

Sick building syndrome: Uncomfortable indoor environments linked to migraines

November 6 2012, by Marc Ransford

(Medical Xpress)—Office workers may suffer more intense migraines and more frequent headaches due to an uncomfortable indoor environment, more commonly known as sick building syndrome, says a new report from Ball State University.

"Headache symptoms and indoor environmental parameters: Results from the EPA BASE study" found employees working indoors may become sick due to abnormal levels of carbon monoxide, carbon dioxide, [volatile organic compounds](#), light, humidity, temperature and sound.

The study found that when exposed to an uncomfortable [indoor environment](#), 38 percent of participants reported having a headache one to three days a month while nearly 8 percent had daily headaches, said Jagdish Khubchandani, a community health education professor in Ball State's Department of Physiology and Health Science. He conducted the study with Suchismita Bhattacharjee, a professor of construction management in the Department of Technology at Ball State.

"Millions of Americans and people worldwide are affected by migraines and headaches, mostly during the highly productive years of their lives," said Khubchandani, who also is a faculty fellow with the university's Global Health Institute. "Migraines and headaches lead to significant decline in quality of life, productivity and daily functioning."

Produced only once by the [Environmental Protection Agency](#), this was a

multicenter cross-sectional study of 4,326 [office workers](#) employed in 100 randomly selected large office buildings across the country. The largest study of its kind used the data collected by EPA for the Building Assessment Survey and Evaluation (BASE) study during 1994-1998. Results were recently published by the *Annals of Indian Academy of Neurology*.

As a result of the research, the authors found:

- Females were more likely to report a headache in the last four weeks when compared to males (75 percent vs. 53 percent).
- About 21 percent of employees admitted that a physician had diagnosed them with migraines. Females (27 percent) were significantly more likely than males (11 percent) to report a migraine diagnosis.
- The highest levels of migraine diagnosis were for employees exposed to out-of-comfort range carbon monoxide and carbon dioxide in their office buildings.
- Exposure to out-of-comfort range indoor environmental parameters was higher in groups that reported higher headache frequencies.

Because headaches related to office environment lead to loss of workdays and decrease productivity, the authors recommend that building managers implement effective intervention strategies to reduce the prevalence of headaches and other symptoms of sick building syndrome.

"Collection of periodic data on indoor environmental parameters should become a universal practice, and based on the data, a health risk management plan for the occupants should be designed," Bhattacharjee said. "Reviewing operation and maintenance of heating, ventilation and

air conditioning systems should be made an integral part of the strategies to reduce harmful worksite exposures."

More information: [www.annalsofian.org/article.as ...
ge=99;aulast=Tietjen](http://www.annalsofian.org/article.as?ge=99;aulast=Tietjen)

Provided by Ball State University

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