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ASSESSMENT OF INDOOR AND OUTDOOR PARTICULATE MATTERS IN RESIDENTIAL AREAS: THE EFFECTS OF CLIMATIC CONDITIONS AND BUILDING CHARACTERISTICS

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Abstract

The aim of this study was to assess the indoor and outdoor particulate matters in residential areas, and to evaluate the effects of building characteristics and climatic conditions on indoor particle concentrations. The concentration of particles was measured simultaneously indoor and outdoor air during four seasons. Information on climatic conditions and building characteristics was collected through questionnaires during the sampling period. Linear regression models were adopted for determining the relationship between the dependent variable of I/O ratio and environmental factors. The I/O ratios of PM₁, PM_{2.5}, PM₄, PM₇, and PM₁₀ were 0.67, 0.64, 0.61, 0.55, and 0.52, respectively. Moreover, the concentration of PM in the indoor air of the buildings were considerably lower than those of the outdoors ($p < 0.05$). The results also suggest the ventilation mode and outside temperature had the most important role in the entrance of particles into the indoor environment.

Keywords: indoor air, outdoor air, outdoor temperature, particulate matters, regression model, ventilation mode

Received: June, 2020; Revised final: September, 2020; Accepted: October, 2020; Published in final edited form: May, 2021

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