



HEALTHY-HOME DEMAND CREATING NEW OPPORTUNITIES FOR BUILDERS

Environmental Design Trends
and Research 2021





RISING DEMAND

Spurred by COVID-19 pandemic health concerns, homeowners' focus on healthy homes has grown dramatically with 4 out of 5 saying it is now the priority for their homes.

LATEST RESEARCH

HEALTHY HOMES

INDOOR AIR QUALITY IS THE HOME IMPROVEMENT PRIORITY FOR 81 PERCENT OF HOMEOWNERS

Executive Summary

The health of our families depends on the health of the home, since most Americans spend about 90 percent of every day indoors and about 35 million homes in U.S. metropolitan areas have one or more health hazards, according to the [National Center for Healthy Housing](#).

While the interest in healthy homes had been steadily on the rise, a [2021 survey from YORK](#) found that indoor air quality is the home improvement priority for 81 percent of homeowners. According to [World Health Organization \(WHO\) findings](#), air quality is the leading environmental cause of health problems, followed by noise pollution.

In recent years, the number of building professionals engaged in providing healthy home construction had remained steady at about 50 percent from 2014 to the start of the pandemic, according to the [Joint Center for Housing Studies](#), but the pandemic has grown this service. An early 2021 survey from [UTOPIA](#) reported that 63 percent of building professionals now offer healthy home features with more natural light and balanced fresh air as some of the most popular offerings.

A building professional's material choices have long-lasting effects on the integrity of the home

and the health of the families who occupy them. The essential elements of a home's construction, like the windows and doors, can positively impact some of the top concerns of homeowners, including the amount of natural lighting, fresh air, heat transfer, and environmental noise.

Introduction

Creating a healthy home is more important than ever. While the interest in healthier environments had been increasing due to growing environmental concerns, changing air quality, and news coverage about sick building syndrome, the COVID-19 pandemic ignited a fierce interest in wellness-centered home design.

Quality building products that are mindfully integrated into a home's design play a key role in a wellness-centered home. While earning certifications for environmentally-friendly building practices may have been assumed to translate into building a healthy house, it's not a guarantee. For example, the WELL certification for a home usually means that the fundamental goals of a healthy home are inclusively met, but it is possible to earn LEED certification without increased sunlight, sound abatement, managed heat transfer, or optimal air exchange rates. An intention needs to be made to earn certification points strategically in the concentration areas that affect a healthier interior environment.

Adding new technology, lighting controls, and mechanical systems may offer ways to increase indoor air quality and create a healthier home, but choosing well-made windows and doors can solve the root of many healthy home concerns without adding complicated and expensive systems to a house.

Windows and doors that offer innate solutions to air quality, natural lighting, noise pollution, and heat transfer can work naturally with the environment and are a simpler solution to a better indoor living environment.



At U.S. Green Building Council (USGBC) their vision is that buildings and communities will regenerate and sustain the health and vitality of all life within a generation. The mission is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life.

Increase air quality with mindful and natural ventilation

While there are many kinds of environmental pollutants that can affect outdoor air quality, the [U.S. Environmental Protection Agency](#) reports that the indoor concentrations of some pollutants are frequently two to five times higher than what's usually found outdoors. And among the current most important homeowner concerns are air quality and ventilation, according to a [2021 survey from Fixr](#).

Without adequate ventilation and the regular influx of fresh air into a home, inside air can become stale or even toxic with concentrations of chemicals, carbon monoxide, radon, and moisture that can lead to mold, structural issues, or illness. In addition, the [World Health Organization](#) has stated that natural ventilation is among the most effective environmental measures to reduce the risk of spread of infections.

Some factors that affect indoor air quality like weather and climate are out of a homeowner's direct control. However, day-to-day habits and possible off-gassing from furnishings and building materials can be adjusted to positively impact indoor air quality. Appropriate air flow and ventilation helps reduce indoor pollution, especially if there are indoor contaminants building up or furnishings and materials off-gassing.

In addition to reducing the amount of home products with VOCs and mechanically ventilating a home, placing windows and doors with insect screens strategically for cross ventilation offer a natural way for fresh air to enter a home. Optimizing the air exchange rate,

and allowing a home to rid itself of moisture and indoor pollutants is essential to indoor air quality and preventing mold growth. Choosing larger windows increases air flow, and screens like the [TruScene insect screen](#).



Andersen® TruScene® insect screens provide more than 50% greater clarity than conventional Andersen insect screens for a beautifully unobstructed view. They let in 25% more fresh air; * all while keeping out unwanted small insects.

*TruScene insect screens let in over 25% more fresh air than standard Andersen fiberglass insect screens.

Increase health and productivity with more natural light

Before electric lighting, homes were carefully designed to maximize the amount of interior natural light. Not needing to rely on the sun for lighting has helped advance technological achievements and building systems for the better overall comfort of homeowners, but humans still benefit from the positive effects of sunshine, and depend upon natural light for optimal health.

As a source of extra warmth and light in today's homes, sunlight entering through the glass of windows and doors is an easy way to increase the well-being of families, reduce a home's energy bills, and provide a natural disinfectant that helps reduce the growth of mold and mildew. Ultraviolet light also weakens and damages bacteria, and sunlight's disinfecting power has been proven to work after passing through windows and other glass in homes, according to a study published in the [International Journal of Environmental Research and Public Health](#).

Another benefit of natural light is that it can increase productivity, as workers reported higher levels of energy in environments with natural light than those in artificially-lit workplaces in a [Swiss Federal Institute of Technology](#) study. With the [U.S. Bureau of Labor Statistics](#) reporting that 42 percent of employed workers are now working from home, this extra boost is even more helpful to those homeowners.

While [larger sized windows](#) and glass-filled doors allow homeowners to take advantage of greater health benefits from increased natural light entering a home, placement is key to optimizing the benefits of natural light.

A window placed on the north side versus the south side of a building will have a very different effect on the amount of light captured and heat gained during different seasons. Planning fenestration based upon a home's site conditions, climate, and interior program is crucial to optimizing the health benefits of sunlight.



Reduce heat transfer and HVAC costs with glass coatings

Heat transfer through window and door glass can be desired and beneficial in some climates and seasons, but intentional placement and use of fenestration can increase the benefits of heat while reducing unwanted heat gain and HVAC use. The [U.S. Department of Energy](#) estimates that about 51 percent of residential energy costs is from heating and cooling needs.

Reducing unwanted heat transfer from outside to inside a home can help reduce the use of HVAC systems. The number of panes, type of gas fill, frame material, and type of glass all affect the transfer of heat. Windows and doors that meet the U.S. Department of Energy's Energy Star program criteria can reduce energy bills and carbon footprints by about [12 percent](#) when compared to other options. The [National Fenestration Ratings Council](#) also provides window performance ratings for U-factor that measures how well a window keeps heat from escaping and the solar heat gain coefficient that shows how well a window resists unwanted heat gain.

In addition to selecting products that have excellent ratings, an effective way to reduce heat gain is with glass coatings that are applied to glass surfaces to control solar heat gain. In typical homes with forced air systems, Low-emissivity (Low-E) glazing can be impactful in northern locations, and southern sites may best benefit from Low-E tint glazing. Since every home may be slightly different based on the design program, site selection, climate, and building materials used, working with homeowners to determine the best coating for each facade's windows can provide

the greatest increase in heat abatement. However, [Low-E 366](#) coatings can be beneficial in most situations.



Low-E4® glass:

Offers excellent energy efficiency for all climates where both heating and cooling costs are a concern.



SmartSun™ glass:

Recommended for Southern climates, it provides exceptional energy efficiency by maximizing light and keeping the sun's heat out.

Sun glass:

Ideal for warmer Southern climates, it's tinted to block the sun's intense heat.



HeatLock® coating:

A special coating that can be applied to any glass option to help heat stay inside your home.

Reduce unwanted sound and create calmer interiors

Noise is one of the most impactful environmental factors on human health. Unwanted noise has been shown to lead to high blood pressure, sleep disturbances, and attention impairments in children. Of the 30 percent of Americans who complained about uncomfortable levels of noise in their homes, nearly 40 percent reported that the noise was severe enough to move, according to the U.S. Census data.

Unwanted noise includes more than just living near an airport or highway, sources common to most neighborhoods can include gas-powered leaf blowers, construction at neighbors' homes, barking dogs, trucks backing up, and loud vehicles.

Specifying double- or triple-pane glass, as well as ensuring proper installation methods can reduce unwanted sound transmission, and

Conclusion

As the COVID-19 pandemic prompted the re-imagining of the home in the new normal of everyday living, homeowners and homebuyers have changed the way they think about their homes. The priority to create a healthy home has increased the demand for healthier building strategies, and the number of building professionals answering the call for wellness-focused design and construction has risen.

More builders, architects, and general contractors can benefit from this growing market opportunity by offering homeowners and homebuyers the options for efficient and healthful building products, like windows and

create a calmer, healthier home. However, there are products specifically designed for sound abatement, like [Andersen's E-Series](#) products that minimize resonance and produce high ratings for sound control by allowing for customization of glass thicknesses and space between panes.

Another way to compare windows among makers is through the sound transmission class (STC), which is a measurement of a window's sound blocking ability. While an STC covers 25 to 4,000 hertz (Hz), an [outside inside transmission class](#) (OITC) can include lower frequencies down to 80 Hz that can include [lawn equipment](#) and other unpopular neighborhood sounds.

doors. Through just the selection of windows and doors, building professionals are able to meet the top needs of clients: better indoor air quality, increased natural lighting, managed heat transfer, and sound abatement.

Not only does a mindful approach to successful healthy home construction benefit the long-term health, well-being, and customer satisfaction of clients, it also contributes to creating homes that provide an environment that's safer and healthier for everyone on the planet.

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