30 September 2022

Australian Academy of Science submission to the
Indoor Air Quality Handbook – review and update

The Australian Academy of Science welcomes the opportunity to provide evidence informing the update of the Australian Building Codes Board's Indoor Air Quality handbook.

The Academy:

- Emphasises the importance of ventilation for minimising airborne pathogen transmissions and improving air quality.
- Recommends the handbook includes guidance to ensure heating, ventilation and air conditioning (HVAC) systems are designed to maximise ventilation without air recirculation.
- Recommends requiring outdoor flow rates are calculated on a case-by-case basis using European Committee for Standardisation (CEN) Standards or similar for buildings using natural and hybrid ventilation.
- Recommends the handbook includes a requirement for air cleaning and disinfection devices in environments where ventilation improvement is difficult – such as germicidal ultraviolet irradiation.

The COVID-19 pandemic has highlighted the critical importance of indoor air quality to minimise contagious pathogen spread, and ventilation, in particular, is a key factor to consider for ensuring healthy environments in public spaces. Assessments of infection risk should be a key component of indoor air quality evaluation.

Properly designed ventilation, including mechanical, natural and hybrid systems, can minimise airborne pathogen transmission. Conversely, inappropriate ventilation design can increase transmission risks. While recirculation of air in HVAC systems can save energy and related costs, it can also distribute contaminated air to areas that would not have been affected otherwise. Outdoor air in the supply mix can help mitigate this.

HVAC filters should have a minimum efficiency reporting value of 13 and should be customised to maximise ventilation in occupied spaces. For buildings using aeration or other means of natural ventilation, outdoor flow rates should be measured. Outdoor air flow rate is dependent on specific local conditions and should be estimated case-by-case using the CEN Standard or similar.

In environments where adequate ventilation is not able to be achieved, air cleaning and disinfection devices such as germicidal ultraviolet irradiation can be used to reduce pathogen transmission and improve air quality. The point of application of these treatments should be considered depending on circulation or recirculation of air flow, and the dose of radiation vs the length of time for irradiation.

We have provided below a list of references with greater detail supporting this information or recommend contacting Distinguished Professor Lidia Morawska FAA for further advice on ventilation and air flow at l.morawska@qut.edu.au.

To discuss or clarify any aspect of this submission, please contact Mr Chris Anderson, Director Science Policy at Chris.Anderson@science.org.au.

Sources and further information:

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