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CogFx results highlight importance of clean air quality in offices

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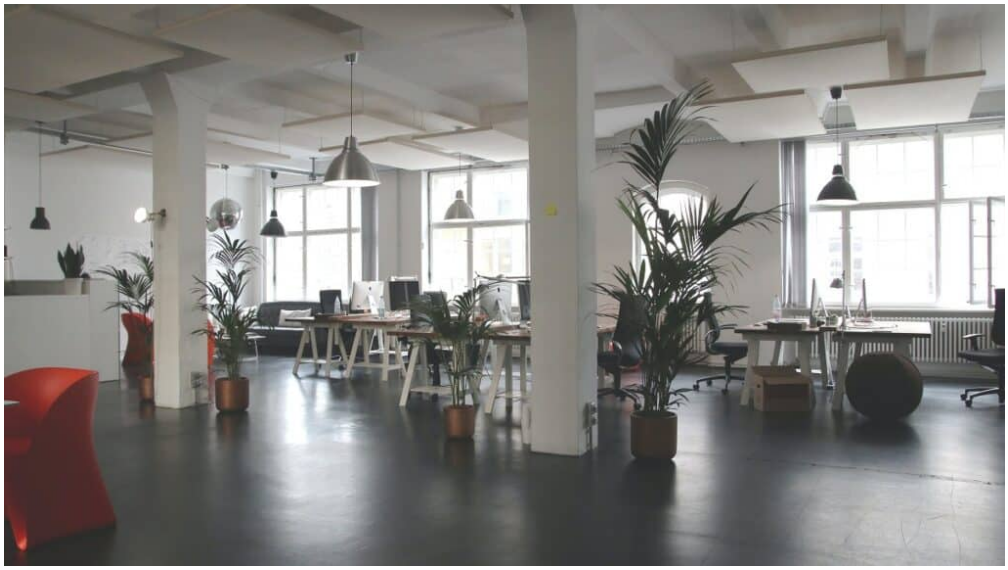

Mott MacDonald was part of the third chapter of the CogFx project – a ground breaking study conducted by the Harvard T.H CHAN School of Public Health, looking at the impact of buildings on cognitive functions.

The study found that air quality has a direct impact on cognitive performance; higher ventilation rates and enhanced filtration are important public health strategies and indoor air quality influences health and performance in profound ways.

The CogFx research team at the Harvard T.H CHAN School of Public Health aimed to understand whether cognitive function was associated with indoor concentrations of fine particulate matter ($PM_{2.5}$) and carbon dioxide (CO_2). The researchers conducted a study among 302 office workers in urban commercial buildings located in six countries (China, India, Mexico, Thailand, the United States of America, and the United Kingdom). Cognitive function was assessed for 12 months using the Stroop colour-word test and addition–subtraction test (ADD) via a mobile research app. The research concluded that there is a direct relationship between ventilation rates and cognitive function, as higher concentrations of $PM_{2.5}$ and lower ventilation rates (corresponding to higher CO_2 levels) resulted in slower response times and reduced accuracy in the exercises completed by the participants.

Mott MacDonald was a sponsor of this chapter of the CogFx study, with over 70 participants from five offices contributing data, while environmental data in those offices was also recorded. Each participant also wore a FitBit bracelet, had an environmental sensor on their desk and input their feedback on an app to record results. This was the third study in the CogFx series, which started in 2015, with study one conducted in a lab setting, study two in real-world office buildings in the US and study three on buildings on a global scale.

With 90% of people's time being spent inside buildings, it is important to understand how the indoor environment influences people's health and productivity. This study has shown that buildings with better air quality have a positive impact on people's cognitive performance and by proxy can contribute to improved productivity.

Jose Guillermo Cedeno Laurent, one of the leading researchers on the team said: "PM2.5 is a very nasty pollutant. It can account for nine million deaths globally. PM2.5 concentrations are associated with neurodegenerative decline such as in Alzheimer's disease, dementia and Parkinson's disease. That evidence comes mostly from older adults and on exposures that could be considered chronic or long-term.

"In this case, we found negative effects in cognitive function due to short-term indoor air pollution in a population with mean age 33 years old. In other words, whenever daily concentrations were going up, cognitive function was going down among people in their prime age for productivity."

Find out more here: The CogFx Study

Image credit: Pexels