



Addressing IEQ issues can ensure that a lease contract renewal is not put at risk due to an IEQ problem.

## EASING

# INDOOR INHALATION

*CETEC's ADAM GARNYS discusses the state of indoor environment quality (IEQ) in Australia, questions where the responsibility for IEQ lies and debates how a balance can be created for better IEQ in the long run.*

In July 2012, Australia hosted its first ever International Society of Indoor Air Quality and Climate (ISIAQ) conference – Healthy Buildings 2012. As the conference is traditionally held in the US or Europe, this was a sign of the increasing emphasis on indoor air quality (IAQ) and indoor environment quality (IEQ) in Australia, both in research and in practice.

The conference's content revolved strongly around the presentation of new academic scientific-based papers in IEQ from universities around the world. However, strong secondary themes at Healthy Buildings 2012 were green building effects on IEQ and occupant productivity.

This year was the first in the conference's 20-year history that included a productivity masterclass. The masterclass was conducted by world leaders in IEQ and productivity, and the outcomes are likely to lead to an internationally consistent method of measuring the occupant productivity gain, or loss (percentage) that can be attributed to a building's indoor parameters, such as temperature, ventilation rate, air contaminants, light and noise.

### THE STATE OF IEQ IN AUSTRALIA

The next wave in building sustainability has been firmly captured by the property industry. The drivers for IEQ assessment have shifted from safety and compliance to optimisation. Occupant performance drivers are now being used as a means of differentiation for a building or facilities management provider.

IEQ optimisation firstly involves ensuring that the original purpose of a commercial building is not forgotten in the race to lower the energy bills. The original purpose of a commercial building is to provide a space where a business can conduct its work safely and productively. The building shouldn't interfere with or be a hindrance to staff daily activities. If designed and run correctly, the building should actually enhance the productivity of a group of workers.

IEQ is also about asset value optimisation. Savvy facilities managers and owners can use IEQ to differentiate their building and protect its value. For example, addressing IEQ issues correctly can ensure that a lease contract renewal is not put at risk due to an IEQ problem, as was the case recently at a major government-tenanted building in Canberra.

Owners and operators at the top end of the property market are increasingly using IEQ as a method to differentiate their office buildings and facilities management services. Local Government Super and GE Capital recently conducted detailed studies using physical IEQ testing of a number of buildings in their portfolios, occupant surveys and a peer-reviewed matrix to calculate the value of building upgrades that had an effect on the quality of the air, light noise and occupant satisfaction in the buildings.

The added value to these assets was up to \$188 a square metre, compared to \$18 a square metre from the energy efficiency changes. IEQ returned nine times the energy benefit due to the high value of the people working in the buildings.

The Green Building Council of Australia (GBCA) is about to expand its tool offerings to include operational IEQ through its new Green Star Performance tool. Romilly Madew, chief executive of the GBCA, announced at this year's Facility Management Association of Australia (FMA) Ideaction conference that the new paradigm in green buildings is "people" and that "productivity is key".

She highlighted the importance of green buildings being productive spaces for their occupants by citing examples of Green Star rated buildings that had displayed considerable productivity gains for their occupants, including the City of Melbourne's CH2, Umow Lai's head office productivity study by CETEC and 500 Collins Street. Madew stated, "The GBCA now recognises the importance of the facilities manager in the next wave of sustainable innovation." The facilities management industry has been a major contributor to the new Green Star Performance tool development, which focuses on existing buildings. She also talked about the need for collaboration with facilities managers in the early phases of building design.

### WHERE DOES THE RESPONSIBILITY FOR IEQ LIE?

The total responsibility for IEQ lies with the facilities manager, the owner and the occupier. Each group has certain measurement metrics that they have the most influence on, as reflected in the NABERS Indoor Environment tool.

For the facilities manager, these include:

- thermal comfort
- airborne microbials
- HVAC noise
- ventilation effectiveness, and
- carbon dioxide levels.

For the owner, these include:

- thermal comfort
- airborne pollutants
- HVAC noise
- lighting
- glare
- radiation
- building design and location
- natural light and outside view, and
- amenities.

For the occupier, these include:

- airborne pollutants
- lighting
- acoustic comfort
- décor
- layout and ergonomics workstations
- space and privacy
- personal control of environment
- pre-existing health, and
- behavioural conditions.

### WORKING TOGETHER TO IMPROVE IEQ

Balance can be created between the various parties for better IEQ in the long run through benchmark testing at the beginning of a relationship, regular communication on IEQ issues and involvement of all three stakeholders in upgrades or when making changes to a building.

An example is when decisions are made regarding energy conservation versus IEQ, especially in the current climate of tightening HVAC energy use. In the situation where occupants demand thermal comfort while the facilities manager is pressured to reduce energy, balance can be found by testing the IEQ of a building in its current state using a nationally recognised protocol, such as NABERS Indoor Environment, then using the outputs to make rational decisions involving all parties in the process.

The importance of actually measuring IEQ in a building is in some cases poorly recognised. Too often a major reliance is put on design features that will provide a high quality indoor environment. While it is important to have the best hardware, when making changes to a building, on-site pre- and post-occupancy measurement are essential in understanding the faults of the existing space, tailoring the design to improve the space and then providing benchmark readings for comparison throughout the lifetime of the building.

This 'soft landing' approach involves facilities managers in the design of a new or retrofitted building and is being seen as a new paradigm to the traditional approach of a 'hard landing' into a new green building that is often difficult to run.

Facilities managers are well-placed to have a major impact on the quality of the space for an occupant and play a vital role in the value of assets through tenant satisfaction. **FM**

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