
- Improving a home improves the lives of all children in the home.
- Benefits of electrification (reduction of indoor carbon sources, reduction of reliance upon fossil fuels.)
- Healthy Homes Certifications and training programs, “build it and they will come.”

### *Z-Man signing off*

#### *Trivia-*

Who was Kevin Kennedy’s former boss at Children’s Mercy Hospital?

Answer: Dr. Jay Portnoy

Answered by Don Weekes: Ottawa, Ontario, Canada

#### **Show Discussion:**

**From J David Miller : When I was invited to speak at AAAAI in 2000, 99% of allergist were sure that dampness & mold was a nothingburger.**

**From Danny Gough : Someone coined the phrase describing the chronic illness issues in our society as “we don’t spend enough time on the other side of the window”.**

**From Paula Schenck : And post covid with all the well-meaning but not effective disinfecting protocols in schools have added to exposures and respiratory issues for both staff and students!!!**

**From Danny Gough : I learned the seven (7) principles of healthy homes when Kevin had more hair. But he slipped in an eighth one, “Keep it Comfortable” . According to consumer research by Decision Analyst (American Home Comfort Study) and others, more than half of 66 million homeowners in the U.S. report some dissatisfaction with their home’s comfort level.**

**From J David Miller : House dust mites did not exist in houses in the US and Canada before the late 1960s. It was too cold and too dry.**

**From ralphsmacbook : Industrial hygienists routinely measure formaldehyde and acrolein, though usually in industrial settings.**

**From Danny Gough : @J David Miller - Interesting. As you know, the AIHA green book says in the**

Preface that the indoor temp in homes was much colder in years past. It mentions as low as 15-17C.  
From J David Miller : I have measured acrolein on a large scale. It is a cooking oil pyrolysis product. Bad ventilation over the stove.

From J David Miller : <https://www.canada.ca/content/dam/hc-sc... ein-en.pdf>

From J David Miller : well as long as the electricity doesn't come from coal

From Danny Gough : J David Miller - And those ventilation range hoods do NOT work very well in substantially airtight homes without some form of make-up air. That introduces lots of humidity in my neighborhood. I've also seen a clothes dryer take 2 cycles to properly dry the clothes because of no make-up air.

From Tom Martin III : Based on my experiences with respiratory issues and low organ function, I can attest to the silent risks of poor indoor air quality. Air monitoring is essential and a no brainer for holding stakeholders and cut rate contractors accountable.

FYI-Taking cardiovascular medication while exposed to high levels of indoor CO2, formaldehyde, and total volatile organic compounds (TVOCs) can lead to serious side effects, especially given that the recommended thresholds from organizations like AAFA and the American Lung Association define unbalanced indoor air quality.. Unfortunately, many states do not recognize indoor air quality as a critical issue, resulting in patients suffering and expiring early directly linked to unmonitored environmental risks over time.. TM3

From Paula Schenck : Just be sure you are monitoring the correct items in air.... Air measurements for fungus is usually NOT helpful!!!!