



HOME SICK:

Is Health the Key Non-Energy
Benefit of the New Energy Codes?

JAMES TROUT

Builder/ Remodeler Building Performance Analyst Environmental Health Assessor

30 years as a Designer, Builder

10 years managing DoE energy efficiency and indoor environmental programs,
And building performance advocate with the Sierra Club and NEHA

Past certifications:



Building Performance Analyst
2012 - 2016



The new 2018 IECC

Intends to improve the energy efficiency and safety of homes

It also corrects an oversight in earlier codes and building practices.

And it creates a significant non-energy benefit worth several times the energy savings alone, and makes homes safer for occupants.

Building Performance

Its how all the products and behaviors work together or against each other in a home.

Indoor air quality and energy efficiency are both effected by behaviors, products, and processes that operate out of view.

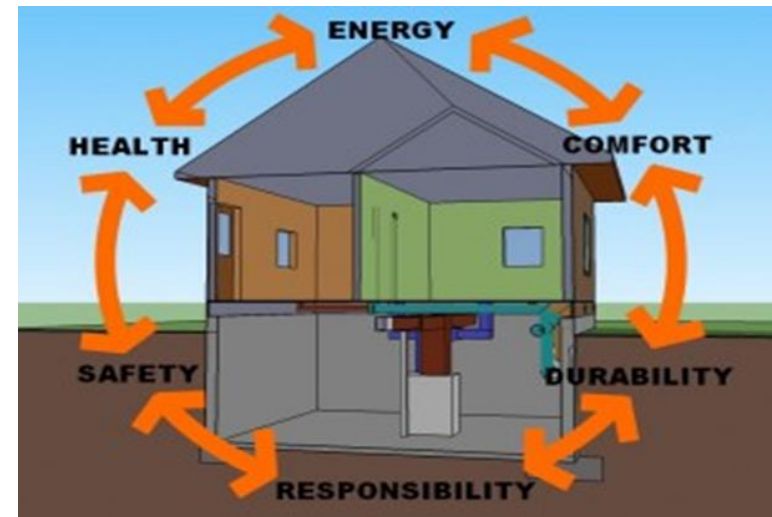
Its what we don't know that gets us

Knowing more about your air and energy can make your home and the people in it

last longer

perform better

and save money



In Missouri

The health benefit has been the winning argument with city and county officials in Mo. Sierra Club has led the fight for code adoption, and is succeeding with an emphasis on community and consumer non-energy benefits

Missouri again

- The connection between building conditions and health are so striking, Medicaid in Missouri reimburses for indoor air assessments.
- The first state to do so.

How bad is it?

- The World Health Organization (WHO) estimates that a third of all new and remodeled homes are “sick buildings”.
- The EPA estimates 30,000,000 homes have toxic indoor air levels. It’s now the 4th highest health risk in the USA

The relationships

Over the last 30 years we've tightened homes while also introducing man-made chemical-based products that produce toxic chemical gases.

Indoor air quality deteriorated because the skin was tighter and the building didn't breathe.

Systems were at risk of skewering the air balance, depressurizing the building, and concentrating pollutants.

New Energy Codes test and balance the air



Which:

reduces humidity - the breeding ground for biologicals;
reduces particulates – the stuff that clogs your lungs;
reduces toxic gases – from chemicals in solid form that off-gas.

They also help to assure uncombusted gases are leaving the premises.

And...

The health cost savings alone
can be 4 times the energy savings.



Are We Too Tight

Sealing a house too tightly without air makeup can:

- depressurize the air enough to back up exhausting gases in the chimney, furnace and water heater flues,
- It can draw dirty replacement air down from the attic,
- It can reduce the effectiveness of exhaust fans in kitchens and baths.
- It can trap polluted air inside

What compounds the problem?

The problems can be amplified by our biochemical intolerance built up by water and food toxicities:

From pesticides in the water to chemicals in the dry cleaning and permanent press clothing, to plastics, herbicides and heavy metals in the food chain.

Studies

The Harvard School of Public Health notes that lead, PBDEs (plastics) and Toluene are among the 10 most toxic chemicals found in homes. Indoor chemical off-gassing is associated with memory loss, attention disorders, loss of development skills, and damage to the central nervous system



It's the commingling of these gases that create a sick home



Of the 500 gases that might be found in your home, 20% have never been identified before.

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Other health impacts?

- 40% of asthma attacks trace to indoor air quality (IAQ) issues. Asthma alone is a \$50B disease and is growing every year.
- Endocrine disruption occurring at very low levels can reach past the current generation and can cause mammary, ovarian, and prostate cancers in our children..
- Increases in immune and auto-immune diseases, and some neurodegenerative diseases, including obesity and diabetes.

In Short:

The problem is created by how we build houses,

perpetuated by the commingling of contaminant off-gassing,

And compounded by other environmental contaminants

The code solution:

We need to test and verify air balance,
and ventilate so the house can breathe.

The cost benefit

he NAHB see a typical cost uptick per home at approximately \$7,000 for updating the codes from 2009 to 2018. MEEA estimates lower.

- That translates to a \$300 interest or carry cost for the builder and a \$50/mo. mortgage increase for the buyer.
- Risk is now significantly reduced for the builder.
- Energy savings roughly pay for the mortgage uptick, and the health benefits can return 400% or better.

A one-size fits-all ventilation solution:

Energy Recover Ventilators (ERVs) can help,
(mandatory in Canada)

Ventilation solves most pollution problems because it dilutes the pollution, provides fresh make-up air, and balances the humidity.

What is an ERV?

ERVs are microwave sized machines for the home that tie directly into the HVAC ductwork,

- remove polluted air every few hours, replace it with fresh air,
- capture the exiting energy and transfer it to incoming air,
- dehumidify in the summer, humidify in the winter, and filter the incoming air.
- The operating cost is equal to a 100 watt lightbulb

Can you prove to buyers that you've added value?

Yes, with any of several available home certifications:

- Energystar's Home Certification
- Missouri DNR's Home Energy Certificate
- HERS rating



And finally...

The 2018 IECC saves money and lives,
makes things last longer,
pays for itself and keeps on giving, year after
year.

Q&A?

James Trout.com

E-mail for links and supporting documentation



Thanks to the Healthy Home trailblazers at the National Center for Healthy Homes, CDC, EPA, DoE, and, more locally, Kevin Kennedy at Mercy, Dr John Kraemer at SEMO, Dr Ben Francisco at University of Missouri and especially the Sierra Club for its support.

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