

Building Smart When Building Green

Real estate professionals come to grips with new materials and related liabilities

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As the volume of green construction materials soars to meet the demand created by the green building craze, it could increase the odds of construction defect litigation.

The green building materials market is expected to hit \$38 billion by 2010 and \$100 billion by 2012, according to a McGraw-Hill Green Building Smart Market report.



Changes occurring in how buildings are constructed could raise the specter of defect litigation since many of the materials now being used in buildings are new and may not have the performance history that older materials have.

"When you have new materials it can take a while to discover there is a problem," said Alexandra Glickman, area vice chairman of insurance broker **Arthur J. Gallagher & Co.** "Asbestos was the greatest thing since sliced bread until engineers found out about its long-term effects.

"Right now, I haven't heard of any products-based litigation for bodily injury caused by green products, but that could change," Glickman added.

A wholesale recall of a product has yet to occur, although some paints were found to not have the durability of previous formulas, said Ted van der Linden, director of sustainability with **DPR Construction Inc.**

The result is that building owners have to re-paint more frequently, but newer formulas have the advantage of not being rock hard like older paints in addition to being more environmentally friendly, he said.

If it is a flaky product, word gets around and no one uses it, van der Linden said.

"We aren't seeing a lot of products with problems," van der Linden said.

The most common scenario van der Linden has seen over the past several years is that products brought to the market failed because they weren't really suited to being mass-produced, he said.

Van der Linden also thinks a lot of manufacturers have been weeded out or have reinvented themselves over the past several years.

"I think there is so much demand now that larger producers have stepped up and are dominating the industry," van der Linden said. "Smaller companies, who are inventing product, are selling off to larger companies. They aren't really putting out stuff that hasn't been through a testing vehicle."

He remembers when DPR was trying to build a green building in Sacramento in 2000 before the green movement had really taken hold. Back then, it was really hard to find any green products, he said.

According to van der Linden, DPR decided to construct an island using a counter-top made from sunflower shells. It ordered the first piece, but had to wait for dimensions to be completed before ordering the second piece. By then, **Phenix Biocomposites** had filed for restructuring under Chapter 11, and DPR couldn't get the second half of its order.

The supplier has since morphed into **Environ Biocomposites**.

"I think there was a time when there was a rogue scenario because people were trying to

grab anything that was green," said van der Linden. "And no one was producing sustainable construction materials."

In 2000, the **U.S. Green Building Council** was considering whether or not it should certify materials as well as providing Leadership in Energy and Environmental Design ratings, said Van der Linden, who serves on the national board of directors of the USGBC.

"We decided then, who were we to decide which products would stand the test of time?" van der Linden said. "We also were concerned that it would make us liable for the products."

He contends, however, that the era of the rogue has passed.

Jay Freedman, an attorney based in the Newport Beach office of **Newmeyer & Dillon LP**, isn't convinced that is true.

While Freedman hasn't seen many construction defect cases resulting from new construction materials, he expects it to become more an issue partly because builders are incorporating new materials into design methods that have been used for 40 or 50 years.

He cited an example in which a builder used a tankless water heater and low-flow shower heads in the same house. The low-flow shower heads created a situation where there was not enough water pressure, so the tankless water heater was not able to heat the water. The tankless water heater functions by constantly recycling water so it remains hot, as opposed to a traditional water heater, which heats 40 or 50 gallons at a time.

The builder was eventually able to get the system to work, but this anecdote illustrates what can go wrong when two new technologies are introduced simultaneously, Freedman said.

Change in residential and commercial building has traditionally come slowly with one new change at a time, he said. The push to build sustainable buildings is resulting in a wave of changes on many fronts.

"We don't have a track record with these technologies, and we are changing a lot of variables," Freedman said. "Trying to figure out how everything is going to interact with everything is difficult."

Filling a Niche

That is one advantage that Trevor Stout, chief executive officer and founder of Los Altos-based **Integrity Block**, a manufacturer of concrete blocks, has over other green product manufacturers.

"It doesn't require any changes to the building process," Stout said of his product. "A lot of products fall under a new building code or a code that does not exist."

When that is the case, cities may have problems understanding the new product and are not as likely to allow it to be used, he said.

"The big benefit we have is that we fall under past specifications for an existing product, although ours is greener and better for the environment," Stout said.

His company has created a new formula for concrete that uses aggregates that are a by-product of the traditional method of producing concrete. The company's formula enables it to use 40 percent less cement.

The creation of cement is the largest energy user in producing concrete, Stout said. To manufacture cement, limestone has to be baked in a kiln at 2,600 degrees Fahrenheit. One ton of cement requires 4.6 million British thermal units of energy, which is equivalent to

47.5 metric tons of carbon dioxide, he said. Stout claims his process will produce 36 percent less carbon dioxide.

Stout is one of several technology entrepreneurs in Silicon Valley who are venturing into producing green construction materials. Another is Kevin Surace, chief executive officer of Sunnyvale-based **Serious Materials**, who sits on the advisory board for Integrity Block. The chemical process Serious Materials developed eliminates the carbon emissions associated with drywall manufacturing.

"I wanted to create a company that has some ultimate benefits and doesn't impact the environment," Stout said of what motivated him to venture into the building industry.

Integrity Block has passed all the tests required of concrete involving its required strength and absorption, Stout said. He plans to begin manufacturing the product on a large scale by fourth-quarter 2008. He is negotiating orders for the product, which include one for the block needed to construct an 800,000-square-foot shopping center, he said.

Considering the newness of the green movement, Lewis Buchner, chief executive officer of San Rafael-based **EcoTimber**, is an old-timer. He founded his company, which makes flooring using bamboo, in 1992.

Litigation isn't as much of an issue in the flooring world because they are not using any "crazy" new methods, Buchner said. Although when woven bamboo was first introduced there were a lot of problems because areas that tend to be dry, such as Colorado and Arizona, were causing the product to shrink and crack. The same issues can occur with hard wood furniture.

"Wood products need to be thought out carefully in terms of the climatic conditions," Buchner said. "Considerations would include what kind of envelope the building can maintain and what wood species are appropriate to the given environment inside the building."

Since his product uses bamboo, its green credibility comes mainly through the preservation of forests. But Buchner also has created a process that uses adhesives that don't contain formaldehyde.

The state's Air Resources Board implemented legislation in April that places a formaldehyde cap on composite wood products that must be met by Jan. 1, 2009. The legislation also lowers the levels allowed further in from 2010 through 2012.

"Formaldehyde is an issue our company started addressing three years ago," Buchner said. "We are using EPI and PBA, two adhesives that completely cure at the factory and become inert, so they don't off-gas anything."

The seriousness of this issue has been further emphasized as people rescued after Hurricane Katrina have become ill from the trailers provided by the Federal Emergency Management Agency. The trailers contain particle board made using formaldehyde.

"I don't see green pushing people to try things that are riskier," Buchner said. "Green manufacturers tend to have a lot of integrity."

It might be more likely in products that are cutting edge, he said.

"Our manufacturing is not different from traditional wood; we are just sourcing our wood ethically and treating our employees



This rendering illustrates how Integrity Blocks could replace conventional concrete masonry units, or CMUs.

ethically," Buchner said. "Other than that, a dry kiln is dry kiln."

Green Litigation

So far, construction defect litigation hasn't been an issue in the movement toward using sustainable materials. What Glickman has seen are errors and omissions in lawsuits filed against architects who promised standards of green certifications and have failed to perform to those standards.

Lawsuits have been filed by building owners saying they paid extra for a building the architect promised would be certified as Silver and it didn't become LEED-certified, so they want their money back, Glickman said. Architects also have been sued when they said it would reduce energy consumption by a certain amount and it did not.

"I have heard of lawsuits based on 'you promised me Silver and achieved Basic,'" Glickman said. "It is not a tsunami yet, but development of green buildings only started to take off over the last 18 months."

The majority of green litigation Freedman has seen has occurred as a result of green-washing. This new fraud label cropping up with the green movement can apply to products that are not really green and to situations when energy-saving claims are exaggerated, he said.

Both the manufacturer and the architect can be held liable. In one instance, a lawsuit was filed against an architect claiming that the product was not properly researched, Freedman said.

Freedman is advising his clients to communicate better with building owners about what their goals are. He also advises against making promises regarding the level of LEED certification. Some owners are just interested in a LEED-certified building and don't care how the design gets there, Freedman said. In that case, document that and when the building gets LEED-certified everyone should be happy, he said.

But some owners want the building to meet certain goals of indoor air quality or energy use. If that is what they want and the builder doesn't know that, litigation can ensue, Freedman said.

And more importantly, don't promise LEED certification; it's always a goal, but it can never be a guarantee.

"On the builder side there are always going to be things beyond your control," Freedman said. "Especially if your trying to attain Basic, you can miss it by one or two points."

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