Simple measures can go a long way to combatting air pollution in schools, say experts

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Most UK primary schools experience levels of pollution which exceed the safe levels set out by the World Health Organization, yet simple measures can cut outdoor and indoor exposure of toxins by almost half, according to a new study from the University of Surrey.

Working with a select number of London schools, researchers from Surrey's Global Center for Clean Air Research (GCARE) investigated whether putting up a green screen along the perimeter fence of a school, installing air purifiers in classrooms, and organizing school street initiatives during pick-up and drop-off hours, improved air quality of classrooms and playgrounds. These initiatives were funded by Impact on Urban Health.

The researchers found that air purifiers in classrooms reduced indoor pollution concentrations by up to 57%, and the School Streets initiative, which stops motor vehicles driving past schools at the start and end of school days, reduced particle concentrations by up to 36%. Green screens at the school boundary reduced some of the most dangerous outdoor particle levels coming from roads by up to 44%, depending on wind conditions.

Prashant Kumar, founding Director of the Global Center for Clean Air Research (GCARE) at the University of Surrey, said:

"Everybody, especially our children, deserves to live and work where the air is as clean and safe as possible. Unfortunately, the reality is far from ideal, with many of our schools unwittingly exposing children to harmful pollutants. The problem is particularly bad at schools near busy roads.

"Our research offers hope to many who care about this issue, as the results show that taking reasonable action can make a positive difference."

Ten million students worldwide spend 30% of their daily lives at school, with 70% of this time being spent indoors. Currently, 7,000 UK schools breach the World Health Organization's air quality limits, leaving children vulnerable to respiratory diseases, affected lung and brain health, behavioral problems, and increased risk of cancer.

Kate Langford, Program Director of the Health Effects of Air pollution program at Impact on Urban Health, funders of the research, said:

"Every child has the right to learn in an environment that keeps them safe and healthy. But, every day, children are exposed to dangerously high levels of air pollution in and around schools.

"Our partnership with Arup, Global Action Plan and the University of Surrey has shown there are practical ways that we can protect children in and around schools and can help guide schools to implement these solutions.

"These measures now need to be combined with efforts from local authorities at regional and national levels to improve air quality and create healthier places for children to live, learn and play."

Larissa Lockwood, Director of Clean Air at Global Action Plan, said:

"Schools should be safe places of learning, not places where students are at risk of health hazards. There is no safe level of air pollution, but children are particularly vulnerable to its impacts including the development of organs and their ability to learn. Services like the London Schools Pollution Helpdesk ensure that schools have access to advice on what they can do to reduce exposure to air pollution, including the measures tested in this research. But this needs to be rolled out nationally—all children must be protected from the health effects of air pollution in their everyday lives."

Professor Prashant Kumar concluded:

"My simple plea to decision-makers in the UK is this: simple actions speak louder than words. By giving every school resources to implement one of the measures detailed in our research, they could make a world of

difference to tens of thousands of children in this country."

The study was co-designed by Global Action Plan and Arup and supported by Impact on Urban Health.

The research was published in the journal *Atmospheric Environment*. Schools looking to implement changes can use a toolkit for guidance and should seek advice from an air quality specialist.

More information: K.V. Abhijith et al, Investigation of air pollution mitigation measures, ventilation, and indoor air quality at three schools in London, *Atmospheric Environment* (2022). DOI: 10.1016/j.atmosenv.2022.119303

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