

Long-Term Indoor Air Monitoring for Students with Emphasis on Particulate Matter (PM2.5) Exposure

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Abstract : One of the main indoor air parameters in classrooms is dust pollution and it depends on the particle size and exposure duration. However, there is a lack of data about the exposure level to PM2.5 concentrations in rural area classrooms. The objective of the current study was exposure assessment for PM2.5 for students in the classrooms. One year monitoring was carried out for fifteen schools by time-series sampling to evaluate the indoor air PM2.5 in the rural district of Sari city, Iran. A hygrometer and thermometer were used to measure some psychrometric parameters (temperature, relative humidity, and wind speed) and Real-Time Dust Monitor, (MicroDust Pro, Casella, UK) was used to monitor particulate matters (PM2.5) concentration. The results show the mean indoor PM2.5 concentration in the studied classrooms was 135 $\mu\text{g}/\text{m}^3$. The regression model indicated that a positive correlation between indoor PM2.5 concentration and relative humidity, also with distance from city center and classroom size. Meanwhile, the regression model revealed that the indoor PM2.5 concentration, the relative humidity, and dry bulb temperature was significant at 0.05, 0.035, and 0.05 levels, respectively. A statistical predictive model was obtained from multiple regressions modeling for indoor PM2.5 concentration and indoor psychrometric parameters conditions.

Keywords : classrooms, concentration, humidity, particulate matters, regression

Conference Title : ICESE 2015 : International Conference on Environmental Sciences and Engineering

Conference Location : Los Angeles, United States

Conference Dates : September 28-29, 2015