

GREEN BUSINESS QUARTERLY: (NOV/DEC 2009: PAGE 57)

Over 25 years ago, a personal tragedy gave George Swanson a new purpose. The husband and father-to-be lived in a well-sealed home in central Iowa when his wife contracted blood poisoning from formaldehyde in their carpet. The couple's child was born, but only lived for less than a few weeks. An autopsy traced the cause of death back to the formaldehyde.

The events led Swanson to research how and why this happened. Studying Building Biology in Europe taught him that the formaldehyde in question had been banned in Europe for 18 years. His investigation continued, and Swanson was eventually certified as a building biologist. Now, he runs Swanson Associates, a company that specializes in non-toxic design-build construction for chemically sensitive clients.

"The difference between accepted practices in Europe and America is astonishing," says Swanson, who has produced over 100 non-toxic buildings for clients with chemical sensitivities and allergies or those who have suffered from a preventable tragedy. "In other countries like Germany and Switzerland, building biology is required training. Design professional and builders are held responsible for the indoor air quality of their buildings and can be prosecuted for doing what is standard practice in America," Swanson explains.

The problem, he says, is in the widely accepted, seldom questioned, and government subsidized use of harmful chemicals in our building materials. Swanson is not only concerned about health and safety; he's also concerned about our nation's economy. "One has to ask why our buildings last only 30 years when European and Asian buildings last 300 or 3000," he says.

Swanson claims that the answer lies in the use of natural, healthy, abundant, and chemical free materials like magnesium oxide (MgO). In fact, Swanson Associates was hired by the Chinese government to do work on one of the country's largest temple restoration projects and will be using MgO cement to complete work on ancient structures.

"In America, we use Portland Cement that is baked at up to 2800 degrees for as long as 7 hours. It will be dust in 150-300 years, and accounts for as much as 12 percent of the world's ozone problems," Swanson says, adding that MgO binders requires 80 percent less energy to produce and forms bonds that are up to 12 times stronger. The resources appear to be there, as dozens of MgO mines were closed when Portland cement emerged as the American building material of choice. "We have massive amounts of it, but companies want to keep us using Portland cement because it is a patented, capitol intensive process that can fend off all competition," explains Swanson, saying that company lobbyists are paying millions to keep the public from hearing this argument.

As a company, Swanson Associates works to remove other harmful toxins in materials

like most forms of OSB, plywood, drywall, MDS board, insulation, and many types of carpet. Some plywood contain up to 30 patented chemicals and are notorious retainers of moisture than can produce rot, mold, mildew, and other air pollutants. “Again, these materials are nearly absent in China, but we make entire buildings with it in America,” Swanson says. In fact, according to Swanson, over 30 percent of all products used in American construction are highly restricted or banned in Europe and Asia. “We should be totally embarrassed by our poor standards for toxicity when compared to the rest of the world, and we’re not,” he remarks before sharing another shocking statistic: over 70,000 chemicals were introduced into the construction industry after World War Two. Less than 10 percent were medically tested.

For their part, Swanson Associates is both providing education and alternatives. Last year, Swanson and his colleagues published an 18-chapter, 300-page book entitled *Breathing Walls, A Biological Approach to Healthy Building Envelope Design and Construction*. The tome describes and highlights ways to produce healthy indoor environments and diminish the side-effects of poor air quality, which include nausea, headaches, allergies, and illness.

When contracted to perform non-toxic work, Swanson looks to eliminate the source of a building’s pollutants by removing drywall in favor of MgO board, replacing harmful furniture, paints, carpets, and papers, and replacing fiberglass insulation with cotton or hemp. “We’re looking to create a breathing assembly that allows clean air to filter through,” he says. MgO board material costs nearly twice as much as traditional drywall, but is only about 30% higher than OSB and is similar in cost to plywood, and in most cases is less expensive to finish and a whole lot less cost to maintain.

Swanson views toxic buildings as a nationwide epidemic that must be brought from shadows into the light. “We’re being asked to endure a great science experiment that started 60 years ago when ‘modern’ materials were brought into construction. The data is in. They are awful. We are the only place on earth using these materials in a nearly unbridled fashion and we must stop immediately,” he says, adding that if non-corporate unbiased biologists, chemists, and physicists looked at these materials they would have never been approved for use.

Homeowners, business owners, and builders can start small—Swanson suggests simple measures like purchasing certain plants that increase oxygen levels and help purify the air. He encourages the public to get educated by doing research at outlets like *Building Biology.net*. “We need to make educated choices and push the government to move their subsidies from chemical laden products to sustainable ones,” he says. For Swanson, the importance of non-toxic materials was a painful and tragic lesson. Now, he’s using that experience to keep others from learning the hard way.