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COMPOSITION OF TRACE METALS IN INDOOR DUST DURING AND AFTER BUILDING RENOVATION

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Abstract

A study was conducted to determine the composition and concentration of trace metals in suspended particulate matter (PM₁₀) and indoor dust in two academic buildings of Universiti Kebangsaan Malaysia. One building was in the final phases of renovation (UR) and the other building had just finished renovation (AR). PM₁₀ sampling of air was performed using a low volume sampler (LVS), and samples of indoor dust were obtained using a brush and a small plastic bag. The compositions of trace metals in both samples were determined by inductively coupled plasma mass spectrometry (ICP-MS). PM₁₀ concentrations in the building under renovation (UR) were found to be higher ($77.1 \pm 32.4 \mu\text{g m}^{-3}$ to $355.4 \pm 38.3 \mu\text{g m}^{-3}$) than those in the building after renovation (AR) ($91.7 \pm 41.2 \mu\text{g m}^{-3}$ to $147.9 \pm 3.0 \mu\text{g m}^{-3}$). Higher concentrations of PM₁₀ were found in the open areas (foyer and corridor) than in closed areas (classroom and laboratory). The concentrations of trace metals in PM₁₀ and indoor dust were found to be dominated by Zn, followed by Pb > Cu > Cd. There is no indication of health adverse effect based on the concentration of trace metals recorded in the UR and AR buildings from this study.

Key words: health risk, indoor dust, PM₁₀, renovation, trace metals

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