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Causes of dampness in residential building walls in Jos Metropolis, Plateau State, Nigeria: Emphasis on microbial concentrations, biodegradation and health hazards

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Statement of Problem: Damp houses can be unhealthy and costly to remedy. Knowing more about the problems can reduce the worry and expense. Most dampness problems can be cured or minimized by simple remedial work but a few will need substantial outlays. In many instances, dampness in your home may not be present all year round and, depending on the source, may only become evident after a change in weather conditions, usually during the colder or wetter months or after periods of heavy or extreme rainfall. Jos Plateau is located on the North Central region of Nigeria. It is relatively undulating plain bounded by mountainous ridges. The prevailing climatic situation of the study area hinges upon alternate seasons of hot and cold weather conditions interspersed with an average period of about 6 months of rainfall, with July and August being the peak period. Dampness is the wetting of structural elements through moisture rise by capillary action. Dampness is one of the most serious structural defects in walls of buildings. Dampness in walls spoils paints and interior decorations, encourages the growth of bacteria and moulds, hampers aesthetics, and poses a threat to health of occupants through providing breeding conditions for mosquitoes. Dampness undermines structural integrity of wall elements, reduces thermal insulation property of building of building materials as well as affects the comfort not the occupants. Dampness causes damages to both structural and building materials and reconstruction efforts can be enormous. This study aimed at investigating the causes of dampness in the walls of some of residential buildings within Jos metropolis, Plateau State, Nigeria.

Methodology & Theoretical Orientation: The causes were diagnosed through tests, physical inspections and oral interviews. Oral interviews were held with the occupants of 500 randomly selected buildings in the study area. Fifty construction sites were also randomly selected for detailed study of the constructional practices and material adopted in building constructions within the study area. The fungi associated with the damped houses were also considered.

Findings: Results identified that about 80% of the houses investigated had damping defects at various degrees. Concentrations of fungi bacteria associated with the damp walls: *Aspergillus spp.* (55%), *Penicillium spp.* (24%), *Trichoderma sp* (12%), and *Fusarium sp.* (9%), while viable concentrations of Bacteria were <100 cfu/m³ from damp houses. The microbial concentrations of none damp houses varies between 60%-70%.

Conclusion & Significance: The results also showed that rising damp through defective damp-proof membranes and efflorescence on walling unit serve as the major causes of dampness in residential building walls. Appropriate recommendations were made as preventive and remedial measures to the problem. For example, research shows that people living in well-insulated and adequately ventilated accommodation are less likely to visit their doctor or be admitted to hospital due to respiratory conditions than those living in damp homes.

Biography

Kalada Itelima qualified as an Architect from Rivers State University of Science and Technology Rivers State, Nigeria. He is presently the Director of Kalite Associate Nigeria. He has participated in conferences where he was actively involved in home and abroad. He is also involved in designing, building construction and consultancy services. He is giving community services in Jos Plateau, Nigeria, where he is residing and to other parts of the country

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