



*The clients wanted a home that was a sculptural piece of art, healthy and energy efficient. The south side window wall can be darkened with the flick of a switch to reduce solar heat gain.*



*The sweeping outward-leaning window wall that focuses the view on the neighboring golf course was prefabricated offsite with the use of 3D modeling technologies and assembled in just a couple days on site.*

# HEALTHY HOME

Building a healthy home is more than using eco-friendly design and materials

BY KIMBERLY NICOLETTI • PHOTOGRAPHY BY GREER PHOTOS



*Jack Snow,  
RKD Architects*

**W**HEN IT COMES TO BUILDING HOMES WITH ENVIRONMENTAL sustainability in mind, the U.S. Green Building Council's LEED certification regulations not only give recommendations, but actually award points, step by step, toward certification. But when it comes to protecting human health in a home, no guiding agency leads the way, and, in fact, some measures, like reducing electromagnetic fields (EMFs), might seem a little quirky to the general public.

After surviving ovarian cancer, Kristin Geer committed to searching out the best ways to build a healthy home, which did not produce, or at least reduced, exposure to chemicals and toxins. She and her husband, Brad, spent 18 months researching every material — and aspect, including EMFs — through the internet, universities, published studies, building expos, visits to manufacturers and more. Many mornings, their architect, Jack Snow, owner of RKD Architects in Edwards, would awake to 19 new website links they had found useful in their quest for a healthy home, and adjust his plans accordingly.



*The wood floors were salvaged from fallen trees. The great room features a pneumatic elevator.*

## DOES GREEN ALWAYS EQUAL GOOD HEALTH?

Though most people assume green-built homes are synonymous with healthy homes, the Geers did not. They began from a position of building a sculptural and organic 6,800-square-foot home — complete with an indoor driving range, a clear, acrylic tube elevator, and floating glass stairs — for human health first.

Along the way, they discovered that what's healthy for the environment is usually healthy for people's homes — but sometimes, it's questionable, and a better method, or product, exists. Although healthy homes fall within a subset of green building, the two circles don't always intersect. When a green product didn't pass the Geer's healthy standards test, "the healthy was always going to

trump the green," Snow says.

For example, Styrofoam blocks, or insulated concrete forms, are a popular green-building technique for airtight, extremely energy-efficient homes, which provide up to an R-40 rating. The lack of cutting materials on the job minimizes waste, as well. However, the Geers eliminated Styrofoam partially because of potential off gassing, and mainly due to toxins released if the home caught on fire.

In this particular case, they found both a healthy and green alternative: Durisol wall forms, made completely from clean, recycled wood. The modular units influenced the castle-like design of the five-bedroom home, with arced and large, stacked stone walls sandwiching long, glass expanses overlooking a golf course.

## ELEMENTS OF HEALTHY HOMES

Snow had built plenty of environmentally friendly, sculptural homes, and he had even "gone fairly far with another client (wanting a healthy home), but they edited it out because of money," Snow says. Still, he hadn't ever delved quite so deeply into each and every material required in a healthy home.

"We looked at about everything you can imagine," he says.

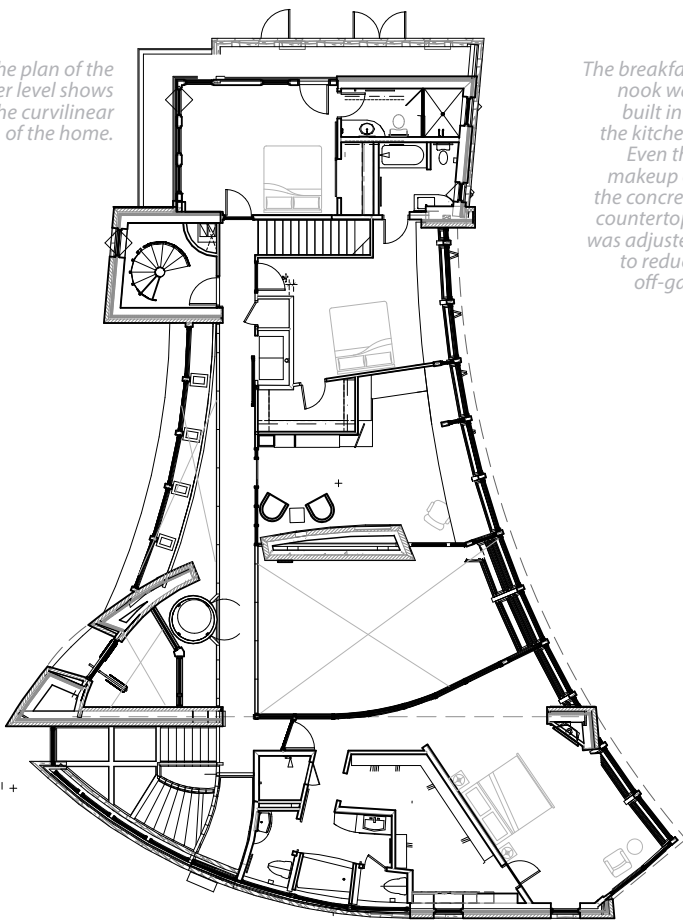
The Geers built their home to avoid magnetic fields, which are generated as electricity flows through a wire or other metallic path, such as a water pipe, because studies suggest high levels of these fields may cause cancer. One study showed that sleeping in both magnetic and electric fields increases a person's risk of cancer by

11 times. The World Health Organization states certain levels of EMFs are "possibly carcinogenic." Research shows EMFs may disrupt sleep, depress the immune system and decrease one's sense of wellbeing.

Overall, the U.S. doesn't concern itself much with EMFs, but the European building biology profession has adopted stringent limits for EMFs, and studies "conservatively" estimate that 3 percent to 5 percent of the population is electro-hypersensitive; the Swedish health care system even compensates people with severe cases of electro-hypersensitivity, viewing it as a disability, according to research the Geers combed through at Create Healthy Homes.

The Geers also nixed spray foams, which have low volatile organic compounds (VOC),

The plan of the upper level shows the curvilinear design of the home.



The breakfast nook was built into the kitchen. Even the makeup of the concrete countertops was adjusted to reduce off-gas.



Snow says, “but you don’t really know what’s in it — you can’t pronounce all of the ingredients.” Instead, they choose spray cellulose insulation, which “may not be as good per square inch in R-value,” Snow says, but it’s made from recycled paper and treated with non-toxic fire retardants.

Steel and sustainably harvested timber formed the bones of the home. Limestone from Vetter Stone, a company that sources the stone from the same state in which Snow built the healthy dwelling — Minnesota — adds interest to the exterior and

interior. The Geers finished all wood, including flooring composed of black walnut trees destroyed in a storm, with water-based, toxin-free products.

The “guts” of the home incorporate 17 ground source heat pumps and an array of cast-iron pipes, rather than PVC, which the Geers didn’t use because of possible toxins and carcinogens. Though cast-iron piping has traditionally been used in older homes, Snow still considers it environmentally sustainable because it’s designed to stand the test of time. One of the main reasons PVC came into fashion

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where it can be vacuumed, rather than remaining suspended in the air, or on walls, to breathe in.

Though most products the Geers found performed well, one non-toxic paint proved unworthy: Within a year, it began peeling from the exterior timbers, so the Geers had to go with a low VOC exterior paint. Inside, the no-VOC paint held up.

Outdoors, paver bricks made mostly of recycled materials line the home. The roof supports wildflowers and other plants, to help insulate the home and improve air quality.

And, speaking of air quality, the Geers employ a hospital-grade air filter system. They ensure their water is equally clean with a whole-house water purification system, to avoid not only drinking treated water, but also showering in chlorinated water. Solar panels generate enough energy for the couple to live off the grid, Snow says.

Though the path to a healthy home is difficult to navigate, plenty of resources exist. Certified building biologists evaluate homes and provide research and resources. And architects like Snow can ensure that a home becomes a healthy, organic sculpture that prioritizes not only the environment’s health, but also, human health.

is due to its lower price.

“It’s worth a little more to invest in cast iron,” Snow says. “(Regarding the) benefits of health and longevity, it wins on that account.”

They chose VOC-free American Clay because it’s 100-percent natural and helps regulate humidity by naturally absorbing and releasing moisture. It also produces negative ions, believed to help neutralize EMFs and cause pollen and dander to clump together and fall to the floor,

The master bedroom overlooks the grounds and golf course.

