(Mis)Understanding Green Products

A DIZZYING ARRAY OF GREEN-PRODUCT CERTIFICATION PROTOCOLS ARE OVERWHELMING THE BUILDING INDUSTRY—EVEN STAUNCH ADVOCATES SEE A TOUGH ROAD AHEAD FOR ARCHITECTS

By Russell Fortmeyer

Stan Rhodes, the president and C.E.O. of Scientific Certification Systems, or SCS, certifies building products. He's been doing it since 1984. You bring him carpet you think is sustainable and he'll certify it against the new NSF 140 *Sustainable Carpet Assessment Standard*. Bring him anything and he'll likely find a standard, somewhere, to use for certification. There are thousands of standards, most of which are accredited by the American National Standards Institute (ANSI), so Rhodes is in no danger of running out of work.

But today, Rhodes doesn't want to talk about standards or certification. If you're talking sustainability, Rhodes says, so-called green building products don't much matter in the scheme of things. "Building envelopes are only 15 percent of the total life-cycle impacts of any building," he says, sitting in his office in Emeryville, California. For Rhodes, life-cycle impacts mean energy use, or the carbon footprint. He says the real question is how you reduce the energy impact of the work function—that other 85 percent consisting of the people who spend a minimum of 8 hours of their day sitting in your building, when not commuting—on the natural environment of your building and the larger region.

That one of the more influential people in the sustainable design world is growing impatient with the mounting army of building products purporting to be "sustainable" should be alarming. But talk to anyone who specifies, designs, builds, or certifies green products and you'll hear the same frustration lurking in their voice. "We're trying to balance delivering what the client wants on schedule and on budget, so adding this other level of complexity of having to understand what standards and what certifications to take seriously is difficult," complains Melissa Mizell, an interi architect at Gensler's San Francisco office. "You either have to embrace th challenge or give up." That sentiment is expressed by many architec working in sustainable design, even those supported by in-house sustair ability experts with the resources of a large firm.

Herman Miller's Celle chair meets both Cradle to Cradle and Greenguard product-certification requirements.

The design world is discouraged because there is no uniform reliable industry consensus in certifying many green products and, i this vacuum, organizations and special interests are rushing in with pr grams and certification labels of sometimes dubious quality. Slap picture of the earth on anything and, presto, it's earth-friendly. The gree products jumble might be sustainable design's first internal crisis. An you've been warned.

The standard response

Standards can come from anywhere. If you can get enough volunte industry players—manufacturers, trade organizations, governmer experts, scientists, environmentalists, architects, and other interested pa ties—in a room, with a few years and some good luck, you can produce standard. That's more or less what happened with NSF 140, the sustainab carpet standard. NSF International is a nonprofit, nongovernment organization that provides the umbrella for the development of ANS accredited standards. NSF and the American Society for Testing an Materials (ASTM) are the two biggest players in the U.S. standard-makir world. Neither organization enforces its standards, nor certifies produc against standards. They simply ensure that appropriate protocols a followed, that a consensus is reached, and that the standard is publishe

Dru Meadows, AIA, is a consultant and founder of Tulsa-base theGreenTeam, which advises corporations and product manufacturers o sustainability. She is also a volunteer on ASTM's sustainable building com

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ *AIA Continuing Education article. To earn one AIA learning unit, including one hour of health, safety, and welfarecredit, turn to page 181 and follow the instructions. Other opportunities to receive Continuing Education credits in this issue can be found beginning on page 184.*

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Discuss various product certifications in the building industry.*
2. *Explain the surge of new green product labels in the design industry.*
3. *Describe the difference between first-, second-, and third-party certifying labels.*

For this story and more continuing education, as well as links to sources, white papers, and products, go to *architecturalrecord.com/tech/*.

PHOTOGRAPHY: COURTESY HERMAN MILLER INTERNATIONAL

EFTA00281487

A Brief Guide to Select Green Product Certifications

Many products, many labels This chart is not comprehensive, but it gives a flavor of green product certifications. A Web site for the North Carolina–based nonprofit cross-industry group The Green Standard (www.thegreenstandard.org), condenses most known programs into a user-friendly matrix.

FSC Forest Stewardship Council Certification for Forest Management and Chain of Custody, www.fsc.org
Established: 1993
Industry: Forest products
About: FSC is an independent, nonprofit organization that sets standards for sustainable forest management and accredits third-party organizations to certify products. **Relevance:** FSC is the only sustainable wood certification recognized by the USGBC's LEED rating program and has wide industry recognition.

Energy Star
Environmental Protection Agency, www.energystar.gov
Established: 1992
Industry: Electronics, appliances, HVAC, building systems
About: EPA's Energy Star was established to standardize energy efficiency for a range of products and buildings. **Relevance:** Energy Star continues to be updated and is one of the most successful federal government programs. The EPA launched the Watersense program in 2007 to address water-saving products.

SCS Sustainable Choice Scientific Certification Systems,
[redacted]
Established: 2006
Industry: Indoor carpet, other building products
About: SCS's Sustainable Choice label recognizes carpets that conform to the NSF 140 standard for sustainable carpet, but will expand to other industries and standards. **Relevance:** SCS is a third-party testing and certification organization widely recognized in the sustainable design community for its impartial and reliable work.

MPI Green Performance
Master Painter's Institute,
[redacted]
Established: 2005
Industry: Paint, lacquers, stains, floor coatings, and fire retardants
About: This standard is based on the EPA's standards for VOC content levels in surface coatings, as well as those of California's Air Quality Management Districts. **Relevance:** Green Seal's sustainable paint standard is based on MPI's Green Performance, and it is recognized in the LEED rating system.

SFI Sustainable Forestry Initiative, American Forest & Paper Association, www.about-sfi.org
Established: 1996
Industry: Forest products
About: SFI was launched as a response by the timber industry to the establishment of FSC. It's a third-party certified standard that verifies sustainable logging and reforestation. **Relevance:** SFI certification is not currently accepted by LEED, although this has been the topic of much research and discussion in the sustainable design community.

Greenguard
Greenguard Environmental Institute (GEI), www.greenguard.org
Established: 2002
Industry: Building products and furniture
About: GEI is a third-party, nonprofit organization that certifies products for emissions for indoor air quality. **Relevance:** The Greenguard air-quality certification has achieved wide industry acceptance, from Cradle to Cradle to LEED. It has been incorporated into other standards for a variety of products.

Cradle to Cradle
McDonough Braungart Design Chemistry (MBDC),
[redacted]
Established: 2005
Industry: Any
About: MBDC's program uses life-cycle assessment, focusing on recyclability, disassembly, and material content as chief concerns. **Relevance:** Cradle to Cradle has significant industry recognition and is considered comprehensive, but its proprietary, closed process and lack of certified products has frustrated the design community.

Planet Positive
dCarbon8/Battle McCarthy, www.planet-positive.org
Established: 2006
Industry: Products and buildings
About: dCarbon8 established the program to standardize how carbon credits have been treated in the building industry. Products and buildings are given credits that must be offset by owners. **Relevance:** Planet Positive has lately focused on buildings, since few if any products offer the credits. Its U.K. base has limited efforts to expand in the U.S.

CRI Green Label Plus
Carpet & Rug Institute (CRI), www.carpet-rug.org
Established: 2004
Industry: Carpet
About: This label indicates compliance with California's CHPS Section 01350 for acceptable emissions for indoor air quality, also recognized as the NSF 140 standard for sustainable carpet.
Relevance: This label is simply the carpet industry's recognition of its sustainable products and, though respected, is still considered a second-party label.

Green Seal Green Seal Organization, www.greenseal.org
Established: 1989
Industry: Building products
About: The nonprofit, independent Green Seal develops accredited, open standards based on existing standards, all focused on life-cycle assessment for many products. **Relevance:** Green Seal standards are cited by LEED, as well as by government entities. Although it maintains standards for a limited group of products, it is viewed credibly in the market.

The information included in this chart was compiled through a range of sources, including interviews for the accompanying article, previous reporting for ARCHITECTURAL RECORD and *GreenSource* magazine, information provided by the organizations profiled, and from the organizations' Web sites.

EFTA00281488

mittee, which covers products and buildings. There are hundreds of standards on the committee's wish list. For example, there is currently no industrywide, specific standard on what qualifies—the materials, techniques, and process—as acceptable rammed-earth construction. That could explain why many clients shy away from such building methods. While there are many standards in development, including those for rammed earth, there are a few ASTM standards that act as umbrellas for sustainability, such as the ASTM E2129-05 *Standard Practice for Data Collection for Sustainability Assessment of Building Products* and ASTM E2432-05 *Standard Guide for General Principles of Sustainability Relative to Buildings*. If you drop a reference to ASTM E2129 into your green specifications, you're basically forcing the manufacturers of the products for your project to comply with a standard set of submittal criteria. This allows manufacturers to compete on an even keel. "E2129 was motivated by frustrated manufacturers who were getting questions from architects such as 'is your product green,' " says Meadows. "Now the attributes are on an apples-to-apples basis. With this market evolving as it is, this is a big accomplishment."

Of course, this evolving nature of the green-products market leads to another set of problems. To return to our example of carpet, an architect might ask why you would need a standard that focused specifically on sustainability. After all, shouldn't all carpet be sustainable? Why have two standards? For the most part, this is guided by the industry, which needs to fulfill the demands of both nonsustainable and sustainable markets. But also by chance, as the State of California, seeking to reduce landfill waste, focused its efforts toward developing a sustainable standard since discarded carpet was its biggest landfill culprit (the standard originated with yet another party, the independent Institute for Market Transformation to Sustainability, or IMTS, which is a Washington, D.C.–based cross-market group of concerned manufacturers). Alternately, with our example of rammed-earth construction, there is no need for a specifically "green" standard, since there are, more or less, only a few ways to do it. Judging a rammed-earth wall's sustainable attributes would be more appropriately handled in a "whole-building" rating system, like the U.S. Green Building Council's LEED program. You could write a book—and many have—about the proper way to evaluate sustainability in a building or the components of a system. Meadows says this is one of the difficulties of even talking about sustainability standards, since you have to consider things like the economic and social issues tied to the product, in addition to the environmental concerns. Measuring an attribute like indoor air quality is a science, whereas accounting for sustainability is more of an art. "It requires not just a familiarity with the materials and your systems," she says, "but a background in applied ecology, socially responsible investing, or any number of environmental issues."

MEASURING INDOOR AIR QUALITY IS A SCIENCE, WHEREAS ACCOUNTING FOR SUSTAINABILITY IS MORE OF AN ART.

If it's so difficult to coordinate the thousands of players in the building industry, why doesn't someone with practically unlimited resources and authority step in to streamline the process—someone like the federal government? It certainly isn't missing from the picture, since the Department of Energy (DOE) and the Environmental Protection Agency (EPA) both play large roles in shaping the national agenda toward sustainable design, but bureaucracies and a scattershot approach of uncoordinated programs also hamper them. It may come as little surprise to know there is no productive "sustainability czar" in this White House, but that may be what it would take. There are bright spots. By far, the biggest success of the DOE and EPA is Energy Star, a joint program dating to 1992 that is most widely known for consumer electronics. This is a voluntary program that single-attribute—it basically guarantees a product meets energy-efficienc criteria—and it is based on existing standards, rather than being a standar itself. For example, the Energy Star requirements for a geothermal he pump are based on standards prepared by the International Organizatio for Standardization (ISO). This approach—creating a product label base on other standards—is common and partly explains the rash of new gree product labels. However, architects interested in sustainability often find th single-attribute label certification to be of limited use. Having an ener efficient geothermal heat pump makes sense, but not if that pump is cor structed of materials that harm the environment. A multi-attribu certification could address this.

The hand that rocks the cradle

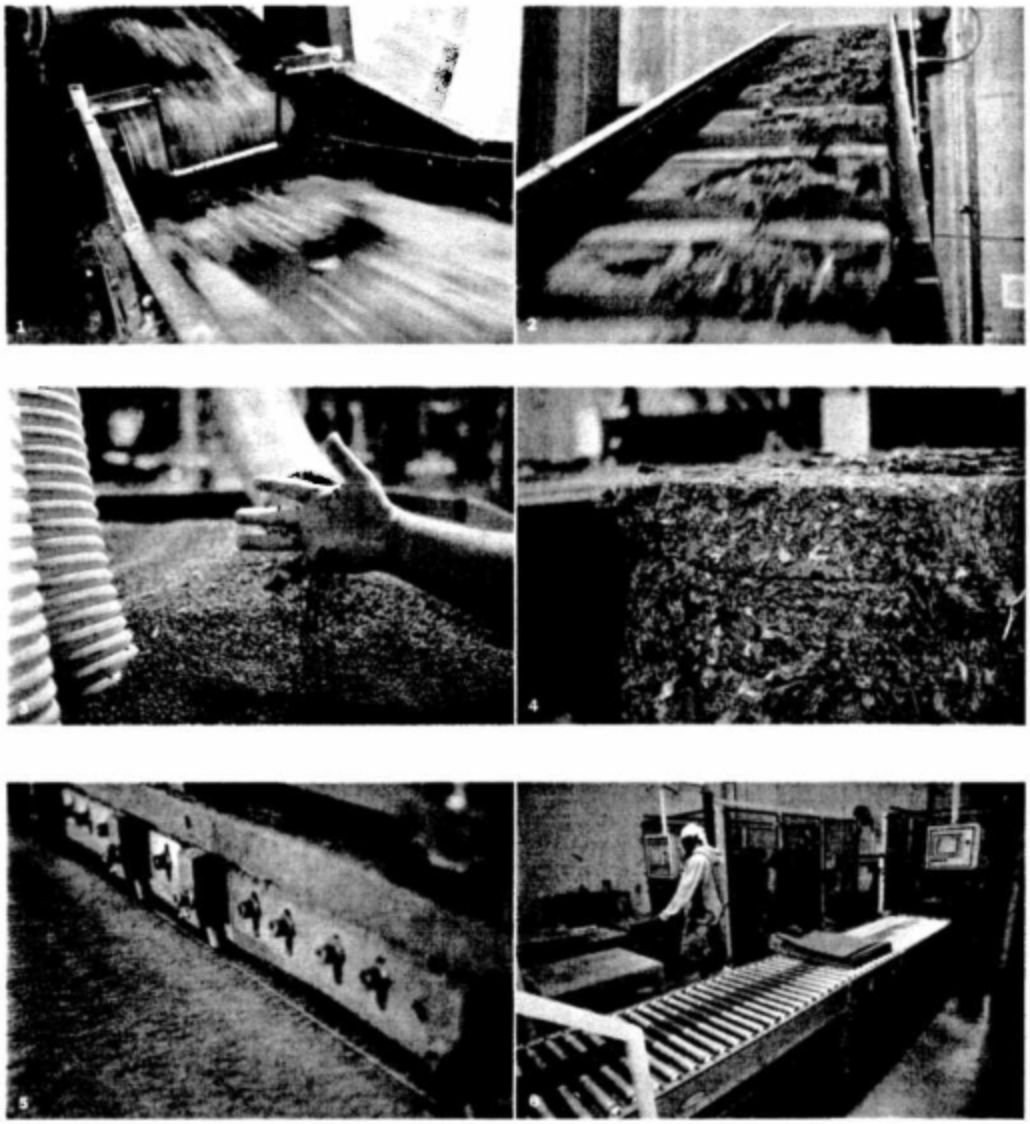
In 2007, the most recognizable of the multi-attribute certifications McDonough Braungart Design Chemistry's Cradle to Cradle progran which achieved notoriety with the 2002 book, *Cradle to Cradle: Remakin the Way We Make Things*, written by William McDonough, FAIA, an Michael Braungart. The idea of making a product that would be endless used or reused has been so compelling in the sustainable design industr that "cradle to cradle" has become shorthand for the goals many peop and organizations are working toward. It's the Kleenex of sustainab design. McDonough Braungart, or MBDC, developed the program as proprietary standard, so a manufacturer is forced to submit materials t MBDC for evaluation and certification. Cradle to Cradle focuses on th life-cycle of a product, looking at where it is produced, the material sources, and how it is used after it's no longer needed—all in addition t the product's construction and performance. Although the Cradle t Cradle program, which was officially launched in 2005, is not an accred ited standard, it is partly based on accredited or consensus standard similar to the way the Energy Star program is structured. While Cradle t Cradle is one of the few certification labels that qualifies for a LEE Innovation point and also satisfies the EPA's Environmentally Preferab Products requirements for government purchasing, few manufacture have invested in certification.

While many in the design industry see Cradle to Cradle as a important development, many regret the proprietary nature of the pro gram—as well as the conflict of interest posed by a manufacturer hirin MBDC as a sustainable product consultant and then paying them to ce tify its products—and think these issues will limit its effectiveness. But n one denies that the program, which could apply to anything from a tootl brush to a 747, is one of the most comprehensive on the market.

Paul Murray, director of environmental health and safety Michigan-based Herman Miller, has seen a lot of changes in the indust since he started working on environmental issues full-time for the compar in 1992. Herman Miller—a manufacturer long committed to environmer tal concerns—was the first company to certify a furniture product, the Mir chair, as Cradle to Cradle. "To some degree, it hasn't always been a hu degree of cost," Murray says. "Reengineering products to meet Cradle Cradle has produced some less-expensive features that have been patentabl So, we try to integrate it as early as possible in the design process." Part what the program does is divide materials into good, okay, and bad cat gories, assigning them colors. Green stands for good, red for bad. Put a re chemical in your plastic, you might fail to get certified. Herman Miller h now embarked on a process of ridding their supply chains of red materia

A benefit to embracing Cradle to Cradle has been that it practical ensures the products will comply with any other standard. For exampl Herman Miller has been testing its products for low emissions of Volati Organic Compounds (VOCs) for decades, but now certifies them again

EFTA00281489



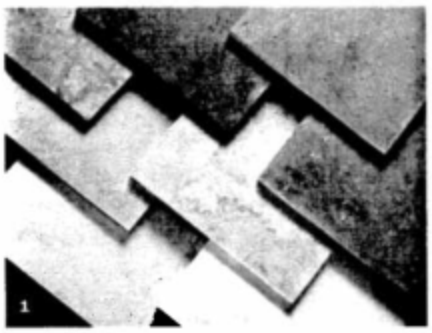
Shaw Contract Group's Ecoworx carpet tile is a Cradle to Cradle product. (1) Old carpet is returned to Shaw's plant, where it is ground up (2) before having the backing and fibers separated. (3) The backing is then melted and turned into fine pellets. (4) At this point, the backing is re-formed into new back material before it is extruded and cut (5). Shaw documents every carpet installation, so it can pursue recycling the material after use. (6) The recycled backing is then combined with the recycled nylon to form new carpet tiles. In August 2007, Shaw introduced a broadloom version of the carpet, but it will take at least seven or more years to reach the point of full recyclability.

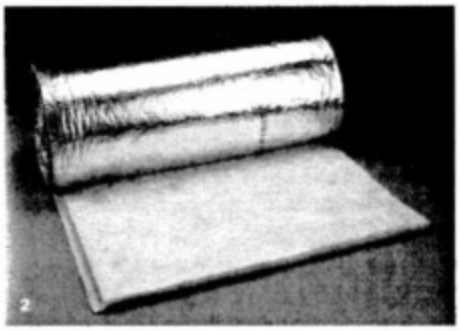
the Greenguard Air Quality standard. This is an ANSI-accredited, consensus-based standard provided by the nonprofit Greenguard Environmental Institute (GEI), which is exclusively affiliated, though independent from, the Air Quality Sciences testing lab (AQS). Herman Miller also participated in the development of another indoor-emissions standard by the Business and Institutional Furniture Manufacturer's Association (BIFMA). "I don't know which one will shake out in the long run, but both have credibility because they are recognized by the USGBC," says Murray. An industry leader, Herman Miller has resources to not only push the market toward specific standards, but also to cover the short-term certification bases.

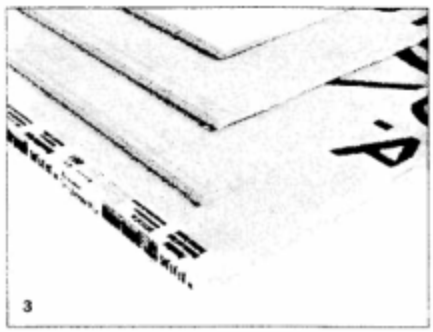
Not every manufacturer can afford every green label. Michigan-based Haworth may be a competitor to Herman Miller in some markets, but it also shares similarly ambitious environmental goals. Aside from Cradle to Cradle certification for its Zody chair, it also worked with London-based mechanical engineer Guy Battle to achieve a Planet Positive certification. Battle's open-protocol program, based on the ISO 14025 standard for environmental labels and declarations, tracks carbon emissions along the supply chain of a product, accounts for them as credits, and then passes those credits to the end user. Someone purchasing a Zody chair then must invest in a renewable-energy project that would offset 110 percent of those emissions credits. "You have to keep in mind that this is an emerging market," Battle says. "The key issues are going to be transparency, accountability, and honesty, so we're taking our time to ensure our protocols are rigorous."

MBDC is aware of the challenge that lies ahead for Cradle to Cradle. In September 2007, MBDC announced a collaborative relationship with the influential architectural materials sources company Material ConneXion, geared toward helping companies develop more sustainable materials and products. Steve Bolton, MBDC's manager of business development, says they haven't made a decision about turning Cradle to Cradle into an open standard that people could certify against outside of MBDC. "A consensus-based standard is valuable in that you are bringing people together to create it, but it could be watered down in the end because you are trying to make sure anyone can meet it," Bolton says. "All of our criteria are widely accepted in the scientific community and typically go beyond what is stringent for any authoritative body."

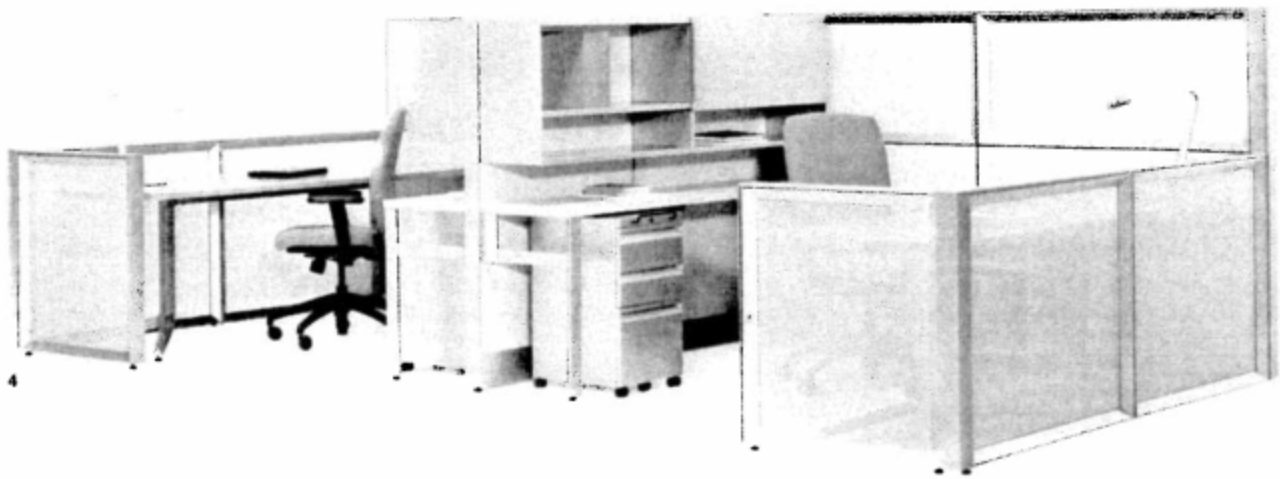
EFTA00281490







The Greenguard air-quality voluntary standard includes more than 150,000 certified products from more than 100 manufacturers, among them (1) Dupont's Corian line, (2) CertainTeed's SoftTouch duct-wrap insulation, (3) Georgia-Pacific's DensArmor Plus abuse-resistant paperless drywall, and (4) Knoll's Dividends Horizon office furniture system. Greenguard is an independent, third-party organization that certifies building products for the emission of Volatile Organic Compounds. The program is recommended by the USGBC's LEED, the National Association of Home Builders' Green Building Guidelines, and the Green Guide for Health Care, among other sustainable design initiatives.



Get the third party started

Product certifications, expressed with labels, mostly break down in three ways: first party, second party, and third party. First-party certification generally means the product manufacturer set up and then tested against the conditions that supposedly qualify the product as green. SC Johnson's new Greenlist program is an example of a first-party program, as the claims represent SC Johnson's own investigations of its products based on a system of its own design. Regardless of the merits of the manufacturer's program—and to be fair, SC Johnson has a comprehensive environmental policy that puts many companies to shame—most architects working in sustainability distrust first-party labels. Second-party labels are more of a gray area, since these are often based on consensus standards established by an industry's trade organization. For example, the Carpet and Rug Institute's Green Label Plus is a second-party label. Third-party labels, on the other hand, often come from a range of organizations outside of the industries seeking certification. The Forest Stewardship Council (FSC) is a well-known third-party certification and label for sustainably managed forests and timber supply chains. LEED recognizes FSC, but doesn't recognize the Sustainable Forestry Initiative (SFI), which is administered by the timber industry. However, SFI certifications are undertaken by independent third parties, such as PriceWaterhouseCoopers, since standards development is usually separate from certification. Other third-party programs include the aforementioned Energy Star and Greenguard, as well as California Gold and Scientific Certification Systems' Sustainable Choice and Indoor Advantage Gold.

All of this can get very confusing, very fast. So, let's return to our carpet example. If you needle down to the fine print in many of the labels and certifications for sustainable carpet, they often rely on only a few real standards. On the VOC emissions side, the Carpet and Rug Institute (CRI) based its Green Label Plus on California's Collaborative for High Performance Schools (CHPS) Section 01350 requirements for indoor-air-quality testing standards. SCS's Indoor Advantage Gold program for carpet is based on Section 01350, too. The limits for VOC emissions in NSF 140—the broader sustainable carpet standard SCS can certify against in its Sustainable Choice program—also refer to Section 01350. If you see a pattern here, it's that three certification programs for carpet all rely, in part, on an emissions standard developed by the State of California for

EFTA00281491

public projects. While California helped develop NSF 140, it ultimately felt the standard wasn't stringent enough for emissions, which is why the state published a revised standard, California Gold. NSF 140 is organized like LEED, with different levels of compliance for Silver, Gold, and Platinum. Since California Gold is now identical to NSF 140 Platinum, it will be phased out in a year.

"There's no question the state has used its purchasing power to motivate change in the marketplace," says Dan Burgoyne, an architect who works as the sustainability manager for California's Department of General Services. Although Burgoyne knew there were no carpets certified to NSF 140 Platinum months before it went into effect in September 2006, by the time the deadline rolled around, there were close to eight products certified and on the market. "We put a lot of effort into the carpet standard and probably won't be able to put as much into the others," he says, though he adds the state is working with BIFMA on sustainable office furniture and with Green Seal on sustainable cleaning standards. NSF 140 has been a good model for other standards, Burgoyne says, because it's a multi-attribute standard that looks at product development, manufacturing, use, and end use.

No end in sight

It's likely the next decade will be filled with new standards and certification labels, giving architects little relief. Marilyn Black, founder of Georgia-based Greenguard and AQS, sees no sign of consolidation any time soon. "I certainly don't see the government in a leadership role of trying to bring this together," Black says. "From my perspective, some of the leading programs need to take a proactive step to focus the industry." TheGreenTeam's Meadows agrees, but she thinks market competition will increasingly come into play. "Certifications and labels are products, so you have to ask which one has more credibility, is least expensive, and most adaptable," she says. "I wouldn't want to say the only way to do things is with ASTM or ISO or LEED because competition is not a bad thing. At some point there are going to be clear winners."

Back in California, SCS's Rhodes still considers life-cycle assessments the missing ingredient in many of these new programs, especially since it allows you to make incremental improvement in larger issues affecting sustainability. And he doesn't see a "super-label" for green products on the horizon. "When you get to the product level for certification, most likely there are going to be trade-offs. There is no magic green bullet," Rhodes says, suggesting that creating standards an industry can easily meet won't do much to change the effects of global warming. "With a life-cycle assessment, some of these materials just don't cause enough impact to show up. We see industrial standards we don't agree with, we have to set our own." With green product certification, that seems to be something on which everyone can agree. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "(Mis)Understanding Green Products" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers on the next page.**
- **Fill out and submit the AIA/CES education reporting form on the next page or download the form at [redacted] to receive one AIA learning unit.**

QUESTIONS

1. The American Society for Testing and Materials does which for standards?
- **a.** enforces standards
- **b.** certifies products against standards
- **c.** ensures standards are followed
- **d.** ensures standards are published according to acceptable guidelines

2. Inserting a reference to ASTM E2129 into your specifications results in which?
- **a.** ensures the result will be a LEED-certified project
- **b.** forces manufacturers of products for your project to comply with a standard set of submittal criteria
- **c.** answers the question, "Is your product green?"
- **d.** certifies products against standards

3. The Energy Star program is all except which of the following?
- **a.** an energy efficiency standard
- **b.** a voluntary program
- **c.** based on existing standards
- **d.** a guarantee that a product meets energy-efficiency criteria

4. Creating a product label based on other standards explains what phenomenon?
- **a.** the creation of volunteer industry organizations
- **b.** the evolving nature of the green-products market
- **c.** the rash of new green product labels in the market
- **d.** the creation of multi-attribute product-certification labels

5. A proprietary certification program that focuses on the life-cycle of a product is known as which?
- **a.** Environmentally Preferable Products
- **b.** Energy Star
- **c.** Cradle to Cradle
- **d.** Cradle to Grave

6. The first company to certify a furniture product as Cradle to Cradle was which?
- **a.** Herman Miller
- **b.** Haworth
- **c.** Steelcase
- **d.** MBDC

7. Architects often distrust first-party certification of a product because of which?
- **a.** an industry organization participated in the formation of the standard
- **b.** the product manufacturer established the standard
- **c.** an independent organization created the standard
- **d.** the state of California created the standard

8. An example of a non-industry-developed, independent certification program is which of the following?
- **a.** Carpet & Rug Institute's Green Label Plus
- **b.** Forest Stewardship Council
- **c.** Sustainable Forestry Initiative
- **d.** SC Johnson's Greenlist

9. Which of the following tracks carbon emissions along the supply chain of a product, accounts for them as credits, and passes them to the end user?
- **a.** first-party certification
- **b.** Cradle to Cradle
- **c.** Planet Positive certification
- **d.** Scientific Certification Systems

10. Building envelopes impact which percent of the energy use in the total life-cycle of any building?
- **a.** 85 percent
- **b.** 60 percent
- **c.** 45 percent
- **d.** 15 percent

EFTA00281492