

Indoor Air Quality analysis of 80-year-old traditional house in Kalabgoor, Telangana, India during the winter

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The traditional architecture of India, particularly residential structures in rural areas, evidently has been constructed in harmony with the nature. Some of the structures have been in operation for more than 75 years and are still in good condition. Kalabgoor, a village in the Sangareddy district of Telangana, has an abundance of traditional houses. Indoor air quality has received a great deal of attention in urban regions, but the areas around such large cities, particularly residences in the industrial zones. Industrial zone located near the site, Isnapur region, has quite an abundance of pharmaceutical companies, steel and marble industries etc which releases a lot of fumes which affects even the indoors. Air quality research was carried out by gathering data from numerous locations throughout an 80-year-old house for a period of 24 hours in each spot. The information gathered has been analysed to determine the sources of pollution and to provide design solutions to combat any such contamination. The research is carried out during India's peak winter season, in the month of December, when the wind is heavier and all the contaminants in the air are more prevalent. Results have shown what traditional houses have to offer as a solution measure for other residences with higher pollution levels.

Figure 1 shows the living room of the house where the equipment was placed. It was placed during the month of December 2021, specifically from 12'O clock on the 11th to 12'O clock of the 12th. The average results for the data entry for each pollutant for a 24-hour period in four different locations of the house is given in Table 1. The analysis for each pollutant on how harmful it is and source of the pollutant etc will be provided in the full length paper.



Figure 1 Living room

Table 1 Average data in 4 different locations of the house for various pollutants

Locations	PM ₁	PM _{2.5}	PM ₁₀	CO ₂	HCHO
Living	44.96904	77.20006	90.50933	415.1016	0.016609
Bedroom	52.98727	95.00797	109.6695	413.7083	0.015515

Kitchen	57.72337	104.1619	121.3815	450.7898	0.015927
Puja	56.78525	102.9108	118.148	523.2913	0.015527