

# Blueprint for mandating indoor air quality for public buildings in form of standards

March 28 2024

---



Professor Morawska is leading international experts presenting a blueprint for national indoor quality standards for public buildings. Credit: QUT

In [research](#) published in the journal *Science* experts addressed setting standards for three key indoor pollutants—carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), PM<sub>2.5</sub>, which are particles so small they can lodge deep in the lungs and enter the bloodstream—and ventilation rate. The paper is titled "Mandating indoor air quality standards for public,"

Distinguished Professor Morawska, from the QUT School of Earth and Atmospheric Sciences, internationally known, among others, for leading the appeal to the WHO to recognize the airborne transmission spread of the COVID-19 virus early in the pandemic, has continued to raise the importance of adequate indoor air quality for [public spaces](#).

"Most countries do not have any legislated indoor air quality (IAQ) [performance standards](#) for public spaces that address concentration levels of IA pollutants," Professor Morawska said.

"To have practical value, IAQ standards must be implementable by designing new buildings that are built, operated and maintained to standard or retrofitted to meet the standards.

"While there is a cost in the short term, the social and [economic benefits](#) to [public health](#), well-being and productivity will likely far outweigh the investment in cost in achieving clean indoor air."

Professor Morawska said CO<sub>2</sub> sensors were readily available, inexpensive and robust and should be used as a proxy to measure pathogens and CO<sub>2</sub> during human occupancy in a public space.

"CO<sub>2</sub> can serve as a proxy for occupant-emitted contaminants and pathogens and to effectively assess ventilation quality," she said.

"We propose a CO<sub>2</sub> concentration level of 800ppm with the proviso that outdoor concentration is used as a baseline and recognition of the fact that outdoor concentrations are increasing due to emissions to the atmosphere that outweigh removal.

"Another key indicator of air quality we addressed is the amount of PM<sub>2.5</sub> and we propose the WHO air quality guidelines as a basis for indoor air quality standards but with a 1-hour averaging time, as the 24 hours of the WHO AQG is much longer than people usually spend in public places."

Professor Morawska said mechanical ventilation systems should remove and dilute human-emitted and other indoor-generated pollutants at a higher rate than their production so that they would not accumulate in indoor air.

"The technologies for measuring ventilation already exist in most modern mechanically ventilated buildings but monitoring ventilation rates in terms of clean air delivered to the space requires us to consider the number of people and their activities in the space to ensure adequate IAQ.

"A practical ventilation standard could be air from outside (assumed to be clean), or clean recirculated air to the entire occupied zone and with airflow not directed from one person to another.

"Additional measures in support of ventilation, such as air cleaning and disinfection, could greatly reduce the need to increase the outdoor air supply, which carries a heavy energy demand.

"Filtering recirculated air is an effective way to reduce concentration of, and thus our exposure to, airborne particulate matter, allergens and pathogens."

**More information:** Lidia Morawska, Mandating indoor air quality standards for public, *Science* (2024). [DOI: 10.1126/science.adl0677](https://doi.org/10.1126/science.adl0677).  
[www.science.org/doi/10.1126/science.adl0677](https://www.science.org/doi/10.1126/science.adl0677)

Provided by Queensland University of Technology

Citation: Blueprint for mandating indoor air quality for public buildings in form of standards (2024, March 28) retrieved 28 April 2024 from <https://phys.org/news/2024-03-blueprint-mandating-indoor-air-quality.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.