



A NEW SET of regulations being prepared in the USA to combat sick building syndrome will send shock waves through the building industry.

If the regulations are adopted as the prosecution standard in the American courts, it will force a major rethink on the way buildings and their services are designed. It will also place an onerous duty of care on building owners, contractors and maintenance firms.

The regulations are being prepared by the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

ASHRAE has no legal power, like its British counterpart CIBSE, the services engineers' institution. But it does have a series of strict design guidelines that its members must follow.

Professor Alan Hedge of Cornell University's department of design and environmental analysis predicts that the new documents, ASHRAE '81R, will have "quite spectacular" implications.

"It is unlikely that research will uncover a single cause of SBS. But the general feeling is

that improving the quality of indoor air across the board will eliminate many of the symptoms," he says.

"Meeting ASHRAE standards is not a legal requirement, but it has been adopted as the prosecution standard in the US courts."

In other words, the American SBS victim can now use the standards as a benchmark from which to make his or her case – with increasing success.

Hedge cites a recent case in California: "The unfortunate victim had collapsed at work and suffered some loss of memory as a result. Indoor pollutants in the building were found to be negligible, and its owners were protected by an insurance scheme.

"So the victim sued the architects, and received an out of court settlement worth US\$643 000 (£380 000)."

But the most startling fact is how many organisations the revisions will affect. "When the new standards come in, virtually

□ It will have to be demonstrated before installation that the system will work as it has been designed, delivering the air volumes specified. This will almost certainly involve computer simulations.

□ Any outside air taken into the system will have to meet with Environmental Protection Agency pollution standards – this may mean that installations in large cities will need some kind of front-end selective chemical filtration.

□ All indoor air pollutant sources, such as photocopying rooms, will have to be controlled or removed from the system – dilution will no longer be adequate.

Hedge says that ASHRAE '81R will also include an updated series of minimum air delivery requirements. And the new delivery rates, instead of being merely nominal, will have to be measurable in a zone between 1 m and 2 m from the workstation.

The rates proposed are:

□ 7.5 litres per second per person for general space – triple the current requirement of 2.5 lps

□ 10 lps for office space and 15 lps for conference space – neither has any current requirement

□ 30 lps for any room with smokers in it – again triple the current 10 lps requirement.

So what are the implications for the UK if, as Hedge predicts, CIBSE follows the ASHRAE lead?

He says there is already a considerable market for specialist firms that certify buildings as "healthy" on a regular repeat basis. And with the number of litigations increasing, that need will grow.

"We also have to look at new ways of getting ventilation to people and possibly let them control their own environments, to meet individual requirements," says Hedge.

"But whatever happens in the long run, the new standards will drive through a rethink in ventilation design, because health costs, both in terms of insurance and work days lost, continue to rise."

## Sick notes

*Sick building syndrome is now widely recognised as a major problem – not only for the 80% of workers who suffer from it, but increasingly for the people who design the buildings they have to work in. Matthew Coomber reports on steps being taken in the USA to combat SBS.*

no existing building in the country will meet them," says Hedge. "The implications for building are enormous."

While the ASHRAE standards only apply to new buildings, Hedge predicts that the tighter provisions in ASHRAE '81R will promote fundamental changes in the thinking behind environmental control.

And the new provisions will be very tight. Under the proposed ASHRAE '81R:

□ The design of any new ventilation system will have to be fully documented, complete with the reasoning behind any assumptions made. This will help to protect the designer should there be any litigation.

□ All system components will have to be designed for maintainability – this alone will mean major design changes for equipment manufacturers.