

A Review of Protocols and Guidelines Addressing the Exposure of Occupants to Electromagnetic Field (EMF) Radiation in Buildings

Authors : Shabnam Monadzadeh, Charles Kibert, Jiaxuan Li, Janghoon Woo, Ashish Asutosh, Samira Roostaei, Maryam Kouhirostami

Abstract : A significant share of the technology that has emerged over the past several decades produces electromagnetic field (EMF) radiation. Communications devices, household appliances, industrial equipment, and medical devices all produce EMF radiation with a variety of frequencies, strengths, and ranges. Some EMF radiation, such as Extremely Low Frequency (ELF), Radio Frequency (RF), and the ionizing range have been shown to have harmful effects on human health. Depending on the frequency and strength of the radiation, EMF radiation can have health effects at the cellular level as well as at brain, nervous, and cardiovascular levels. Health authorities have enacted regulations locally and globally to set critical values to limit the adverse effects of EMF radiation. By introducing a more comprehensive field of EMF radiation study and practice, architects and designers can design for a safer electromagnetic (EM) indoor environment, and, as building and construction specialists, will be able to monitor and reduce EM radiation. This paper identifies the nature of EMF radiation in the built environment, the various EMF radiation sources, and its human health effects. It addresses European and US regulations for EMF radiation in buildings and provides a preliminary action plan. The challenges of developing measurement protocols for the various EMF radiation frequency ranges and determining the effects of EMF radiation on building occupants are discussed. This paper argues that a mature method for measuring EMF radiation in building environments and linking these measurements to human health impacts occupant health should be developed to provide adequate safeguards for human occupants of buildings for future research.

Keywords : biological affection, electromagnetic field, building regulation, human health, healthy building, clean construction

Conference Title : ICSBS 2020 : International Conference on Sick Building Syndrome

Conference Location : New York, United States

Conference Dates : October 08-09, 2020