

Assessment of children's health and indoor air contaminants of day care centre in industrial area

ABSTRACT

Background: Carbon dioxide (CO₂) is one of the most commonly used indicators of indoor air quality (IAQ) in industrial area. The higher concentration level of CO₂ and particulate matter (PM₁₀) in day care centre could affect children's health. The objective of this study was to assess children's health symptom, and measure the CO₂ and PM₁₀ concentration level as IAQ parameters in different locations of day care centres near the industrial area at Kuala Lumpur, Selangor and Hulu Langat as urban, suburban and rural areas respectively. Methods: The data of children's health symptom were collected from the distributed questionnaire. Results: The day care centres (DCC) in Kuala Lumpur has the highest number of children's illness frequency of more than four times annually (11%), followed by the highest number of children who experienced asthma (5.3%), wheezing (3.3%) and coughing (10%). The results of data collection of day care centres in Kuala Lumpur, Selangor and Hulu Langat ranged between 629-830 ppm, 587-823 ppm and 600-830 ppm for CO₂ level, and 60.80-78.60 mg/m³, 56.90-80.50 mg/m³ and 59.90-79.10 mg/m³ for PM₁₀ level. The statistical analysis for CO₂ level between areas was significantly different (P<0.05). Conclusion: Day care centers in Kuala Lumpur have the highest mean rate of CO₂ and PM₁₀ as well as frequency of children's illness which could identify traffic congestion and less greenery of a densely populated city.

Keyword: Day care centre (DCC); IAQ; CO₂; PM₁₀; Health symptoms