

MODELLING INDOOR FORMALDEHYDE EXPOSURE IN A UNIVERSITY HOSTEL BUILDING USING ARTIFICIAL NEURAL NETWORKS

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Abstract

Indoor air quality is gaining more attention by researchers and other stake holders. Formaldehyde is a major indoor air-pollutant which has attracted public attention worldwide due to its negative impact on health and can be found in household and construction products. The data set was comprised of particulate matters (1.0, 2.5 and 10), Total Volatile Organic Compound (TVOC), Relative Humidity, Daily Ambient Temperature and Formaldehyde. Sample data for Indoor Air Quality were gathered from an active sampler. The data collection was carried out in eighteen days consecutively in one room located on the ground floor of the hostel building. The Artificial neural network have proven to be an effective tool in the analysis of non-linear data by establishing a relationship between experimental and predicted data through historical data records. The results of MSE of the tested network show that the best validation performance was achieved at 0.00011101 at epoch 1 when a neural network architecture comprising 16 hidden neurons were used which was characterized by its regression value of 0.98847 indicating that the two variables between input data and target have positive relation. It is possible for the model to be improved upon by adding more indoor environmental parameters and prolonging duration of data collection to reflect seasonal variations.

Biography

Nkeshita, Fidelis is an academic staff and a PhD student with the Department of Civil Engineering, Federal University of Agriculture, Nigeria