



Creating Healthy, Safe and Sustainable Indoor Environments: Parliamentary & Science Committee Meeting: 15 January 2024 at Portcullis House

Sponsored by IMechE, this event aimed to tackle the challenges associated with maintaining indoor environments within both new and existing residential, workplace, and educational settings. This insightful gathering convened experts in building engineering, indoor air quality, public health, and project delivery to share knowledge and explore innovative solutions. The event was chaired by Stephen Metcalfe MP, with speakers Dr Alexandra Smyth of RAEng, Prof. Nicola Carslaw of the University of York, Michael Ralph of NHS Scotland, Prof. Sani Dimitroulopoulou of the UK Health Service Agency and Chris Rush of Hoare Lea.

The seminar highlighted the critical importance of prioritizing healthy, safe, and sustainable indoor environments, even in the face of conflicting traditional energy conservation methods. As our indoor lifestyles continue to expand, understanding the impact of indoor environments on health and well-being is paramount, alongside efforts to decarbonize our built infrastructure.

Speakers identified various challenges, emphasizing the complexity and interconnectedness of factors affecting indoor air quality. Challenges include the impact of double glazing, the importance of ventilation, the need to include staff areas and canteens in hospitals, the difficulty of retrofit in active hospitals, and the spread of cooking fumes when family life is centred around cooking areas. Achieving optimal outcomes requires simultaneous consideration of ventilation, contaminants, and energy efficiency to prevent unintended consequences.

Innovative solutions discussed centered on enhancing building ventilation rates through thoughtful design and effective ventilation systems, incorporating both mechanical and natural approaches. Additionally, technological advancements such as sensor integration and data analytics offer promising tools for monitoring and regulating indoor air quality.

Despite progress, challenges persist within the built environment sector, necessitating efforts to break down industry silos, promote collaboration, and integrate diverse disciplines. Effective interdisciplinary collaboration, particularly in early project stages, is crucial for addressing conflicts between thermal efficiency, material properties, toxins, ventilation, and air quality.

Technological advancements, notably Building Information Modelling (BIM) and artificial intelligence, hold promise for overcoming these challenges by facilitating data integration, holistic design approaches, and simulation modelling.

Sources of design guidance include CIBSE's design guidance for schools; the Institution of Air Quality Management (<https://iaqm.co.uk/guidance>); NICE (<https://nice.org.uk/guidance/ng149>); the Chief Medical Officer's report on air pollution; and DEFRA air quality expert committee. The chairman asked whether the Building Regulations need to be changed.

Overall, the event provided valuable insights and practical solutions for maintaining healthy indoor environments while acknowledging ongoing challenges and the importance of

collaboration. Engaging with these challenges and adopting comprehensive approaches, the built environment sector can significantly improve indoor air quality and contribute to a healthier, safer, and more sustainable future. Looking ahead, continued dialogue and innovation will be essential for addressing emerging issues and shaping resilient indoor environments.

Peter Egan, Worshipful Company of Engineers

(465 words)