

INDOOR AIR QUALITY

Hot Topics: [Evergreen Awards, Codes and Standards, Energy Efficiency](#)

From: [eco-structure July-August 2010](#) | Posted on: August 11, 2010

The ABCs of IAQ

Exploring the importance of indoor air quality in sustainable building and design.

By: [Rachel R. Belew](#)

[Related Articles](#) [Save/Share](#) [Print](#) [Email](#)

For most people, terms such as "green design" and "sustainable building" conjure up images of high-performance spaces marked by ample daylight, rapidly renewable materials, water-efficient fixtures, and products made from recycled content.

But sometimes, a building that's seemingly good for the planet isn't good for the people occupying it. Many man-made products and materials—even those dubbed "good for the environment"—can off-gas, or release potentially harmful chemicals into a building's indoor air, which a building's occupants end up inhaling. These products include everything from a building's drywall, insulation, and flooring, to its paints, furniture, and cabinetry.

Paradoxically, some high-performance green buildings may worsen the problem by trapping these pollutants inside. Energy-efficient buildings are, by design, tightly sealed to minimize fresh outdoor air exchange and conserve energy; but this can cause airborne chemicals to amass indoors. This creates a "bubble" of hazardous pollutants—some of which are "respiratory stressors, neurotoxins, carcinogens, reproductive hazards, hormone mimics, and developmental toxins," according to a recent report by Environment and Human Health, a nonprofit organization that aims to protect humans from environmental harm.

"Formaldehyde, acetaldehyde, xylene, toluene, benzene—the list can go on and on," says Henning Bloech, executive director of the Greenguard Environmental Institute, a third-party organization that certifies products and materials for low chemical emissions. "It's possible that one, some, all, or most of these chemicals are getting into the air we breathe inside our buildings simply because of product off-gassing," he says.

Moreover, tens of thousands of other chemicals that off-gas from everyday products have never been studied for their effects on human health, and thousands of other compounds are introduced into the marketplace every day.

When indoor air quality (IAQ) suffers, the building as a whole fails to meet the intent of sustainability, which is to minimize negative impact on both the planet and the people. Especially important is the IAQ of buildings intended for use by sensitive population groups, such as infants, children, the sick, and the elderly. In general, these groups are particularly vulnerable to short- and long-term health problems associated with chemical inhalation exposure, including headaches, nausea, nosebleeds, upper respiratory irritation, asthma, delayed cognition, reproductive disorders, and even cancer. And according to the EPA, studies show that exposure to poor IAQ can increase student and teacher absenteeism, decrease student performance, and lower student test scores.

In addition, the EPA considers IAQ a key determiner of employee productivity and attendance. Indoor air pollution, experts say, can lead to more sick days and decreased employee output. Asthma, which can be triggered by exposure to poor IAQ, accounts for over 13 million hospital, emergency room, and physician visits each year in the U.S., according to the Centers for Disease Control and Prevention, and results in an average hospital stay of 3.2 days. "Sick Building Syndrome" and "Building Related Illness"—both of which can be costly for a building owner or facility manager due to worker absenteeism, loss of productivity, and occupant lawsuits—are often directly linked to indoor airborne chemical exposure resulting from off-gassing products and materials.

Fortunately, good indoor air quality isn't difficult to achieve. In fact, it starts with controlling the source of indoor air pollution: building products and materials. Specifying low-emitting products and materials can significantly reduce the number of chemicals that off-gas into the indoor air. But, a word of caution: When selecting low-emitting products, be wary of manufacturers that make eco-friendly claims without legitimate third-party, industry-independent data to support them. Remember, too, that not all certified "green" products account for a product's chemical emissions. For a complete listing of products that have been independently certified for low chemical emissions, check out the Greenguard Product Guide at [greenguard.org](#). All products are searchable by sustainable credit qualifications, product category, and manufacturer.

By taking the proper steps early on, building and design professionals can help ensure the creation of healthier, greener, more sustainable indoor environments that will benefit generations to come.

Services: [CEUs](#), [Associations](#), [Events](#), [Webcards](#)

Advertisement

All About Flooring.
All About You.

nora®
All About Flooring. All About You.

Advertisement

CLICK FOR MORE INFO >>

**OPEN NOW
FOR ENTRIES**
www.holcimawards.org

Holcimawards
for sustainable construction