

The air quality in your home may be worse than in your office building

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A new study from the Texas A&M University School of Public Health suggests the air quality inside homes may not stack up against air quality inside office buildings.

The [pilot study](#), published in the journal *Atmosphere*, delves into indoor [air quality](#) and [health outcomes](#) in people working remotely during the COVID-19 pandemic. Researchers measured [indoor air quality](#) in both the offices and homes of employees in 2019 and 2020 and evaluated their health outcomes during those periods.

Air pollution indoors is most often linked to building materials and the activities of people living and working in those buildings. These pollutants include volatile organic compounds (VOCs) from carpet and furniture, paints and other chemicals as well as [fine particulate matter](#) (PM2.5) and mold.

Prolonged exposure to indoor air pollutants is associated with a wide range of poor health outcomes, from headaches and dry eyes to cardiovascular disease and lung cancer. These outcomes have driven significant work into improving [office](#) building indoor air quality. However, the percentage of people working from home has grown dramatically over the past two decades and skyrocketed since the beginning of the COVID-19 pandemic, meaning home indoor air quality can be considered a workplace health issue.

Taehyun Roh, assistant professor in the Department of Epidemiology and Biostatistics, and Genny Carrillo, associate professor in the Department of Environmental and Occupational Health at the Texas A&M School of Public Health, along with colleagues from Houston Methodist Hospital and Lancaster University in the United Kingdom, analyzed indoor air quality in an [office building](#) between May and July of 2019 and then at the employees' respective homes between June and September 2020.

The researchers used a standard consumer-grade air quality monitor to collect data on air temperature, relative humidity and concentrations of particulate matter and VOCs. At the same time, the researchers collected

data on outdoor air temperature and particulate matter concentration from the Texas Commission on Environmental Quality. Additionally, the researchers had participants complete a survey where they ranked the prevalence of symptoms like dry, itchy or watery eyes, stuffy nose and dry or irritated skin on a scale ranging from not experiencing symptoms to having them every day.

The participants all lived in single-family homes with central air conditioning, and none of the people living in any of the households smoked or worked with hazardous materials.

The study found that the fine particulate matter concentrations were significantly higher in the participants' homes than in their offices, and the home levels were greater than the standard for a healthy work environment. The researchers also found that VOC concentrations were higher in homes compared to offices; however, the VOC concentrations in both places were well below the limit set by health standards. The majority of employees in the study reported higher frequencies of symptoms while working at home.

The findings of this study point to the importance of indoor air quality for people working from home and the need for measures to improve indoor air quality. This could be as simple as opening windows when outdoor air quality allows it or providing remote workers with air purifiers.

Taking steps to improve indoor air quality in both conventional office buildings and [home](#) offices will likely become a growing area of study for public health researchers and employers looking to ensure [health](#), safety and productivity.

More information: Taehyun Roh et al, Indoor Air Quality and Health Outcomes in Employees Working from Home during the COVID-19

Pandemic: A Pilot Study, *Atmosphere* (2021). [DOI: 10.3390/atmos12121665](https://doi.org/10.3390/atmos12121665)

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