

INDOOR AIR QUALITY

Understanding sick building syndrome

Finding a direct physical cause of sick building syndrome is difficult, if not impossible. But there is much that can be done to prevent, alleviate and — even — solve the problem.

There is a fine balance among the aspects of measured indoor air quality, performance of buildings, techniques of design and construction and very real responsibility of management of workers in buildings. That is how Richard Rooley sees the task facing Dr Ivan Vince in the compilation of his report on the sick building syndrome.* Billed as the most comprehensive report yet on the causes and prevalence of sick building syndrome and its long term implications for the design, management and maintenance of office buildings, it also sets out to provide solutions to the problem.

An important characteristic of sick building syndrome (s.b.s.) is that, unlike hysterical epidemics, it also attacks

managers. Despite that observation, the fact remains that clerical workers are more prone to s.b.s. than professional or managerial staff.

Elusive objective

Try to relate s.b.s. to indoor air quality has proved to be an elusive objective. Dr Vince observes that office air quality generally meets existing standards by a wide margin. However, these standards apply to outdoor levels. Indoor air pollution is different — not only in concentration but also in kind — and people in developed countries spend most of their time indoors.

Sick building syndrome also affects managers

There is the further point that fully air-conditioned offices have the lowest levels of outdoor generated pollutants. Since

these are the very offices that are most prone to s.b.s., outdoor pollutant sources are logically eliminated as primary agents of s.b.s.

The mystery is compounded by the fact that no single compound has been indentified to explain the excess of symptoms — lethargy, stuffy or running nose, dry throat, headache etc — found in affected versus unaffected buildings. Additionally, recently constructed buildings where indoor pollutant levels might be expected to be high because of out-gassing from new furnishings and because they are well sealed appear to suffer markedly less from s.b.s. than those built in the late 1970s.

Passive smoking

Nor is it possible to attach firm blame to passive smoking. In the USA, for example, of over 200 air-quality complaints investigated by a government body, only 5% were proved to be related

to smoking.

Considering how the climate in a sealed building affects the occupants provides some clues to the causes of s.b.s.

Trying to relate s.b.s. to indoor air quality has proved to be an elusive objective

The important variables affecting thermal comfort the temperature of the air and of the room boundaries, relative humidity and air speed. In particular, draughts and other variations in air speed indoors should be avoided.

'Fresh air' proves to be difficult to define. It is certainly not polluted outdoor air, nor is it chemically pure air or, for that matter, ionised air.

Odour

The report attaches considerable importance to odour and chemical irritation and observes, 'It

appears very likely that odour cues point to the "freshness" or "staleness" of the air. This is not surprising since the human sense of smell outperforms the most delicate equipment in detecting some chemicals.'

There is a host of other factors that could contribute to or cause sick building syndrome.

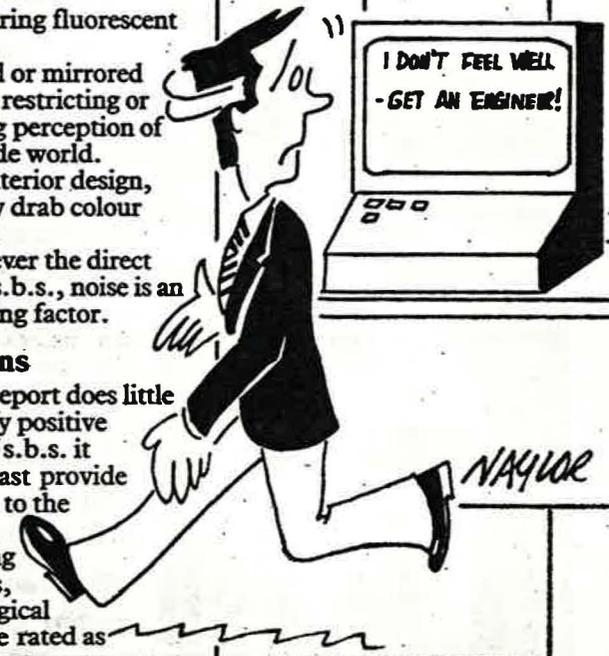
- Low ceilings resulting in glare from overhead lights.
- Flickering fluorescent lights.
- Tinted or mirrored windows restricting or distorting perception of the outside world.
- Bad interior design, especially drab colour schemes.
- Whatever the direct cause of s.b.s., noise is an aggravating factor.

Solutions

If the report does little to identify positive causes of s.b.s. it does at least provide solutions to the problem. In existing buildings, psychological effects are rated as

Without a doubt, people are growing more concerned about the quality of the air they breathe in their work-a-day lives. Smokers are increasingly finding themselves out of favour, visible air pollution in factories is being tackled, and sick building syndrome often seems to amount to an inadequate supply of fresh air.

If only buildings could tell us when they were 'sick'....



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