

UK building standards failing to deliver healthy ventilation, say experts

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Building standards are failing to ensure offices, shops, public buildings and homes provide healthy ventilation, say leading experts in a report on air pollution by England's Chief Medical Officer.

The panel of scientists and engineers described a system where buildings

were complying with the standards at the design phase but there was limited scrutiny to see if those standards were being met as the buildings went up—or when in use or adapted over time.

Writing in the [Chief Medical Officer's \(CMO\) report](#), they said, "Whilst new buildings are subject to [building](#) standards, these are quite limited in scope and often poorly applied. There is good evidence that many buildings constructed to recent building standards fail to meet the minimum requirements for a number of aspects including [ventilation](#)."

When it came to older buildings, the expert panel noted that: "Most critically these standards are not relevant or applicable to most older buildings in the U.K."

Rigorous approach

Cath Noakes, Professor of the Environmental Engineering for Buildings at the University of Leeds and the lead author of the technical review on solutions for indoor air quality in the CMO's report, said, "For years, we have recognized that people need to be protected from [air pollution](#) outdoors.

"Now, there is growing evidence that we need to adopt the same rigorous approach to indoor air quality and acknowledge that it plays a significant role in people's health and well-being through exposure to pollutants and pathogens.

"The technology exists to help keep people safe. We just need to ensure that it is in place, is working effectively and that people are able to use ventilation properly."

Professor Tim Sharpe, Head of the Department of Architecture at the University of Strathclyde, who was one of the expert panel members,

said, "Change is needed to ensure that we design buildings with good ventilation and maintain this provision over time.

"The way that we design new buildings and retrofit existing buildings can have major impacts on occupants' health and as we make buildings more energy efficient it is vital that we also make sure that they provide healthy and useable environments."

Good ventilation

Factors affecting indoor air quality include dust, bacteria, viruses, gases such as [carbon monoxide](#) and nitrogen dioxide, [volatile organic compounds](#)—gases released from some liquids and solids—and synthetic fibers.

Recent reports from the World Health Organization, the Royal College of Pediatrics and Child Health and the Royal Academy of Engineering have all argued for measures to improve indoor air quality.

One of the simplest technologies to reduce the health risks from [indoor air pollution](#) is good ventilation.

The experts note in the report: "Ensuring good ventilation can reduce people's exposure to indoor pollutants that cannot be fully controlled. Ventilation is also essential for wider health and well-being, thermal and moisture control in buildings and it can reduce people's exposure to airborne infectious diseases including COVID-19 and influenza."

Where ventilation cannot be fully effective, it can be supplemented by air cleaning technology, such as HEPA—or high efficiency particulate air—filtration. A HEPA filter can remove particles the size of bacteria and viruses from the air.

Inadequate heating

With homes, the experts say the focus should be on trying to improve indoor air quality in older homes. 80% of homes in the U.K. were built before 1990.

"People living in the most deprived areas and in particular in rented properties are more likely to live in homes that are overcrowded with lower energy efficiency, have inadequate heating and ventilation, are poorly maintained, and are more likely to have poor indoor air quality," said the expert panel.

"Tackling domestic indoor air quality has several specific challenges, including that the responsibility for identifying a problem often lies with the owner who may not have the knowledge, funds, or agency to tackle the problem."

The [expert panel](#) recognized the need to improve building standards. They say the standards rely on guidance notes and these had become the de facto standard rather than the minimum requirement. Expert skills were being lost as builders, architects and engineers followed the guidance notes rather than designed from first principles.

Also, changes to standards had been driven by single issue concerns, often at the cost of ventilation and indoor air quality. For example, buildings had been made more airtight to boost energy efficiency.

Professor Noakes added, "The solutions exist to ensure we can improve indoor air quality. We need to strengthen the systems that ensure they are implemented and working effectively. At the same time, we must build our knowledge base to understand the economic and social costs that poor [indoor air quality](#) can cause."

Provided by University of Strathclyde, Glasgow

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