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Sick Building Syndrome: Interdisciplinary Perspective on Indoor Environmental Quality

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Introduction

Sick Building Syndrome (SBS) has been defined as the manifestation of dermatological conditions, mucosal disorders, and general symptoms causally associated with residing or working in specific buildings. Although the term designates the building itself as "sick," the actual sufferers are its occupants, whose health and productivity are affected by environmental factors. This article synthesizes findings from medical, environmental, and architectural research to examine SBS as both a clinical phenomenon and a socio-environmental issue, highlighting its implications for workplace productivity, design practices, and regulatory frameworks.

Literature Review

Evolving Perspectives

Early research by Povl Ole Fanger (1934 - 2006) should be mentioned as being of substantial importance in the field of thermal comfort and indoor environment. His research introduced quantitative measures of odor and perceived air quality (namely Olf, Decipol) underscoring the importance of indoor environmental parameters in shaping occupant well-being. Skov, Valbjørn, and Pedersen (1990) placed great emphasis on the detailed enumeration of factors that may influence the onset of SBS, such as temperature and relative humidity, carbon dioxide, static electricity, formaldehyde, airborne dust, floor dust, microorganisms, airborne fibers, settled fibers, organic compounds in the air, lighting, noise, material evaluation, and cleanliness. The authors conducted statistical analyses of multiple environmental variables to establish the manner in which each factor affects the phenomenon of SBS. More recently, scientists (Burge, 2004) have identified common symptoms including fatigue, headaches, rhinitis, dryness of the throat, eyes, and mouth, and dermatological problems as indicative of SBS. Environmental factors—temperature, humidity, ventilation, odors, dust, mold, and bacteria—were found to interact in complex ways, either exacerbating or alleviating SBS. Burge (2004)

emphasized that while medical symptoms may appear relatively minor in isolation, their significance is amplified when combined with negative psychological predispositions or workplace stress. It should be mentioned though that at the same time other articles, such as Eriksson and Stenberg (2006), questioned the extent to which SBS impacts productivity, suggesting that its significance may have been overstated.

More recent scholarship has broadened the scope of SBS research. Wakefield-Rann and Fam (2018) argued for an interdisciplinary approach, treating indoor climate as a holistic ecosystem studied by architects, social ecologists, environmental psychologists, urban planners, and biotechnologists. Loftness et al. (2007) highlighted sustainable design as a means of reclaiming social and environmental values, stressing personal responsibility (e.g., systematic cleanliness) and material evaluation. Paevere (2008) emphasized design aspects such as furniture design, aesthetics, access to light, noise reduction, and psychosocial impacts, linking improved comfort to enhanced productivity. Cluster analysis studies (Niven et al., 2000) compared buildings with natural ventilation, identified "sick buildings," and modern designs with artificial ventilation systems. Results confirmed correlations between dust, noise, and SBS across all building types, while also affirming the benefits of contemporary environmental design in promoting well-being.

From a regulatory and policy Framework perspective, Millan (2013) advocated linking SBS to broader commitments to green and sustainable design, proposing legislation to regulate building expansion, protect water resources, and promote clean energy. Within the European Union, awareness of SBS has grown, with legal frameworks addressing indoor air quality and banning smoking in enclosed spaces. However, decentralized decision-making and conflicting economic interests have slowed progress (Olaf C. G. Adan et al., 2007). In contrast, the United States had implemented measures earlier, such as restrictions on lead and radon, setting precedents for air quality regulation.

Discussion

The literature reveals a shift from viewing SBS as a narrowly defined medical condition to understanding it as a multifaceted phenomenon shaped by environmental, psychological, architectural, and regulatory factors. While early studies emphasized symptomatology and productivity loss, later research highlights the importance of sustainable design, interdisciplinary collaboration, and policy frameworks. The complexity of SBS lies not only in its clinical manifestations but also in its entanglement with broader questions of environmental justice, workplace well-being, and sustainable urban development. Sick Building Syndrome exemplifies the intersection of health, environment, and design. Although its direct medical impact may be relatively modest, its broader implications for productivity, psychological well-being, and sustainable living are significant. Contemporary approaches emphasize interdisciplinary research, sustainable design practices, and regulatory measures to improve indoor environmental quality. Future work should continue to integrate medical, architectural, and policy perspectives, ensuring that buildings are not only structurally sound but also conducive to human health and well-being.

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