Occupant comfort is critical to green building design

October 23 2012, by Dani Corona

Green design does not necessarily mean comfortable design, reports a study by Cornell and Ithaca College ergonomists.

Workers in two LEED (Leadership in Energy and Environmental Design) Platinum-certified buildings said they perceived the air quality and thermal conditions to negatively influence their health and work performance, according to the study.

Alan Hedge, professor of design and environmental analysis in Cornell's College of Human Ecology, and his co-author found significant associations between occupants' fatigue and their ratings of air temperature, as well as between their ratings of eyestrain and perceived air freshness. In one building, more than 50 percent of respondents said that the air ventilation, temperature and noise—factors closely tied to the structure's energy systems—did not benefit their comfort.

The paper, "Green Buildings Need Good Ergonomics," was published online in the journal *Ergonomics* Aug. 31.

The researchers reached their conclusions by conducting an online, anonymous survey of 44 occupants of Ithaca College's Park Center for Business and Sustainable Enterprise and the Peggy Ryan Williams Center.

According to Hedge, as more LEED buildings are constructed, the need to measure their impact on occupant performance becomes more

important. Worker efficiency and comfort can be lost in the focus on energy efficiency and LEED credits, he said.

"When people construct green buildings, they must pay attention to how well the buildings work from a human standpoint," Hedge said. "A building may be energy efficient but not efficient for worker well-being. There needs to be a focus on the ergonomic aspect in addition to the engineering aspect, because buildings are about people."

Past research has shown that worker productivity is crucial to business' bottom line. In the long term, salaries account for 92 percent of the costs associated with a building; therefore, small increases in productivity can equal or exceed the building's total energy costs.

"There are very few studies to date that see how those buildings are working for people," Hedge said. "The current emphasis is on meeting energy goals. You can meet those, but if people are uncomfortable you are losing their support and their productivity. The message is, you can be green, but you also have to be human."

Provided by Cornell University

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