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Futile filters

Standard 62 may hold the answer to the smoking problem, says Ewen Rose

Attempts to control the health risks of tobacco smoke by filtering indoor air are pointless, according to a senior physicist at the US Environmental Protection Agency.

"It is like trying to filter a lake to control water pollution," said James Repace. "Air cleaners with high efficiencies for captured particles are capable of reducing, but not eliminating, the environmental tobacco smoke tar particles in room air, and are not at all effective for gases, which contain most of the irritants.

"Even expensive particulate air cleaners cannot remove enough tar particles in room air to eliminate the cancer risk from environmental tobacco smoke."

He favours an approach where smokers are separated from non-smokers, to control the source of the pollutant rather than trying to reduce its impact. This means restricting smoking to separately ventilated spaces, or banning smoking indoors, which would be cheaper.

Pollution

"Smoking is a major source of indoor air pollution. It produces about 4,000 chemicals in the particle phase and about 500 chemicals in the gas phase. The tar particles contain most of the cancerous substances in tobacco smoke. The gases contain most of the irritating substances.

"Providing a level of ventilation that would produce only 20% dissatisfaction in a group of non-smokers requires in excess of 100 CFM/occupant - substantially beyond the maximum capacity (60 CFM/occ) of typical mechanical ventilation systems at typical design occupancy. Further, ventilating a building to reduce cancer risk to a level that would meet one proposed standard would create a virtual windstorm indoors, requiring 5,400 CFM/occ."

Mr Repace believes that setting up separate smoking areas in buildings is not a technically challenging issue, but can be expensive.

> **"Air cleaners can't remove enough tar"**

"This area should be under negative pressure in relation to the non-smoking areas of the building and should be ventilated at the maximum capacity of the ventilation system. Special smoking areas in existing buildings may require structural or mechanical system modification.

"Simply separating smokers from non-smokers within a room cannot keep tobacco smoke from diffusing throughout the space and is effective only in reducing peak, not average, smoke concentrations. This action obviously is better than nothing for short-term exposures in restaurants and airplanes. But for effective control of exposure to environmental tobacco smoke in the workplace, the only viable approach is source control - restricting smoking to separately ventilated smoking areas or banning smoking entirely."

However, Art McIvor, the incoming chairman of the ASHRAE Standards Committee, believes that the industry has the expertise and the technology to be able to control indoor pollutants and believes that revisions to Standard 62 should include detailed guidance for engineers on how to deal with these problems.

Basics

Mr McIvor does not agree with those members who seem to have wearied of the whole revision process and want to take the standard back to basics.

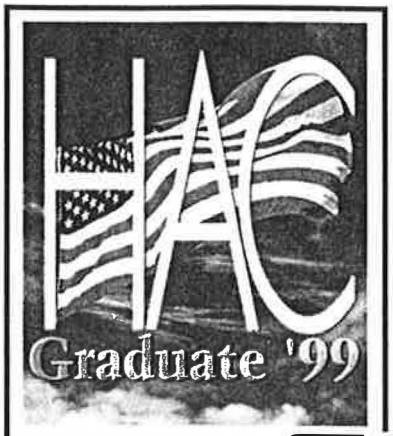
"They suggest that it is not ASHRAE's responsibility to consider the health issues and that we should be only concerned with providing a minimum ventilation level for the building. That is not enough. You have to give the engineer the tools to be able to deal with what he comes across.

"I do have some sympathy because many feel that the revision process is taking so long and has attracted so much attention, but it is very important work."

He also believes that ASHRAE has an obligation to consider the issue of tobacco smoke in its standard: "You cannot apply what is happening in California [where smoking is banned in public places] everywhere else."

Mr McIvor feels that the final version of Standard 62 should provide detailed guidelines for calculating ventilation rates to optimise air quality and should not be restricted to simply providing minimum levels to satisfy legal requirements.

"We have the ability and the equipment to remove many of the harmful particulates from indoor air," added Mr McIvor.



DALLAS – the fourth episode

Hold on to your stetsons, it's HAC Graduate Award time again.

The fourth awards ceremony will take place on October 5 in Harrogate during the CIBSE conference and the winner will be on his or her way to Dallas for next year's ASHRAE Conference.

We are now inviting building services graduates who have either just completed their degrees or who have recently begun their careers with a building services firm, to enter.

As well as the first prize of the trip to the USA, there are generous cash prizes for runners up and all finalists will be invited to the gala dinner presentation ceremony hosted by ASHRAE president Bill Goodman.

● For an entry form please contact Catherine Stevenson on 0181 277 5401 (email: catherines@trenton.emap.co.uk)