

## Royal Society of Biology response to the Clean Air Strategy consultation

August 2018

*The Royal Society of Biology (RSB) is a single unified voice, representing a diverse membership of individuals, learned societies and other organisations. We are committed to ensuring that we provide Government and other policymakers, including funders of biological education and research, with a distinct point of access to authoritative, independent, and evidence-based opinion, representative of the widest range of bioscience disciplines. Member Organisations of the Royal Society of Biology are listed the Appendix.*

The Royal Society of Biology welcomes the consultation on the draft Clean Air Strategy 2018. Alongside our existing interest in this topic, we recently convened a meeting to discuss the draft Strategy with Fellows of the Society and others with expertise in the health impacts of air quality. Overall, we welcome the renewed focus of the draft Strategy. In this short briefing, we present several points raised during the discussion that we believe warrant consideration in the present consultation.

### **Nanoparticles**

The draft Strategy makes little mention of particle pollution of nanoscale size (i.e. particles with diameters between 1 and 100 nanometres). However, such nanoparticles could pose a hazard to health of equal or greater significance than PM<sub>2.5</sub> pollution.<sup>1,2</sup> Further understanding is needed of the toxicity and level of exposure to these particles, and the strategy should acknowledge this challenge and encourage research in this area.

### **Exposure**

The goal to halve the number of people living in locations where concentrations of fine particulate matter are above WHO guideline levels (10 µg/m<sup>3</sup>) is welcome. However, the ambition to reduce national emissions of various pollutants from a range of sources should be balanced with plans to minimise exposure to pollution (both average levels and incidences of peak exposure). For instance, children in the Greater London area receive around 40% of their total daily exposure to significant air pollutants while at school, and a further 11% while travelling to and from school.<sup>3</sup>

Almost everybody is exposed on a daily basis to air pollution derived from vehicles used in transport, for example while commuting to work or school. This type of exposure represents an enormous opportunity for abatement that would improve quality of life. It is an area in which the Clean Air Strategy could be more

<sup>1</sup> Pieters *et al.* (2015). Blood pressure and same-day exposure to air pollution at school: associations with nano-sized to coarse PM in children. <https://ehp.niehs.nih.gov/1408121/>

<sup>2</sup> Chen *et al.* (2016). Beyond PM<sub>2.5</sub>: The role of ultrafine particles on adverse health effects of air pollution. <https://doi.org/10.1016/j.bbagen.2016.03.019>

<sup>3</sup> Whitehouse and Grigg (2018). The air they breathe; where children are exposed to air pollution. Presentation to the American Thoracic Society 2018 conference. <http://www.abstractsonline.com/pp8/#!/4499/presentation/16135>

ambitious. Defra could look to the Air Quality Action Plans it receives from local councils to review and compare different interventions, in order to consider and advise on the costs and benefits of those that are the most effective at improving air quality, and the factors that influence the success or failure of measures. Best practice in implementing the most effective interventions at a local level should be shared nationally where possible, for maximum societal benefit.

Workplaces are also potential sources of considerable exposure to air pollution for many. However, those workplaces to which members of the public do not have regular access are excluded from the requirement for assessment of air quality under the EU Ambient Air Quality Directive. The Strategy could consider measures to address exposure to air pollution in the workplace as an area in which the UK could go further than the European Union in protecting people from air pollution.

### **Indoor pollution**

The inclusion of indoor air pollution in the draft Strategy is appreciated; the issue has not received adequate recognition in the past, despite the fact that the indoors is where most of our time is spent and where most exposure to air pollution therefore occurs. Indoor air pollution is a combination of pollution generated indoors and pollution from the outdoors. Improving outdoor pollution can contribute to improved indoor air quality, as can consideration to the design and siting of buildings.

However, there are also significant sources of pollutants indoors. The drive to increase home insulation to improve energy efficiency can reduce ventilation, creating high levels of indoor pollutants. Appropriate balance and mitigation of risk will be important to achieve.

We have been advised of an issue where some research grant applications for the study of indoor air pollution have been rejected by several Research Councils, with the subject seeming to fall between their remits, rather than squarely in that of any individual Research Council. Research is needed, however on the sources and range of pollutants in the indoor environment, and levels of exposure to those pollutants in typical homes, in conjunction with their effects on human health, both independently and in combination. While the draft Strategy does not differentiate between different particles within the PM<sub>2.5</sub> size range, they are very likely to differ in their impacts on health, and research to investigate this is needed.

### **Public communication and advice**

The draft Strategy rightly highlights that there are many common misconceptions about air pollution. For instance, many people are unaware that cooking, heating and candle burning within the home are significant causes of exposure to air pollution, and exposure to pollution in a car can be comparable to walking or cycling near traffic in certain conditions.

It is important that accurate information is communicated effectively to the public to improve awareness of how to reduce exposure to air pollution, as well as how to assist in reducing pollution emissions overall. Timely air pollution information should be prominent, for example appearing alongside information on weather, pollen and UV levels.

As a specific action, we recommend producing fit-for-purpose guidance for the public on what to do during days with high levels of air pollution. Guidance should also be available to people who have specific health conditions and who work in a variety of sectors and environments. Where vulnerable people are advised to stay indoors, they should also be aware of how they can reduce exposure to both outdoor and indoor sources of pollution.

### **Collaboration with neighbouring countries**

A large proportion of UK fine particulate pollution (PM<sub>2.5</sub>) originates from outside of the UK, both from other countries and from shipping. Our ability to reduce levels of this form of pollution partly depends on the measures taken in neighbouring countries in Europe, and may also be affected by production or safety standards of imported products used in the UK. It is important that the UK continues to work with these countries after EU exit.

### **Opportunities**

We consider that improving air quality could be aligned with other cross-government objectives, to achieve multiple benefits from policy interventions. For instance, considering improvements in air quality in conjunction with meeting our climate change commitments provides extra impetus to transition from fossil fuels to renewable energy alternatives, in transport and elsewhere. We welcome the broad 'mission-led' approach and interdisciplinary thinking that has gone into the draft Strategy, across government departments and sectors.

In its 25 Year Plan for the environment, the Government announced the intention to establish a new, independent environmental watchdog. If set up appropriately, this has the potential to support cross-cutting work. It would be particularly valuable to encourage work across Whitehall departments to achieve outcomes beneficial both for health and the environment, and support sustained commitment to these goals - rather than frequent changes in direction that can be detrimental to progress. Failure to provide a watchdog with the ability to hold the Government to account through legal processes, replacing the current function of the European Court of Justice, would represent a weakening of scrutiny of environmental protections upon our withdrawal from the EU. The Royal Society of Biology made these points in its response to the Environmental Audit Committee inquiry into the Government's 25-Year Plan for the Environment.<sup>4</sup>

We would advise that Government needs to provide clear information on the future of air quality legislation, to enable industry to plan accordingly and direct its research appropriately on alternatives to current products and processes.

The draft Strategy's ambition to make the UK a world-leader in technological solutions to address air pollution can encourage development. There is a high need for these solutions in major cities – not just in the UK but around the world – representing a substantial export opportunity. Innovation to reduce the production and release of pollutants must be a priority, in combination with measures to deal with pollution generated, and developing the means for effective and accurate measurement of air pollutants.

Applying measures in areas with high pollution and poor health indices overall has the opportunity to create benefits. Overall, we welcome the focus on air quality which is a health imperative that affects everyone.

---

*The Society welcomes the Committee's inquiry on the Clean Air Strategy. We are pleased to offer these comments and for this response to be publicly available.*

*For any queries, please contact the Science Policy Team at Royal Society of Biology, Charles Darwin House, 12 Roger Street, London, WC1N 2JU. Email: [policy@rsb.org.uk](mailto:policy@rsb.org.uk)*

---

<sup>4</sup> Royal Society of Biology response to the 25 Year Environment Plan inquiry.  
[https://www.rsb.org.uk/images/RSB\\_response\\_25\\_Year\\_Environment\\_Plan\\_inquiry\\_Submitted.pdf](https://www.rsb.org.uk/images/RSB_response_25_Year_Environment_Plan_inquiry_Submitted.pdf)

## Appendix: Member Organisations of the Royal Society of Biology

### Full Organisational Members

Academy for Healthcare Science  
 Agriculture and Horticulture Development Board  
 Amateur Entomologists' Society  
 Anatomical Society  
 Association for the Study of Animal Behaviour  
 Association of Applied Biologists  
 Bat Conservation Trust  
 Biochemical Society  
 British Andrology Society  
 British Association for Lung Research  
 British Association for Psychopharmacology  
 British Biophysical Society  
 British Ecological Society  
 British Lichen Society  
 British Microcirculation Society  
 British Mycological Society  
 British Neuroscience Association  
 British Pharmacological Society  
 British Phycological Society  
 British Society for Cell Biology  
 British Society for Developmental Biology  
 British Society for Gene and Cell Therapy  
 British Society for Immunology  
 British Society for Matrix Biology  
 British Society for Medical Mycology  
 British Society for Nanomedicine  
 British Society for Neuroendocrinology  
 British Society for Parasitology  
 British Society of Plant Breeders  
 British Society for Plant Pathology  
 British Society for Proteome Research  
 British Society for Research on Ageing  
 British Society of Animal Science  
 British Society of Soil Science  
 British Society of Toxicological Pathology  
 British Toxicology Society  
 Daphne Jackson Trust  
 Drug Metabolism Discussion Group  
 The Field Studies Council  
 Fisheries Society of the British Isles  
 Fondazione Guido Bernardini  
 GARNet  
 Gatsby Plant Science Education Programme (incl. Science and Plants for Schools)  
 Genetics Society  
 Heads of University Centres of Biomedical Science  
 Institute of Animal Technology  
 Laboratory Animal Science Association  
 Linnean Society of London  
 Marine Biological Association

Microbiology Society  
 MONOGRAM – Cereal and Grasses Research Community  
 Network of Researchers on Horizontal Gene Transfer & Last Universal Cellular Ancestor  
 Nutrition Society  
 Quekett Microscopical Club  
 The Rosaceae Network  
 Royal Microscopical Society  
 Society for Applied Microbiology  
 Society for Experimental Biology  
 Society for Reproduction and Fertility  
 Society for the Study of Human Biology  
 SCI Horticulture Group  
 Systematics Association  
 The Physiological Society  
 Tropical Agriculture Association  
 UK Environmental Mutagen Society  
 UK-BRC – Brassica Research Community  
 University Bioscience Managers' Association  
 Zoological Society of London

### Supporting Organisational Members

Affinity Water  
 Association of the British Pharmaceutical Industry (ABPI)  
 AstraZeneca  
 BioIndustry Association  
 Biotechnology and Biological Sciences Research Council (BBSRC)  
 British Science Association  
 CamBioScience  
 Envigo  
 Ethical Medicines Industry Group  
 Fera  
 Institute of Physics  
 Ipsen  
 Medical Research Council (MRC)  
 MedImmune  
 Northern Ireland Water  
 Pfizer UK  
 Porton Biopharma  
 Procter & Gamble  
 Royal Society for Public Health  
 Syngenta  
 Understanding Animal Research  
 Unilever UK Ltd  
 Wellcome Trust  
 Wessex Water  
 Wiley Blackwell

