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 in 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$_{2.5}$ pollution.\(^1\)\(^2\) 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$^3$) 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.\(^3\)

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

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2 Chen et al. (2016). Beyond PM$_{2.5}$: The role of ultrafine particles on adverse health effects of air pollution. https://doi.org/10.1016/j.bbagen.2016.03.019

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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$_{2.5}$ 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.¹

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

## 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 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 Animal Science
- British Society of Plant Breeders
- 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

### Supporting Organisational Members

- Affinity Water
- Association of the British Pharmaceutical Industry (ABPI)
- AstraZeneca
- BiolIndustry Association
- Biotechnology and Biological Sciences Research Council (BBSRC)
- British Science Association
- CamBioScience
- Envigo
- Ethical Medicines Industry Group
- Ipsen
- Institute of Physics
- MedImmune
- Medical Research Council (MRC)
- 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

- Microbiology Society
- MONOGRAM – Cereal and Grasses Research Community
- Network of Researchers on Horizontal Gene Transfer & Last Universal Cellular Ancestor
- Nutrition Society
- Quckett 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