

Taking the LEED in Greener Building DESIGN & CONSTRUCTION

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The Donald Bren School of Environmental Science and Management at the University of California, Santa Barbara, was one of the first buildings in the United States to be LEED Certified. It attained the highest rating given by the US Green Building Council — LEED Platinum. The architectural millwork was done by Woodwork Institute member K & Z Cabinet Company of Ontario, CA.



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The Leadership in Energy and Environmental Design Green Building Rating System, commonly referred to as LEED®, is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. Members of the United States Green Building Council (USGBC) representing all segments of the building industry developed LEED and continue to contribute to its evolution. LEED standards are currently available or under development for:



Hospitals



The most relevant categories to the architectural millwork industry are Materials & Resources and Indoor Environmental Quality, with LEED-CI being the most critical LEED rating system. (LEED-CI, currently in the pilot phase, will be officially launched this year.)

The majority of health and environmental organizations around the globe recognize indoor air pollution as a significant threat to public health. Data shows that 96% of the specific VOCs found most frequently in building air resulted from construction materials, interior finishes, and furnishings. Primary products affecting the indoor air VOC levels included paints and adhesives, wall coverings, floor coverings, system office furniture, and built-in-cabinetry.

Source control eliminates the cause. USGBC's LEED program has adopted source control as a means to create high quality indoor environments throughout the design and building process. To ensure the use of low emitting products, buyers are looking to manufacturers to verify their claims through third party testing. Environmental and health claims can be certified or reviewed by organizations such as Scientific Certification Systems, Forest Stewardship Council, Green Seal, Greenguard, Carpet & Rug Institute, Building Green Inc and Energy Star Roof program. (Please see p. ___ of this issue for more information on these certifying organizations.)



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- New building construction and major renovation projects (LEED-NC)
- Existing building operations (LEED-EB, pilot version)
- Commercial interiors projects (LEED-CI, pilot version)
- Core and Shell projects (LEED-CS, pilot version)
- Homes (LEED-H)
- Neighborhood Development (LEED-ND)

The LEED rating system certifies buildings, not products. The products and materials that are used in designing and constructing a project can only contribute to earning LEED points. LEED version 2.1 categories total 69 possible points. All building products are evaluated and weighted averages are applied. USGBC recommends that manufacturers familiarize themselves with the rating system to ensure they completely understand the credits that apply to their products. The rating system is a free download online at www.leebuilding.org

The LEED categories are:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality

Schools Deserve Special Treatment



We've all experienced the familiar smell of fresh paint and new carpeting... but it wasn't until just a few years ago the general public learned that smell was called "off-gassing" and it carried some potential health hazards. The World Health Organization estimated in a 1984 report that 30% of new buildings had poor indoor air quality primarily due to off-gassing construction materials. Generally those materials stop emitting large amounts of volatile organic compounds (VOCs) over time, but they have still been found to cause health problems in the interim, especially among those who are sensitive to VOCs.

Schools and hospitals deserve special attention because of the greater impact environmental toxins can have on their occupants' health. Health organizations are banding together in an effort called Health Care Without Harm (www.noharm.org) to identify and encourage environmentally sound practices in healthcare facilities around the world. One of the participating

health care institutions, Kaiser Permanente, recently pledged to avoid carpets that contain polyvinyl chloride (PVC) in new hospitals over the next decade. The Healthy Building Network (www.healthybuilding.net) advises Kaiser on the issue of environmental toxins, and that organization has issued reports on the multiple dangers posed by the manufacture and use of products containing PVC.

The Healthy Building Network (HBN) has reported PVC to have the following impacts on human and environmental health:

- The manufacture of PVC releases toxins into the environment.
- PVC workers face a greater risk of cancer and decreased fertility.
- Off-gassing by PVC products has been linked to respiratory problems in consumers.
- PVC is difficult and costly to dispose of safely.
- The materials used to produce PVC are considered hazardous, and their untracked production and transportation throughout the U.S. makes them a threat to homeland security.

As a result, HBN argues that it's difficult for a building to be considered "green" if it contains vinyl or PVC. The organization has asked the U.S. Green Building Council to amend its LEED program to account for any PVC that might be used in the construction of a LEED-certified building. In architectural millwork, PVC is not used widely – one of the most common applications is edgework on cabinet bodies, doors, and drawer fronts.

A mid-1990s report by the Environmental Protection Agency (EPA) showed that more than 50 percent of schools in the U.S. have ventilation and pollution problems. Those hazards can stem from new construction materi-

als off-gassing, poor ventilation systems combined with tightly sealed buildings, moisture that leads to mold, and renovation that causes dust or asbestos exposure. Temporary buildings used as full-time classrooms for overburdened schools can often be a source of mold and bacteria problems.

The EPA has developed a new program called IAQ Design Tools for Schools (www.epa.gov/iaq/schooldesign/) that provides guidance for the construction of new buildings and helps schools renovate and improve air quality in existing buildings. The EPA's website also explains the potential interactions between pollutant sources, the HVAC system, and the occupants of a building. For example, a minor roof leak may not normally be cause for concern, but when water from the leak wets the carpet below, mold spores can be activated and released into the environment. The HVAC system can then circulate those mold spores throughout the building, potentially causing or aggravating respiratory problems in children. Health concerns like these can be avoided with the use of rooftop dehumidification units, avoiding the use of carpet, and incorporating filtration in the HVAC system.

The EPA suggests "flushing out" or forcing large amounts of outdoor air through a building for a period of three to 90 days to remove emissions caused by new carpet, paint, and other synthetic materials. However, this is not recommended by the Woodwork Institute for buildings that include wood materials in their architectural millwork because the change in temperature and humidity could cause the wood to move or warp. In general, flooring with low VOCs is best for hospitals and schools and can eliminate the need to flush out new buildings. 