

Effects of Indoor Air Quality on Children and Young People's Health Call for Evidence

Background

The Royal College of Paediatrics and Child Health (RCPCH), in collaboration with the Royal College of Physicians (RCP), has established an Indoor Air Quality Working Group. The Working Group's aim is to produce an evidence-based report on the issues affecting the health of infants, children and young people exposed to poor indoor air quality in homes and schools, considering both indoor and outdoor sources of pollution. Indoor air quality refers to any airborne chemical or biological pollutants, as well as heat and moisture conditions. This work builds on the [*Every breath we take: the lifelong impact of air pollution*](#) report published by the RCP and RCPCH in 2016.

Responses to this call for evidence will feed into a report being developed by the Indoor Air Quality Working Group. The report will raise awareness of existing evidence relating to indoor air quality and child health, make recommendations based on the available evidence, and highlight key areas where future research is needed.

Guidance for respondents

Your contribution to this consultation is greatly appreciated. Please note the following guidance for respondents:

- Please submit your response using the template provided below. Completed templates should be submitted as a MS Word file (not PDF) and not contain any logos, embedded pictures or macros.
- Submissions should be based on published literature wherever possible, with the literature referenced and electronic links provided. References may be provided in any style, as either footnotes or endnotes.
- Please submit your response as a single document. If you would like to add any annexes or appendices, please include these in the same document.
- Please try to be concise – we have given a maximum word count **for each section** below.
- Please focus on indoor air quality in **homes** and **schools**, wherever possible. For the purposes of this project, school settings include nurseries and preschools.
- Submissions specifically focused on the UK are welcomed. Where responses draw on evidence from other countries, please ensure this is clearly indicated.
- Please note which consultation question(s) you are answering where indicated in the template. If you do not do so, it may not be possible for your submission to be considered.

The consultation questions are intentionally broad, and some directed to particular professional groups in order for us to collect as comprehensive a range of perspectives as possible. **If you feel that any questions are not relevant to your knowledge or experience, you may choose to omit them.**

Deadline

Please send your submission to iaq@rcpch.ac.uk by **midday, 20th December 2018**. If you have any questions regarding this call for evidence or the wider project, please contact us via iaq@rcpch.ac.uk.

We very much look forward to receiving your submission, which will contribute to improving our understanding of indoor air quality to benefit the health of infants, children and young people.

Questions for consultation (answer only applicable questions)

About you **(required)**

1. Please provide your name and role. If you are responding on behalf of an organisation, please state this here. Please also briefly describe your motivation for submitting evidence – for example, this may be organisational or personal interest.

Section 1: Your experience (max. 500 words)

2. Are you, and/or your organisation, aware of any issues of poor indoor air quality in home or school environments and its effects on the health of infants, children and young people? (Please provide supporting evidence)

Section 2: Health effects (max. 1,000 words)

3. What are your views on the effects of indoor air pollution on pregnancy and the future health of children after they are born? (Please provide supporting evidence where possible)
4. We are very interested in hearing your views on the quality of indoor air in homes and schools and whether this affects the health of infants, children and young people. (Please provide supporting evidence where possible)
5. There are many substances that escape into the air indoors, including chemical and biological pollutants (those pollutants derived from living organisms such as bacterial, fungal and viral products). Which substances and/or pollutants do you believe pose the greatest risk to the health of infants, children and young people both in the short- and long-term? (Please provide supporting evidence where possible)
6. Which other indoor air quality factors (e.g. temperature, moisture) do you think pose the greatest risk to the health of infants, children and young people in the short- and long-term? (Please provide supporting evidence where possible)

Section 3: Factors driving exposure (max. 1,000 words)

7. In your view, which sources of pollution dominate in determining the quality of indoor air in homes and schools? (Please provide supporting evidence where possible)
8. Which building materials (e.g. interior finishes, furniture) do you understand affect indoor air quality the most in homes and schools? (Please provide supporting evidence where possible)

9. Which building characteristics (e.g. construction, heating and ventilation systems) do you understand affect the quality of indoor air in homes and schools? (Please provide supporting evidence where possible)
10. What factors have the greatest influence on heating and/or poor moisture conditions (e.g. those related to mould growth) in homes and schools? (Please provide supporting evidence where possible)
11. What type of occupant activities (e.g. consumer product use, cooking, heating) do you understand influence indoor air quality and the heat and moisture conditions in homes and schools? (Please provide supporting evidence where possible)

Section 4: Measuring exposure and outcomes (max. 1,000 words)

12. What do you believe are the most appropriate ways of measuring and quantifying the levels of indoor air pollution for investigating adverse health effects in communities? (Please provide supporting evidence where possible)
13. What are your views on the roles of outdoor air pollutants on the quality of indoor air in homes and schools? (Please provide supporting evidence where possible)
14. What are the levels of indoor pollutants that may cause short-term health effects, including the worsening of existing diseases, in infants, children and young people? (Please provide supporting evidence where possible)
15. What are the levels of indoor pollutants that are detrimental to the long-term health of infants, children and young people? (Please provide supporting evidence where possible)
16. At what level is indoor exposure to heat and/or damp/moisture detrimental to the short- or long-term health of infants, children and young people? (Please provide supporting evidence where possible)

Section 5: Prevention and interventions (max. 1,000 words)

17. Can you provide evidence of which interventions can be used to prevent the presence of harmful indoor air pollutants and reduce excessive levels of heat and moisture in homes and schools? (Please provide supporting evidence where possible)
18. How should homes and schools be designed, constructed and used to improve children's exposure to cleaner air? (Please provide supporting evidence where possible)
19. How effective do you understand filtering systems, such as personal or household devices, are at reducing exposure to indoor air pollution? (Please provide supporting evidence where possible)

20. How can ventilation provision be used to minimise infants', children's and young people's exposure to poor indoor air quality in homes and schools? (Please provide supporting evidence where possible)
21. Are you aware of any evidence on the clinical efficacy and effectiveness of interventions to reduce exposure to, and/or health effects of, poor indoor air quality for infants, children and young people in homes and schools? (Please provide supporting evidence where possible)
22. Should we seek to try to remove all pollutants or just some, based on their effect on the health of infants, children and young people? (Please provide supporting evidence where possible)

Section 6: Interacting factors (max. 1,000 words)

23. Across environmental, climate, construction and health and safety legislation in the UK, what is currently in place that relates to indoor air quality? Are you aware of any other relevant legislation or policy?
24. What do you understand is the true cost (both direct and indirect) of poor indoor air quality to infants, children and young people? What metric(s) best represents this cost?
25. How do the risks of poor indoor air quality inform building and furniture design decisions? (Please provide supporting evidence where possible)

For built environment professionals who include indoor air quality in their design thinking:

26. How do you do so alongside efforts to improve energy efficiency?

Section 7: **For respondents with technical building expertise** (max. 1,000 words)

27. What do you understand are the most appropriate metrics for describing indoor air quality?
28. How are homes and schools designed to provide the best indoor air quality? What are the main drivers for design?
29. What external factors (e.g. roads, building form, urban design and urban heat island) may affect indoor air quality? (Please provide supporting evidence where possible)

30. In relation to urban environments in the UK where outdoor air is more polluted than indoor air, at what air change rate does ingress of pollutants outweigh the reduced exposure benefits of ventilation? (Please provide supporting evidence where possible)
31. Can you provide any experimental evidence (not modelled) of how different levels of air changes per hour impact on indoor air quality? (Please provide supporting evidence where possible)
32. Are there data demonstrating seasonal variation in the presence and levels of indoor air pollutants? If so, does this vary on a daily temporal basis or based on the different climate regions of the UK? (Please provide supporting evidence where possible)
33. Is there experimental evidence (not modelled) of how pollutants in homes and schools travel in space from their source, how they dilute and mix, and how long they persist? Do meteorological or ventilation conditions or other building characteristics influence this? If so, how? (Please provide supporting evidence where possible)
34. Is there experimental evidence (not modelled) of how pollutants infiltrate from outdoors into indoor home or school environments? (Please provide supporting evidence where possible)

35. Are there any other specific issues relating to indoor air quality in homes and schools that you wish to draw to the Working Group's attention, that are not covered by the questions above? (Please limit to 200 words)

Submission template

Please use the template below to record your responses. Please remember to indicate which question(s) you are responding to, and include your references.

About you (required)

Name	
Role	
Organisation (if applicable)	
Contact email	
Motivation for submission	

Question number:	Response:

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Please add extra rows as necessary

Thank you for your response. Please send your submission to: iaq@rcpch.ac.uk