


Event:
Date:
Place:

ENERGY in BUILDINGS 2024
November 22-23, 2024
Athens, Hellas



#	Dr. John McKeon MD	
Title:	Principal at iAIR Institute	
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Presentation title:	Advancing Indoor Environmental Quality Metrics: Integrating Biomarkers and Real-Time Monitoring for Health-Optimised Buildings	
<p>The indoor environmental quality (IEQ) of our buildings and homes plays a critical role in our health and well-being, resulting in ongoing research focused on creating comfortable and health-optimized indoor spaces. This research highlights the evolving understanding of IEQ and its connection to human health, emphasizing the need for comprehensive standards that assess and enhance indoor environments. Many current IAQ sensors face challenges related to accuracy, calibration, and real-time responsiveness, making it difficult to reliably assess their direct impact on occupant health. This demonstrates the need to further explore the integration of health-based metrics to derive meaningful insights.</p> <p>A recent ASHRAE strategic plan calls for the development of IEQ metrics that could integrate health-based measures, such as biomarkers. Biomarkers—biological indicators that provide objective data on physiological changes—are increasingly recognized for their potential to assess the impact of indoor pollutants on human health. This paper explores various types of biomarkers, including vital signs, respiratory markers, and blood and urinary indicators, to measure short- and long-term exposures to indoor pollutants. Wearable sensors and real-time environmental monitoring technologies also offer promising opportunities for continuous IEQ assessment, providing real-time insights into how indoor environments can affect health. Additionally, integrating subjective data from occupant surveys with objective biomarker data can offer a more holistic approach to understanding IEQ’s impact on perceived well-being.</p> <p>However, challenges such as standardization, validation, and ethical considerations related to data privacy must be addressed. This paper advocates for multidisciplinary collaboration among researchers, policymakers, architects, and engineers to advance IEQ metrics and create healthier indoor environments. This effort should be pursued with privacy, data security, and public trust kept at the forefront of decision-making. Continued research in this field will contribute to improved public health outcomes and enhance the quality of indoor spaces for future generations.</p>		

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Short CV:

John McKeon, M.D. is Principal at the Indoor Air Innovation & Research Institute, a 501(c)6 where he leads efforts to advance the conversation around healthy buildings, partnering with industry leaders and driving change through innovative research.

Dr. McKeon is an active member of several influential committees in the built environment, including ASHRAE's Environmental Health Committee, NAHB Healthier Homes and Communities Subcommittee and is the current Chair of IEC SC 59D Advisory Group 17 Allergen Team, contributing to the development of industry standards, advocating for healthier indoor environments and practical solutions that connect industries and research.

CV:

Dr. John McKeon is Principal at the iAIR Institute, where he leads efforts to bridge the gap between health outcomes and the built environment. A qualified physician and Fellow of the Royal College of Surgeons in Ireland, John has dedicated his career to advancing research, education, and innovation in indoor air quality and health.

With a strong foundation in medicine and entrepreneurship, John has worked extensively on understanding the relationship between indoor air quality, building design, and human health. He is a member of several influential committees, including ASHRAE's Environmental Health Committee, NAHB Healthier Homes and Communities Subcommittee and is the current Chair of IEC SC 59D Advisory Group 17 Allergen Team.

John collaborates with government agencies, industry leaders, and organisations to develop practical solutions and advocate for healthier indoor spaces. At the iAIR Institute, he focuses on advancing conversations around healthy buildings, driving change through innovative research, and partnering with industries to create practical and impactful solutions.

John qualified as a doctor from Trinity College Dublin, is a Fellow of the Royal College of Surgeons in Ireland, and also holds his United States Medical Licensing exams. He maintains a keen interest in clinical medicine and has had several publications in medical journals.

In addition to his entrepreneurial and business activities, John maintains an interest in university research and knowledge exchange practices. He is an Adjunct Professor in the Centre for Practice and Healthcare Innovation, Entrepreneur in Residence in the Faculty of Health Sciences, guest lecturer at Trinity College Business School, and a member of the Knowledge Transfer & Innovation Committee, Trinity College Dublin.