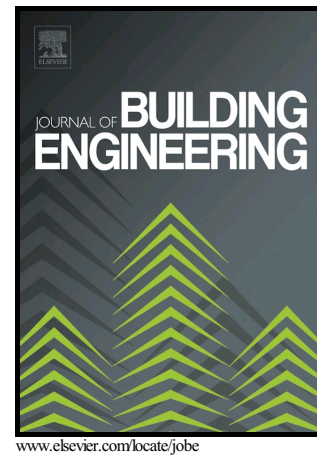


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The effect of ventilation on air particulate matter in school classrooms

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ABSTRACT

Health problems and respiratory diseases are associated with indoor air particulate matter (PM) mass. This is specially a concern in schools as children spend most of their time indoors. Understanding factors that affect PM mass such as occupant activities, ventilation and the infiltrating outdoor environment are important to safeguard occupant health. We investigated the air quality inside and outside two low decile primary school classrooms (children ages 7 to 9) over a three-week period during the southern hemisphere winter season in Palmerston North, New Zealand. Both classrooms were heated with wall mounted inverter heat pumps and in addition one classroom roof was fitted with a solar air heated ventilation unit (treatment). Particulate matter was continuously sampled and monitored to identify particles less than 10 μm in aerodynamic diameter (PM_{10}) both outside and inside both classrooms to compare their indoor air quality. Significantly higher PM_{10} concentrations occurred within both classrooms during school hours (0845-1500), but the ventilated treatment classroom had PM_{10} concentrations on average 66% lower than those measured in the unventilated control classroom. Elemental composition and source apportionment of

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