Study Shows Green Building Conditions Improve Workers? Cognitive Function

The environment inside the buildings where we live and work impacts our mental and physical health, both positively or negatively. A new study from the Harvard School of Public Health looked at the impact of indoor environmental quality conditions in green and conventional buildings on cognitive function. And it found that workers' scores on cognitive tests were significantly higher in green building conditions.

In the study, 24 participants spent six full work days in an environmentally-controlled office space, where they were exposed to conditions representative of:

- **Conventional office buildings**: typical (~500 ppm) volatile organic compound (VOC) levels and 20 cfm outdoor air per person
- **Green office buildings**: VOC levels reduced to approximately 50 ppm and 20 cfm outdoor air per person
- **Green buildings with enhanced ventilation**: VOC levels reduced to approximately 50 ppm and 40 cfm outdoor air per person.

Researchers also artificially elevated CO_2 levels independent of ventilation.

At the end of each day, participants took a cognitive exam, which tests live decision making performance by simulating real-world scenarios. This method enabled researchers to understand any changes in cognitive function that might be attributable to building design features.

The results: Cognitive function scores were better in green building conditions compared to the conventional building conditions across nine functional domains, including crisis response, strategy and focused activity level.

On average, cognitive scores were 61% higher in green building conditions and 101% higher in enhanced green building conditions. CO_2, VOCs and ventilation rate all had significant, independent impacts on cognitive function.

For more information, tools and other resources on indoor air quality related issues in your workplace, see the following:

- A checklist to inspect your facility for some of the common causes of IAQ problems
- How to properly maintain the IAQ in your facility.