Green Expectations

New Risks for Manufacturers Take Root

By T. Sky Woodward
and Erin C. Miller

Understanding the nature of green certification and enhanced building performance expectations is critical to reduce liability exposures.

The growing popularity of "green buildings" will create business opportunities for building product manufacturers. Enhanced consumer expectations for green building products may, however, create a host of liability issues. Similarly, green building construction may have unintended consequences for product manufacturers. Manufacturers should take steps now to minimize liability exposure for green buildings and green building products.

The Greening of an Industry

Suddenly, green building is in demand. Green building, also known as "sustainable" or "high performance" construction, is the practice of designing and constructing structures using processes and materials "that are environmentally responsible and resource-efficient throughout a building's life-cycle, from site selection to design, construction, operation, maintenance, renovation and deconstruction." *Basic Information, Definition of Green Building*, U.S. Environmental Protection Agency, http://www.epa.gov/greenbuilding/pubs/about.htm#1. The goal of green building is "to reduce the overall impact of the built environment on human health and the natural environment." *Id.*

In the United States, traditional buildings have a staggering impact on our natural resources, consuming astronomical energy, water and material resources and producing enormous waste. For example, buildings reportedly account for 38.9 percent of primary energy use, 72 percent of energy consumption, and 38 percent of all greenhouse gas emissions in the United States. U.S. Green Building Council, *Green Building Facts*, (citing Environmental Information Administration, *EIA Annual Energy Outlook* (2008) and Energy Information Administration, *Assumptions to the Annual Energy Outlook* (2008)), http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718. Buildings use 40 percent of raw materials worldwide—3 billion tons annually—almost all of which ultimately end up as waste. David Malin Roodman & Nicholas Lenssen, *Worldwatch Paper 124: A Building Revolution: How Ecology and Health Concerns Are Transforming Construction* (Worldwatch Institute 1995). Construction and demolition

■ T. Sky Woodward is a member and Erin C. Miller is an associate in the Baltimore office of Womble Carlyle Sandridge & Rice, PLLC. Active in DRI since 1996, Ms. Woodward has served in leadership positions in the Product Liability and Toxic Torts and Environmental Law Committees, the Public Policy Committee, and the 2010 Annual Meeting Committee. She is a past president of Maryland Defense Counsel, Inc. Ms. Miller is active in the DRI Young Lawyers Committee, serving on its sponsorship and membership subcommittees.

debris is estimated to total 170 million tons in a single year. U.S. Green Building Council, *Green Building Facts* (citing U.S. Environmental Protection Agency, *Estimating 2003 Building-Related Construction and Demolition Materials Amounts* (2009). Green buildings aim to improve this record.

Even before mandatory state and local green-building laws came into vogue, developers recognized that they could gain a competitive edge by going green. Green buildings are touted as more energy efficient, less expensive to heat and cool, and potentially healthier for building occupants than conventional buildings. If achievable and sustainable, such enhancements make green buildings very attractive in a competitive, commercial, real estate market. *See* James B. Witkin, Kathleen J. Trinward, & Joseph Lapan, *In the District, Green is Every Builder's Color*, Washington Lawyer (Mar. 2009), http://www.dcbar.org/for_lawyers/resources/publications/washington_lawyer/march_2009/green.cfm. It is no wonder that the value of green building is projected to increase to $60 billion in 2010. McGraw-Hill Construction, *Key Trends in the European and U. S. Construction Marketplace SmartMarket Report* (2008). The appeal is self-evident.

In the future, green building will become even more common, driven by technological improvements and demand. In the next wave of green building, industry should expect building that more aggressively reduces energy and materials consumption and waste-production, eventually achieving targets such those anticipated from zero net energy buildings—buildings that consume no more energy than they generate. Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs, *Getting to Zero: Final Report of the Massachusetts Zero Net Energy Buildings Task Force* (2009), http://www.mass.gov/Eoeea/docs/eea/press/publications/zneb_taskforce_report.pdf.

It's Not Easy Being Green: Emerging Performance Standards

The advent of voluntary certification programs and mandatory state and local green-building codes have also accelerated the transition from traditional building systems to green buildings. Voluntary certification programs, which operate as yardsticks to measure green performance, create minimum thresholds for modern building. In the past two decades, various standards have emerged to direct green-building design: Building Research Establishment Environmental Access Method (BREEAM); the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council; Green Globes, developed by the Green Building Initiative; the American National Standards Institute-approved National Association of Home Builders' and International Code Council's Green Building Standard, ICC-700-2008; and the American Society of Heating, Refrigerating and Air Conditioning Engineers Standard Project Committee 189, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings.

This article focuses on the impact of U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System. In 2000, the nonprofit U.S. Green Building Council (USGBC) developed quantifiable standards—the Leadership in Energy and Environmental Design (LEED) Green Building Rating System—for designing, constructing, and operating high-performance, green buildings. Both industry and government have recognized the LEED green-building standards as the leading certification standards for green buildings. LEED standards continue to evolve to keep up with technological advancements in the green building field. In fact, the USGBC released the most recent standards, LEED version 3, on April 27, 2009.

Under the LEED system, a building may achieve a ranking of certified, silver, gold, or platinum. Dwight S. Patten, *LEED the Way with Sustainability: Go Green without Spending Too Much Green*, USGB in the News (Apr. 17, 2009), http://www.usgbc.org/News/USGBCInTheNewsDetails.aspx?ID=4060. LEED-constructed buildings do not follow cookie-cutter designs. Instead, to obtain LEED certification, building owners, developers, or architects must obtain a certain number of points, based on incorporating particular design features. LEED applies different design standards to different types of buildings, whether a new, commercial construction, an existing residential building requiring renovation, a school, or an institution. Each rating system, regardless of the building type or whether for a new construction or renovation, is rated in at least five environmental categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. U.S. Green Building Council, *LEED 2009 for New Construction and Major Renovations Rating System*, at xi–xii (2008). Depending on the type of building, a building might receive additional points in the following additional categories, depending on how well they meet the category standards: innovation in design, locations and linkages, awareness and education, and regional priority.

When new products are used, or traditional construction processes are significantly altered, the performance of buildings may be adversely affected.

Green-building certification has dramatically modified and advanced building performance expectations. Conventional expectations for the built environment were basic: shelter, comfort, minimal function, and aesthetic contribution. Green buildings, however, are intended to outperform traditional construction in nearly all aspects, and as such, are considered preferable to conventionally constructed buildings.

First, green buildings are preferable because they have less impact on the environment than conventional buildings. Green-certified buildings are expected to protect ecosystems and biodiversity, improve air and water quality, reduce waste, and conserve and restore natural resources. U.S. Green Building Council, *Green Research*, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718; U.S. Environmental Protection Agency, *Why Build Green*? http://www.epa.gov/greenbuilding/pubs/whybuild.htm.

Second, green buildings have economic advantages. For instance, many suggest that savings in operational costs, such as

energy use, will offset capital costs. Alan Yates, *Quantifying the Business Benefits of Sustainable Buildings: Summary of Existing Research Findings, Project Report No. 203995* (Building Research Establishment Centre for Sustainable Construction 2001). Similarly, studies claim that LEED-certified buildings use 25–30 percent less energy. *Compare* Cathy Turner & Mark Frankel, *Energy Performance of LEED for New Construction Buildings: Final Report* (U.S. Green Building Council 2008), *with* Guy R. Newsham, Sandra Mancini, Benjamin J. Birt, *Do LEED-Certified Buildings Save Energy? Yes, But… NRCR—51142* (National Research Council Canada—Institute for Research in Construction 2009), http://www.nrc-cnrc.gc.ca/obj/irc/doc/pubs/nrcc51142.pdf. Green buildings also are highly marketable and can enhance overall asset values. Green-building advocates suggest that real estate values for green buildings appreciate faster than conventional buildings and result in shorter resale and release times and longer tenant occupancy terms than conventional buildings. *See* Lenssen and Roodman, *Worldwatch Paper 124: A Building Revolution*. Recent research has quantified those benefits. For instance, LEED-certified buildings sell for $171 more per square foot and rent for $11.24 more per square foot and boast a 3.8 percent higher occupancy rate than conventional buildings. *See* http://www.costar.com/News/Article.aspx?id=D968F1E0DCF73712B03A099E0E99C679.

Third, proponents claim that green buildings have health and safety benefits. More specifically, green buildings are said to improve indoor air, thermal, and acoustic environmental quality, enhancing occupant health and minimizing costs associated with asthma, allergies, and "sick building syndrome." William J. Fisk, *Health and Productivity Gains from Better Indoor Environments and Their Relationship with Building Energy Efficiency*, in 25 Annual Review of Energy and the Environment 537–66 (2000). This, in turn, reduces employee absenteeism and enhances comfort and health, purportedly improving productivity. New Buildings Institute, Inc., *Integrated Energy Systems: Productivity and Building Science Final Report* (California Energy Commission Public Interest Energy Research Program 2003); Michael H. Nicklas & Gary B. Bailey, *Analysis of the Performance of Students in Daylit Schools* (Innovative Design 1996). Additionally, green building is intended to benefit an entire community by contributing to overall quality of life and reducing the strain on local infrastructure. U.S. Green Building Council, *Green Building Research*, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718; U.S. Environmental Protection Agency, *Why Build Green?* http://www.epa.gov/greenbuilding/pubs/whybuild.htm.

The LEED certification process considers the products incorporated in buildings in determining certification eligibility and sustainability. For instance, using particular types of commercial or residential fixtures, fittings, and appliances can contribute to water efficiency. U.S. Green Building Council, *LEED 2009 for New Construction and Major Renovations*, at 21–27. Particular types of energy-related building systems—heating, ventilation, air-conditioning, and refrigeration and associated controls—qualify for energy and atmosphere credits. *Id.* at 29–45 (energy and atmosphere). Incorporating salvaged, refurbished, reused, or rapidly renewable materials in a building's trusses, walls, flooring, and ceilings can provide certification points. *Id.* at 47–55 (materials and resources). Also, using products, such as adhesives, sealants, paints, coatings, or flooring systems, made of low volatile organic compound-emitting materials, allows a builder to rack up points in the indoor environmental quality category. *Id.* at 57–81. Particular types of building products, for instance, a green roof, can help achieve LEED points even in the sustainable sites category if they contribute to storm water management or minimize the heat island effect. LEED green-certification in multiple categories, thus, rises and falls with the products incorporated in a building and how they work synergistically.

Going Green Pressures Product Manufacturers to Meet Green Standards

Demand for green buildings has created demand for green-building products and new performance expectations. While a universally accepted definition or applicable industrywide standard for green products does not yet exist, a green product has a less detrimental environmental impact than a comparable product.

LEED-certified buildings incorporate both green and nongreen products to gain LEED certification. But, "[t]he USGBC does not certify, endorse or promote products, services or companies, nor… track, list or report data related to products and their environmental qualities." U.S. Green Building Council, *LEED Frequently Asked Questions*, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1819#Material. Rather, using products—whether green or not—assists in meeting LEED-certification criteria. A building's success in achieving green certification will succeed or fail based on the building's ability to amass credits in the LEED environmental categories mentioned above. All of a building's components work together to optimize performance in green-building design and construction.

Green building demands have naturally created a significant green-building materials market. Between 2003 and 2008, the green-building materials market grew 45 percent. The Freedonia Group, *Green Buildings Materials to 2013* (2009). In 2008, green-building materials generated almost $57 billion in sales. *Id.* By 2013, the Freedonia Group projects that the United States market for green-building materials will exceed $80 billion, a predicted increase of 7.2 percent annually. Moreover, by 2013, green building is expected to represent 25 percent of all commercial and institutional building and 20 percent of all residential construction. McGraw Hill Construction, *Green Outlook 2009: Trends Driving Change* (2009).

The Freedonia Group also projects double-digit growth for products such as water-efficient and energy-efficient fixtures. Similarly, green floor coverings—green carpets, Carpet and Rug Institute Green Label-Plus certified carpets, and products manufactured from rapidly renewable resources such as bamboo and cork flooring—are expected to grow. Generally, products made from recycled materials, for example, concrete made from blast furnace slag, also known as fly ash, are forecast to grow 8.4 percent per year to $14.3 billion. The Freedonia Group further predicts that Forest Stewardship Council-certified lumber and wood panels are expected to be the fastest growing green products, with demand for Forest Stewardship Council-certified wood tripling by 2013. Presently, Forest Stewardship Council-certified wood

is one of the most specified green building products in McGraw-Hill's database of product specifications.

When Green Buildings Go Bad: Is It Due to a Product Defect or Building Failure?

Because a green-certified building is expected to perform at an enhanced level in many different respects, the products used in its construction generally are expected to perform accordingly. Consumer causes of action that assert fraud, intentional or negligent misrepresentation regarding product labeling, product performance, or product claims, will initially predominate. Thereafter, building-product manufacturers may face traditional product liability claims for products installed or constructed on property. *Jacobs, et al. v. Osmose, Inc.*, 213 F.R.D. 607 (S.D. Fl. 2003) (class action brought against product manufacturer for wood treated with chromate copper arsenate installed in residential homes; claims included strict liability, negligence, public and private nuisance, civil conspiracy or concert of action, breach of implied warranty, violation of the Magnuson-Moss Consumer Products Warranties Act, and state consumer protection laws); *Smith, et al. v. Behr Process Corp.*, 113 Wn. App. 306 (Wash. Ct. App. 2002) (class action filed against product manufacturer of exterior waterproofing seal applied on residential homes on the basis of strict liability, negligence, misrepresentation, breach of common law contract and good faith and fair dealing, breach of express and implied warranties, and violations of state consumer protection laws). In addition, federal enforcement actions remain a potential risk.

Product manufacturers targeted in lawsuits not only face traditional theories of liability, but they also may face enhanced risk and liability on the basis of consumer expectation. A representation that a product is green or should perform green could subject a manufacturer to claims for breach of warranties, whether those are express, implied, or fitness for a particular purpose, or a breach of the Magnuson-Moss Warranty Act, 15 U.S.C. §2301 *et seq.* Also, building-product manufacturers could face liability from third parties or building occupants for the use of their product in a building.

Product failure is an emerging liability risk for building-product manufacturers when green products are integrated in green buildings and these buildings' systems. In the context of green roofs, for example, a traditional product manufacturer could face potential liability for unintended consequences of green construction. Consider a waterproofing membrane installed on the green roof of a building. Even though this waterproofing membrane is not manufactured or labeled as a green product, its incorporation in a green-certified building may result in liability. With a green roof garden, the waterproofing membrane must have an insulation layer to protect the membrane from punctures from gardening tools, penetration from invasive root systems, and decomposition from the acid and alkali components of fertilizer. A failed waterproofing membrane would result in a leaky roof, creating an environment in which the moisture in the building may lead to excessive humidity, mold, and bacteria. This scenario is complicated because the building would likely have been represented as "healthy," yet moisture, mold, and bacteria in a building is not healthy.

Product degradation resulting in direct water intrusion, whether due to a green roof failure or cork board flooring failure in high traffic areas near sinks, ice machines, or coffee makers, is likely to result in water retention and mold growth. Consider an agrifiber wallboard product, made from cereal straw, sunflower husks, walnut shells, coconut husks, and agricultural prunings. Although the product is considered "green" and supports green-building certification criteria, it may also induce moisture intrusion and degradation, posing risk. An agrifiber board may offer a way for a building owner to challenge a product's design. What is the foreseeable risk of harm from this product, if any? Left exposed to natural environments, these biodegradable products are susceptible to moisture retention. In the context of a water leak, what health impacts should a manufacturer expect to see?

The history of building failures reveals that when new products are used, or traditional construction processes are significantly altered, the performance of buildings may be adversely affected. J. David Odom and Richard Scott, *The Risks of Building Green in the Southeast*, Southeast Construction (Feb. 2008). Take two examples. The Martin and Polk County courthouses in Florida suffered extreme humidity and condensation due to heating, ventilation, and air-conditioning system design and installation requirements driven by industry ventilation rates that allowed almost 300 percent more outdoor air into the buildings. Pervasive mold growth and multimillion dollar litigation to repair the buildings ensued. Also in the Southeast, failures of exterior insulation and finish systems that led to moisture and mold conditions from pervasive rainwater, which intruded the building system envelopes, was alleged to be the result of a new type of wall system that entered the building products market without sufficient testing about failure susceptibility.

The push to get new green products on the market may mean that these products receive little field testing.

"Sick building" cases generally had a latent period, occurring only after building systems experienced degradation. For instance, the advent of tight buildings to reduce energy consumption in the early 1970s devolved to "sick building" claims, decades later, against a variety of defendants: building owners and managers; architects and engineers; general contractors and subcontractors; heating, ventilation, and air-conditioning design, installation, and maintenance companies; manufacturers of building products; energy consultants; leasing agents; interior designers; and even indoor, air-quality consultants. The same could occur in green-building construction, especially if a potential plaintiff can trace the negative environment to a defective product. Because a green-building certification process requires documentation of building performance data, operational procedures, and specific products, a plaintiff could potentially obtain more information than from a conventional construction

project and use this information to support various legal claims.

"Sick building" cases may be of equal concern in the green built environment. The most common example in commentary is green roofs, mentioned above. A green roof is intended to reduce thermal stress on a waterproofing membrane, heat island effects in urban areas, storm water run-off, and the outdoor air pollutant levels of nitrogen oxide and sulfur dioxide. Industrial hygienists have noted that there is very little science comparing the long-term sustainability and integrity of green roofs with conventional roofs. Without meaningful research on buildings or products to determine how performance occurs or whether intended benefits are achieved, no one can claim that green roofs are superior products. Mold-related claims offer only one example of the claims that can arise as a result of poor maintenance, construction, installation, or maintenance.

The distinction between a green building as a product as opposed to a green building as a sum of its component parts is critical in determining liability.

Other low volatile organic compound-emitting green products, such as carpet systems, paints and coatings, adhesives and sealants, and composite wood and agrifiber products are equally subject to potential product liability claims. The push to get new green products on the market may mean that these products receive little field testing, especially for incorporation in sustainable buildings with life expectancies of 50-plus years.

Will the Economic-Loss Rule Limit Green Product Liability?

Courts will likely test manufacturer liability for green-building products against the evolving legal standards of the economic-loss rule, which provides that if a party sues another solely for an economic loss, the suing party must be in a contractual relationship with the defendant. *Seely v. White Motor Co.*, 63 Cal. 2d 9 (Cal. 1965). The absence of privity of contract often prevents product manufacturer liability. In many states, this doctrine has been eroded in claims against manufacturers, and a homeowner is entitled to recover contract damages for alleged defects in the home, particularly if a construction defect has ripened into property damage. Thus, the economic-loss rule permits a homeowner to recover in strict product liability in tort when a product defect causes damage to "other property." *Aas v. Superior Court*, 24 Cal. 4th 627, 640 (Cal. 2000). The distinction between a green building as a product as opposed to a green building as a sum of its component parts is critical in determining liability. If a green building is considered a product, individual component parts failures will not result in liability for product manufacturers because the product defect causes damage to itself, not other property.

While most states have rejected the theory that a building itself is a product, these cases have not considered green buildings. Similarly, the scope of damages for green building defects has not yet been considered. Two contrasting cases illustrate the tentative legal liability of product manufacturers when incorporating products in green construction. In *Jimenez v. T.M. Cobb Co.*, the California Supreme Court expanded liability for component-part manufacturers, finding that the finished building was not a product. 29 Cal. 4th 473 (Cal. 2002). Manufacturers of windows installed in mass-produced homes were subject to strict liability in tort when defective windows caused harm to other parts of the home. The court in this case rejected the product manufacturer's argument that the product was the entire house in which its windows were installed and that the damage caused to other parts of the house was damage to the product itself, which, under the economic-loss doctrine precluded liability. *Id.* at 483–84. The California Supreme Court left open the issue of whether defective raw materials in the home construction should be treated as component parts. *Id.* at 484.

In contrast, the Florida Supreme Court has limited homeowners to damages under contract warranties. *Casa Clara Condo Ass'n. v. Charley Toppino & Sons, Inc.*, 620 So. 2d 1244 (Fla. 1993). The "product purchased" test dictated that economic loss should apply. The Florida court opined that "[g]enerally, house buyers have little to no interest in how or where the individual components of a house are obtained. They are content to let the builder produce the finished product, *i.e.*, a house. These homeowners bought finished products, not their various components of those dwellings. The concrete became an integral part of the finished product and, thus, did not injure 'other' property." *Id.* at 1247.

Green buildings present unique challenges to conventional home construction. When a homeowner purchases a green-certified home, the component parts used may be a material consideration. The homebuyer may very well care how the concrete was manufactured, wanting to know, for instance, how much energy was consumed and what its carbon footprint is. The same is true for other components selected for the home, such as a cork floor, a green roof, and recycled countertops. Alternatively, the homeowner may simply want to purchase a green building that overall, compared with a conventional building, has a smaller carbon footprint and uses less energy and resources. In fact, the goal of green building is to employ an integrated design process to achieve a sum that is greater than the parts. Yet, in green construction, either *Casa Clara* or *Jimenez* could be legally determinative.

Managing Liability in a Rapidly Greening Market

Because green construction involves many new factors and expectations, a product manufacturer likely risks liability for any potential green building failure. Product manufacturers, however, can observe some sound business practices to mitigate liability.

First, product manufacturers must understand the performance expectations for green buildings and certification levels. They must understand how their products will be used to attain green-building ratings, and in many cases, craft warranties that restrict liability to product use only, clearly stating that warranties do not

cover product interaction with other products manufactured and controlled by other companies.

Risk-management and quality-control programs, such as periodic product testing and monitoring, pose additional challenges, inasmuch as green construction is more about product synergy than functionality. By maintaining close vigilance of customer complaints and following up on warranty claims, a product manufacturer may gain valuable insight into the use of its product and, more importantly, the product's interaction in the green built environment.

Product manufacturers may even face some risk for damages stemming from decertification. Although LEED does not currently require monitoring of green buildings for continued compliance, recently, the U.S. Green Building Council has suggested that certification may be revoked. Under the Minimum Program Requirements (MPRs), certification may be revoked from any LEED project upon knowledge of noncompliance. U.S. Green Building Council, *LEED 2009 Minimum Program Requirements*, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2014. Prerequisites for maintaining LEED status, depending on certification category, include (1) complying with environmental laws; (2) permanency; (3) using reasonable site boundaries; (4) meeting minimum floor area requirements; (5) meeting minimum occupancy rates; (6) sharing energy and water usage data for a proscribed period of time; and (7) complying with a minimum building area-to-site area ratio. Building products failures could lead to decertification and potential liability for manufacturers.

As green building insurance becomes more readily available, insurance companies may also consider insuring risk for green products, not just green buildings. For instance, AIG now offers commercial, general liability, "Green Reputation Coverage." AIG Press Release, *AIG Risk Management Introduces AIGRM Green Product Line to Address Green Building Risks* (Nov. 25, 2008), http://media.corporate-ir.net/media_files/irol/76/76115/releases/112508a.pdf. AIG's policy insures adverse green claims, such as civil lawsuits for alleged failure to meet or comply with industry-recognized, green building standards in insured buildings. Additionally, the Fireman's Fund Insurance Co. offers insurance premium reward incentives to manufacturers that employ environmentally friendly initiatives, practices, and products. Thus, by monitoring the availability of new insurance programs, a product manufacturer may find additional incentives to produce green products or a new insurance product to minimize certain risks.

Most importantly, product manufacturers must ensure compliance with all product guidelines, including federal government, state and local regulations and building code provisions, industry standards, and trade association recommendations. Because green construction and green advertising rules remain in flux, a product manufacturer must commit resources to keep apprised of changes that will impact its business and risk for liability.

Conclusion: Knowing What You're Getting into Will Make It Lots Easier

The marketplace has embraced green construction. Consumers demand it. Building-product manufacturers have tremendous business opportunities to design and manufacture products for green buildings. Manufacturers must understand the nature of green certification and enhanced building performance expectations to reduce liability risks for products used in these new settings. FD