

The New Nexus of Health and Energy

Larry Zarker

Our Homes Suck, And Why Our Kids Have Sinus Problems

Editor's Note: We've followed a path of fast evolution in the world of home performance. From a simple beginning in 1977, when President Jimmy Carter extolled Americans to simply reduce the energy consumption of our buildings, we've developed a multi-faceted approach to home performance that strives to capture all manner of non-energy benefits. Among these, none can loom so large as our ability to have a positive effect on the health of those who live in the homes with which we're involved. Our health is, after all, a primary measure of human happiness and success.

Luckily, the recognition of this connection—the nexus of health and energy—has risen to the highest levels among regulators, program managers, and insurers. We now have some tremendous opportunities before us which could vastly improve our relationship with our housing. Larry Zarker, of the Building Performance Institute, makes a compelling case for a holistic and healthy management of our homes.



Most people involved in home performance understand how stack effect works, but I'm always surprised by how many hands are raised when I ask: "How many of you think you can make a house too tight and cause problems with indoor air quality?" Generally, at least three-quarters of the room raises their hands. Really? This shows how much education we have to do, because it is clear to most building scientists that the problem is not how tight the home is, but rather where the air comes from that is breathed by the occupants.

My colleague Joe Kuonen says that getting a house so tight that you need to ventilate is a feat worth celebrating. "Now, we can get fresh air from a place we can trust," he says. Where do most of our homes get their fresh air? From places we cannot trust, like crawl spaces, attics, and wall cavities.

What do we know about crawl spaces? Generally, they are dark and wet. This is a perfect habitat for mold, rodents and insects to thrive – and gain access to the house. Those of you who have spent a lot of time in crawl spaces have horror stories about close encounters with both living and dead creatures.

That basement is often where the air handling unit resides. Thankfully there's a furnace filter, you might say. But if you look at most furnace filters in people's homes, you'll generally find them clogged and gross and full of pollutants. This can't be good for your health.

And this observation—that there are places from where you do not want to draw air—can made about attics and wall cavities, too. In other words, it is best to bring fresh air into the home by way of planned pathways, and it's a bad idea to allow random air leaks to do the job.

Where Building Science Meets Health Science

At the Building Performance Institute (BPI), our Building Analysts are trained to conduct diagnostic testing to measure air infiltration rates, check for gas leaks and evaluate the possibility of spillage from the by-products of combustion. They also examine the house for presence of moisture and recommend solutions. Any known hazards are noted through visual observation and through interviews with homeowners. Yet, to date the assessment does not comprehensively include the triggers that can create and sustain health problems in occupants.

The Children's Mercy Hospital has conducted over 800 home interventions in Kansas City on behalf of patients under the care of hospital physicians. These are cases of pediatric patients whose health conditions do not improve through medical treatment. A full environmental assessment is conducted at the home along with an interview of the adults in the home. These assessments identify improvable areas of the home which, when retrofitted, can help improve the overall health of the occupants. Dr. Jay Portnoy is the division director of allergy/asthma immunology at CMH. He, Christina Ciaccio and Kevin Kennedy have created a set of environmental assessment protocols for use in homes.

How Does This Apply to Home Performance Professionals?

There are two provisions in the Affordable Care Act (ACA) that could significantly alter the business model for home performance contractors:

The first provision relates to the essential benefits rule under Medicaid. The new rule states that preventive services must be recommended by a physician or other licensed practitioner of the healing arts within the scope of their practice under state law. It used to require that the in-home

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Why should we care about the quality of indoor air?

The U.S. is in the midst of an asthma epidemic. Asthma cases have increased by more than 60 percent since the early 1980s, and asthma-related deaths have risen to 5,000 per year. As a common, chronic disease, asthma affects more than 35 million Americans, including 6 million children. Each year, it causes more than 2 million emergency room visits and 500,000 hospitalizations.

A Mayo clinic study reports a clear connection between chronic sinusitis and the presence of mold in nasal passages. The presence of mold in a home is directly related to moisture levels in the home.

Sensitization and exposure to cockroach allergens is associated with increased asthma morbidity in the United States, especially among lower socioeconomic groups. Exposure to cockroach allergens in the first 3 months of life has been associated with repeated wheezing and asthma.

The American Lung Association states that dust mites are one of the major indoor triggers for people with allergies and asthma. Kevin Kennedy, Program Manager for the Center for Environmental Health at Children's Mercy Hospital (CEH/CMH) in Kansas City, Missouri reports that, "dust mites are known to cause asthma development in people." A primary trigger of asthma is found in dust mite droppings. A mattress can sustain as many as one million dust mites. Four in five homes in America have dust mites in at least one bed.

Lead, asbestos, and radon are also known health hazards. EPA estimates, for example, that 21,000 deaths occur each year from indoor radon.

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services be provided by a licensed health care provider. For Medicaid patients, the proposed new rules allow for home assessment services by a non-clinical, licensed person, such as healthy home specialists, environmental professionals, or potentially even Building Analysts with additional training. BPI has organized a task force to address the question of what would be required of BPI certified professionals. Each state will develop their own plan for compliance. While the rules only apply to Medicaid, Kevin Kennedy suggests, "as goes Medicaid, so goes the managed care industry."

The second provision is a penalty for hospitals with repeat admissions for conditions. Asthma patients comprise one of the largest groups with repeat admissions. The cost of a single hospital stay can well exceed \$10,000 – 15,000, if not more. The cost of a home assessment and corrective action is typically less than that. Factor in the penalties levied under ACA, and the home assessment and repair becomes a viable option for both the hospital and the health insurance industry.

Now is the time for the building science community, the medical community, and the insurance industry to build a collaborative model toward preventive health care that starts with a whole house home performance assessment.



Mold, asbestos, lead, radon, dust mites and cockroach allergens in American homes have led to a 60 percent increase in asthma related deaths since the early 1980s.

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Find out more:

www.pbs.org/wgbh/americanexperience/features/primary-resources/carter-energy/

www.childrensmency.org/Patients_and_Families/Support_and_Services/Environmental_Health/Environmental_Health/

www.ncbi.nlm.nih.gov/pmc/articles/PMC3493798/