EAC inquiry – written evidence that mentions IAQ monitoring

Leeds City Council

Fundamentally the nature of air quality monitoring, both indoor and outdoor needs to be updated in line with advances in technology and understanding of the issues. Greater granularity of data needs to be developed through increasing the concentration of monitoring equipment, with a concerted effort to consider how indoor air quality can also be assessed. There needs to be support for local authorities to be able to develop improved monitoring networks and support for creating national, data sharing models that allow for this data to be effectively utilised.

Government should evaluate the effectiveness of the ventilation campaign that ran nationally as part of the COVID response and then re-launch a similar campaign to encourage uptake of ventilation behaviour changes that reduce exposure to air pollution indoors.

Government should fund a trial of indoor air quality monitors in public spaces, particularly those most likely to be visited by vulnerable/at-risk individuals, to better understand the scale of the risk in these spaces and whether statutory or nonstatutory limits for indoor air quality should be introduced.

[The Government should provide] funding to create a network of indoor air quality monitoring especially in public spaces (hospitals, schools, GP surgeries etc). It is difficult to know how big a problem indoor air quality is and how to land messages without knowing what the main pollutants of concern are etc. The only way to get this information is it have better indoor AQ monitoring networks and then effective sharing of the data nationally to allow for profiling, modelling, and analysis to determine the actions needed to improve the quality of the air.

Chartered Institute of Environmental Health (CIEH), The Association of Directors of Environment, Economy, Planning and Transport (ADEPT), The Association of Directors of Public Health (ADPH)

[in response to "What steps can the Government take to improve indoor air quality"]: LAs do not have adequate monitoring capabilities to understand the full picture of local air quality for local action. The present air quality monitoring system lacks capabilities and effectiveness.

The Breathe London network was able to install, maintain and insure air quality sensors at 139 sites between December 2020 and September 2021. This network also has a simple online tool for accessing the data. There is no reason why all LAs could not have the same sort of network by 2027 if supported by appropriate funding from central Government.

Finally, there is no explicit duty placed on the Government by the Environmental Targets (Fine Particulate Matter) (England) Regulations 2022 to review and revise the monitoring network to ensure it is up to date with the latest technological and scientific standards and that the placement and number of stations remain appropriate. This represents a loosening of regulations compared to the regime under the Air Quality Standards Regulations 2010, which requires a review of the network every five years. We believe the Government should revisit this.

To improve indoor air quality, it is vital that the Government adopts a whole system and a health in all policies approach, linking key partners across transport, planning, health and education at local, regional and national levels. The Government should also consider health inequalities in its strategy to improve air quality.

…the Government should improve indoor air quality by ensuring that LAs are supported with resources, adequate staffing and additional inspection capacity to enforce restrictions and reduce pollution.

…we would ask the Government to take the lead in promoting a consistent nationwide approach.

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Prof Nicola Carslaw (University of York), Professor Nicholas Pleace (University of York), Dr Sarah West (Stockholm Environment Institute – York, University of York)

We need the same sort of [IAQ] long-term studies that have been carried out for outdoors, linking air pollutant concentrations to health effects. These studies would include longer-term air pollutant measurements indoors, similar to those collected outdoors over many years now. They would need to be carried out in representative buildings (schools, homes, hospitals, offices etc.) that aimed to cover living and working environments for most of the population.

We need a better awareness of the sources of indoor air pollution, and how the pollutants they generate differ from what we experience outdoors. One key area is how the toxicity of PM varies indoors and outdoors, e.g. between cooking activities indoors versus diesel engines outdoors. More measurements in homes will help us to understand which pollutants accumulate and under which conditions (either by activity or by building characteristics/operation), and enable us to rank some priority pollutants to target for toxicological measurements.

Policy Connect; All-Party Parliamentary Carbon Monoxide Group

[in response to "What steps can the Government take to improve indoor air quality"]: As proposed in the Clean Air (Human Rights) Bill , it is likely to be beneficial to monitor air quality in public buildings, such as schools and libraries, and report on pollutants to identify patterns and areas/times of concern. In public buildings, people can choose to visit at a time when air quality is good. Asthmatic children may be advised not to attend school if there is particularly poor air quality in the building. Monitoring IAQ may also reveal if there is a need for air filters or purifiers to protect children and the public from poor quality air.

It may be useful to consider how information about air quality outdoors is effectively shared with the public when considering how to monitor or share information about IAQ in public buildings. The current 24-hour summary page from UK Air31 is not particularly well known or well used by the public. It may be reasonable to consult on improvements to this and a similar platform for IAQ. Hopefully this will form part of the Air Quality Information System review which is taking place December 2021 – December 2023.

Royal College of Physicians

Establish large-scale research of UK homes and schools on the indoor air quality, linking this with health and public health datasets. This should include provisions to monitor the impact of changes over time, to identify if improvements in indoor air are resulting in better health outcomes.

Gather evidence on emissions and ventilation rates in buildings of differing age and design. This should identify the most cost-effective interventions and design choices for improving indoor air quality and lowering energy demand and carbon emissions.

Measure emissions and exposure in a more realistic indoor environment such as the House Observations of Microbial and Environmental Chemistry experiments.

Schools' Air quality Monitoring for Health and Education project and the Tackling Air Pollution At School Network

[SAMHE (Schools' Air quality Monitoring for Health and Education)] is a national research study monitoring air quality in schools across the UK. Poor air quality impacts pupils' health and attention levels, so it is important it is monitored and understood

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HEICCAM

Indoor air quality is rarely measured, and public awareness is generally low. Therefore, large-scale monitoring of indoor air is an important step towards understanding indoor air quality across the UK housing stock. Large-scale monitoring using low-cost sensors (which are becoming increasingly available and affordable) is key to examining different buildings and how indoor air quality varies in multiple scenarios8 . This would be particularly interesting for homes undergoing retrofitting for net zero energy efficiency measures, which reduce unintended ventilation, but by decreasing air exchange can lead to a build-up of internally generated pollutants. The government can approach this by funding at-home monitors (especially to lower-income households, who have been shown to suffer more from poor indoor air quality) and establishing mechanisms by which households can report indoor air quality concerns to their councils/landlords. However, reporting is meaningless without action arising from it: the enforcement of standards is therefore essential to ensure actions are taken

Transition

All targets require expansion of the existing regulatory monitoring network

Additional coordination between national, local government alongside public, civic and industrial sector partners is essential to improve air quality. Adopting a whole systems approach to the transport sector – considering both indoor and outdoor air quality - will be beneficial from a public health perspective.

Catherine Noakes; Henry Burridge; Abigail Hathway; Maarten van Reeuwijk; Malcolm Cook; Tim Sharpe; Helen Freeman. (Future Urban Ventilation Network)

A systems approach is needed that captures the complex interactions between people, buildings and both indoor and outdoor air, to be able to identify win-win solutions and unintended consequences

Through the UKRI SPF clean air networks we have recommended that indoor air is measured in a more systematic manner and highlighted examples in France and the USA where availability of data can support more effective interventions.

…providing air quality testing and mechanisms for residents, employees and the public to report IAQ problems and providing funding to support low-income households to make IAQ improvements.

Prof Sir Stephen Holgate (University of Southampton), Dr Suzanne Bartington (University of Birmingham) and Dr Gary Fuller (Imperial College London)

Establish large-scale research of UK homes and schools on the indoor air quality, linking this with health and public health datasets. This should include provisions to monitor the impact of changes over time, to identify if improvements in indoor air are resulting in better health outcomes.

Measure emissions and exposure in a more realistic indoor environment such as the House Observations of Microbial and Environmental Chemistry experiments.

…highlight the need for a UK Indoor Air Observatory. This would address major evidence gaps by collecting systematic data from UK indoor environments, create a platform for research and importantly track changes from net-zero policies to help ensure that they were not adverse for indoor health.

Royal Academy of Engineering, and National Engineering Policy Centre

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Whilst the current regulations do address ventilation, there is limited consideration of indoor air quality more broadly, and including this more explicitly would encourage improvements. Furthermore, ventilation standards often receive less attention compared to fire and safety regulations - many safety systems are subject to regular inspection whereas ventilation or air cleaning systems are not.

The interconnection between indoor and outdoor air quality is misunderstood by many building users, there is a need to improve awareness and to collectively improve overall air quality. Area-level measures will be important, as well as targeted measures for air within buildings.

There is scope for the government to take action to improve capacity of the existing building stock to meet modern ventilation standards.

For indoor air to be managed there needs to a reliable means of monitoring air quality. In spaces with high occupancy, CO2 sensors can be used as a proxy for monitoring air quality, but this only informs on ventilation rate based on number of people in a space and does not give information on presence or levels of pollutants. There are opportunities for the government to collaborate with industry partners and explore options for standard monitoring.

Air quality needs to be considered alongside other priorities and policy initiatives for the built environment. Typically, policy initiatives lack a systems-based view with many studies and guidance focusing on one aspect of health, safety, or sustainability but little information on bringing these issues together in a holistic way