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## David Jacobs

Chief Scientist at the National Center for Healthy Housing

A Healthy Homes Pioneer; Over 40 Years of Improving IEQ

This week we welcomed David Jacobs for an interview about his pioneering career helping make housing healthier for all. For over 40 years David has been a force for good in the healthy homes movement. It started early in his career as a research scientist at Georgia Tech and continues today at his current positions at the NCHH and as the Director, US Collaborating Center for Research and Training on Housing Related Disease and Injury, World Health Organization/Pan American Health Organization. From lead paint to gas stoves and everything in between David has been a tireless advocate for healthy housing we discussed his thoughts on accomplishments, current events and the future of healthy housing.

David E Jacobs, PhD, CIH is currently Chief Scientist at the National Center for Healthy Housing, where he recently completed a major study on indoor air quality in homes with gas stoves.. He is also an adjunct associate professor at the University of Illinois at Chicago School of Public Health (Environmental and Occupational Health Sciences Division). Jacobs holds degrees in Environmental Engineering, Science and Technology Policy, Environmental Health and Political Science. He is a licensed lead paint risk assessor and a board-certified industrial hygienist. He was a contributing author to the recently released Guidelines on Housing and Health from the World Health Organization. He helped launch the Healthy Homes Initiative in the US in 1999 with a report to Congress, where he has testified on several occasions (most recently in 2021). Dr. Jacobs has led research related to childhood lead poisoning prevention, lead exposure assessment and mitigation, healthy housing, asthma, green building design and policy development. He also was the principal author of the HUD Guidelines for the Evaluation and Control of Lead Based Paint Hazards, the standard industry

reference in the field. He was the principal author of the President's Task Force report on childhood lead poisoning prevention in 2000. He previously served as director of the US Department of Housing and Urban Development's Office of Lead Hazard Control and Healthy Homes from 1995-2004. He has over a hundred peer-reviewed papers and 20 book chapters or books, most of which are available at this [link](#).

Dr. Jacobs is also President of Lincoln Westmoreland Housing in Washington DC, a non-profit organization providing low-income housing for over 150 families.

Nuggets mined from today's show:

***Let's start with the project that got you back on my radar after far too long without you being on the show?*** The project was *Studying the Optimal Ventilation for Environmental Indoor Air Quality*. "...Studying the Optimal Ventilation for Environmental Indoor Air Quality (STOVE IAQ) gathered evidence of the health and environmental benefits that green affordable housing meeting ventilation criteria brings to families and communities..." Learn more about this study by following [link](#).

***Let's talk a little about your early career and work at Georgia Tech.*** David was trained as an industrial hygienist where he measured exposures in workplaces and worker exposures. While at Georgia Tech he investigated lead levels in public housing. Although the allowable OSHA lead exposure is 50 micrograms per M<sup>3</sup>, during lead abatement he found levels of 11,000 micrograms per M<sup>3</sup>. Not only were the workers being overexposed, but he and other researchers also found that kids were experiencing health issues in homes after lead abatement because they couldn't reduce lead levels following abatement using open flame burning and power sanding of lead paint that were widely used in the 1980s, but now banned. David began working with housing groups to lower lead exposures for children, workers and others, determine best practices and influence governmental policy.

- 1971 – Congress passes the Lead Based Paint Poisoning Prevention Act, which led to a mostly medical approach to lead regulation- doctors don't know and understand rehab and the housing profession failed to respond to lead paint, resulting in policy paralysis until 1991. It would take both professions working together decades later to make real progress.

- 1992 Dave testified at government hearing and discussed how kids were exposed (e.g. ingestion of lead from peeling paint, house dust and bare soil)?
- David prepared a white paper based upon his New Orleans Public Housing Authority research which was submitted to Congress. A senator wanted one stop shopping, and together with other Congress members ordered HUD to create its Office of Lead Hazard Control to be located within the office of the Secretary to give it cross-cutting authority across all federal housing programs.
- 1995- Money appropriated by Congress for lead abatement was not being spent because the US lacked the capacity to fill the needs (inspect, test, abate and remediate lead).
- Dave was asked by housing authority insurance risk retention group to create a scientifically based risk assessment protocols, which was adopted by a public housing insurance organization. He advised housing authorities how to implement both short term and long term risk reduction methods that could protect as many children as possible in the shortest time. Later research showed that these procedures were working using biomarkers that demonstrated a 37% reduction in children's blood lead and a more than 66% reduction in dust lead.
- Leveling the playing field instituting best practices. Lead and Environmental Hazards Association comprised of inspectors, risk assessors and abatement firms, local HUD grantees and governments, and community groups.
- According to David, science was the common thread that guided America's lead paint policy.
- David opines that climate change is linked to indoor health concerns.
- David opines that COVID heightened public awareness to healthy housing and now is the time to popularize the concept of healthy housing.
- Electric stoves do not create combustion gases.
- Having kitchen exhaust ventilation. Running kitchen exhaust ventilation while cooking. Cooking on back burner with vent hood running. David advocates continuous ventilation so people don't forget to turn it on while cooking. A recent study he worked on showed significant reductions in PM2.5, CO2, CO and formaldehyde, but not NO2, suggesting that gas stoves should be replaced with electric or induction ones. The STOVE study is [here](#).

- Housing developers have requested government funding to install proper ventilation in low-income housing and the requests have sometimes been denied, showing that ventilation improvements are often not being adequately financed.
- After Hurricane Sandy HUD regulated rehabs for federally funded recovery operations and required rehabbing to meet a Green Standard which improves health by reducing indoor exposures.
- Sometimes tragedy is the impetus to get things done. Sanitation drove solutions to typhoid and TB in the late 1800s. The origin of housing laws lies in public health needs.
- In 1999 while still at HUD, received \$10 million to study mold problem in housing in Cleveland, Ohio. Investigation found defective HVAC systems in homes with flooded basements. Infants who had died were later diagnosed with idiopathic pulmonary hemorrhage, which was tied to those defective ventilation systems; this disease is still not a reportable disease.
- In 2000 under President George Bush, HUD Secretary Martinez made lead a priority.
- Putting lead in pipes and paint was a bad idea!!!!
- 23 million homes have lead paint and 6-9 million homes have lead pipes.
- According to David, the governmental definition of infrastructure is misguided, because housing is infrastructure. The government allotted money for lead pipe replacement and not for lead paint removal. The 2000 financial crisis was a housing crisis. Housing should be considered infrastructure.
- The National Safe and Healthy Housing Coalition is a broad, voluntary coalition of over 650 members, including 400 organizations, working to improve housing conditions nationwide through education and outreach to key national stakeholders and federal public decision makers. The coalition promotes policies for safe and healthy housing in the United States, with special emphasis on those who are disproportionately impacted. Learn more at: <http://nshhcoalition.org/>
- Investment in healthy housing makes sense.
- Pay attention to the facts. David participated in a scientific march, "What do you want?" "Peer Review!"
- Old, single pane, energy inefficient windows are both a significant source of lead paint and a collector of lead dust. Non energy benefits is a euphemism

for health. The HUD lead paint program didn't often replace windows and when they did they used the cheapest ones available. On the other hand, Department of Energy Weatherization Programs often did not replace windows at all or sometimes deferred working on homes with lead paint issues. The two programs are now working together in a more cohesive fashion

### **The Principles of a Healthy Home**

Housing conditions can and should support good health. But what makes a healthy home environment? These principles provide a framework for describing the critical components of a healthy home.

Healthy homes are:

**Dry:** Damp houses provide a nurturing environment for mites, roaches, rodents, and molds, all of which are associated with asthma and other respiratory conditions.

**Clean:** Clean homes help reduce pest infestations and exposure to contaminants.

**Pest-Free:** Recent studies show a causal relationship between exposure to mice and cockroaches and asthma episodes in children; yet inappropriate treatment for pest infestations can exacerbate health problems, since pesticide residues in homes pose risks for neurological damage and cancer.

**Ventilated:** Studies show that increasing the outdoor air supply and properly distributing it in a home improves respiratory health.

**Safe:** The majority of injuries among children occur in the home. Falls are the most frequent cause of residential injuries to children, followed by injuries from objects in the home, burns, and poisonings.

**Contaminant-Free:** Chemical exposures include lead, radon, pesticides, volatile organic compounds, PFAS, environmental tobacco smoke and others. Exposures to asbestos particles, radon gas, carbon monoxide, and secondhand tobacco smoke are far higher indoors than outside.

**Maintained:** Poorly maintained homes are at risk for moisture and pest problems. Deteriorated lead-based paint in older housing is the primary cause of lead poisoning, which affects over half a million U.S. children annually.

**Thermally Controlled:** Tenants and homeowners are at risk for various health problems related to prolonged exposure to excessive heat or cold when their homes do not maintain adequate temperatures.

**Accessible:** Modifications are often necessary in order for occupants to move safely in their homes. Lack of accessibility in and outside the home can result in reduced physical activity, trips, falls, isolation from family and friends, and poor mental health. New homes should be designed for the accessibility of all possible occupants, regardless of their age or mobility.

**Affordable:** Households in which more than 30% of the income is spent on housing are considered to be *cost burdened*; if they spend more than 50% of their income on housing, they are considered *severely cost burdened*. High housing cost burden can lead to housing instability in the forms of difficulty paying rents or mortgages, evictions or foreclosures, frequent moves, overcrowding, living with relatives or friends, and homelessness. The high cost of housing can drive families into substandard housing, often in unsafe neighborhoods, can lead to damaged credit, job loss, lack of nutritious food and adequate healthcare, and poor mental health. Learn more at: <https://nchh.org/information-and-evidence/learn-about-healthy-housing/healthy-homes-principles/>

- When not properly promoted and financed by the housing market, funding must come from subsidies and enforcement.
- Healthy Housing is Going Global. WHO has assembled evidence and published healthy housing guidelines in 2018. New Zealand, Australia, UK, and other countries all have healthy home rating systems. The UK's system has highly trained inspectors (most with masters degrees). Green housing and redevelopment.

**What about radon?** New York State technical study carried out by NCHH and others helped to reform federal housing policy to require sampling in all ground-contact units to ensure remediation in multi-family housing is properly targeted. Radon is the second leading cause of lung cancer. The study found that there is a high probability of missing homes where radon is a problem when only a percentage of homes are inspected. Active radon remediation systems work! Must have the money to both inspect and fix homes with radon problems. There is a concern over reducing exhaust ventilation in homes with radon problems. Study shows that while reducing exhaust ventilation may increase radon levels in basements, the radon does not migrate to living area spaces.

**What topics don't get enough coverage?** Houses should be viewed as a system. Housing is infrastructure. Getting the housing market to monetize the benefits of

healthy housing so that healthy housing investments become like any other home improvement. There is no national strategic plan for healthy housing. A new senior level national strategy is needed. Healthy housing should be linked to climate change. In an odd way people think that lead or housing problems have already been solved or are too big to solve; this thinking leads to policy paralysis. We can either continue to pay the cost of unhealthy housing in higher medical, school, and property budgets or we can do the smart thing and invest in healthy housing before children and other occupants are harmed. We should act on the science.

*Z-Man signing off*

**Trivia:**

Name the pediatrician who warned the world about so-called low-level lead exposure?

**Answer:**

Dr. Herb Needleman