

**Exposure to indoor air pollutants (formaldehyde, VOCS, ultrafine particles) and
respiratory health symptoms among office workers in old and new buildings in
Universiti Putra Malaysia**

ABSTRACT

This study was done to investigate the association between exposure to indoor air pollutants (formaldehyde, VOCs and ultrafine particles) and respiratory health in two different buildings (old and new). A hundred and five office workers were purposely selected where 55 workers were from an old administrative building and another 50 workers were from the new Faculty of Engineering and Faculty of Medicine and Health Sciences buildings. Questionnaire adapted based on NIOSH Indoor Environment Quality Survey (1991) and American Thoracic Society (1982) was used to record prevalence of respiratory health symptoms. Measurement of indoor air pollutants was performed according to IAQ Code of Practice, Department of Occupational Safety and Health, (DOSH, 2005) Malaysia. Level of ultrafine particles was significantly higher in old building compared to new buildings ($z = -2.72$, $p < 0.05$). There were no significant associations between old and new office buildings and the prevalence of respiratory health symptoms among office workers ($OR = 0.47$, $95\% CI = 0.21 \text{ ó } 1.05$). In the old building, ultrafine particles level had a significant association with the prevalence of respiratory health symptoms which was ($p < 0.05$) and ($OR = 4.57$, $95\% CI = 1.36-15.40$). Moreover, respiratory health symptoms were significantly higher for stuffy, runny nose or sinus congestion and dry or itchy skin ($p < 0.05$). The level of indoor air pollutants in the buildings may influence the prevalence of respiratory health symptoms among office workers. Exposure to high ultrafine particles had a significant association with respiratory health symptoms in the old building.

Keyword: Indoor air pollutants; New building; Office workers; Old building; Respiratory health symptoms