

7 August 2023

Dear Dr Smith,

Thank you for your correspondence of 11 May, co-signed by Dr Elaine Mulcahy, about the effects of air pollution on human health. I have been asked to reply and I apologise for the delay.

Poor air quality is the largest environmental risk to public health in the UK. Epidemiological studies have shown that long-term exposure to air pollution (over years or lifetimes) reduces life expectancy, mainly due to cardiovascular and respiratory diseases and lung cancer. Short-term exposure (over hours or days) to elevated levels of air pollution can also cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in respiratory and cardiovascular hospital admissions and mortality.

The UK Health Security Agency's (UKHSA's) Cleaner Air Programme aims to reduce people's exposure to air pollution and achieve better outcomes for all – particularly for the most vulnerable groups such as those with pre-existing respiratory and cardiovascular conditions, older people, pregnant women and children, and deliver physical and mental health as well as climate change co-benefits. The Cleaner Air Programme focuses on three core outcomes: increasing the evidence base, influencing and supporting stakeholders, and improving awareness and understanding.

The UKHSA supports national and local government to reduce the burden of disease attributable to air pollution and provides expert advice to various stakeholders including other Government departments and agencies, local authorities and the general public on the human health effects of indoor and outdoor air pollution.

The UKHSA provides the Scientific Secretariat for the Committee on the Medical Effects of Air Pollutants (COMEAP), a Department of Health and Social Care advisory committee of independent experts that provides advice to Government departments and agencies on the effects of air pollution on health.

The UKHSA contributed to the Chief Medical Officer's Annual Report 2022. The evidence of links between exposure to air pollution and a wider range of health effects, such as adverse birth outcomes, diabetes and increased dementia risk continues to build, with varying strengths of evidence. The *Chief Medical Officer's annual report 2022: air pollution* can be found at www.gov.uk/government/publications/chief-medical-officers-annual-report-2022-air-pollution.

The Department for Environment, Food and Rural Affairs (DEFRA) and the UKHSA established an expert group to steer an overhaul and update of the air quality information systems in the UK, including the Daily Air Quality Index (DAQI) and its associated advice, in light of accumulated new evidence and lived experience. The review brings together various strands of work related to air quality alerts, advice and guidance, to provide clear, actionable recommendations on the changes that need to be made to the present system to better meet the needs of individuals, healthcare professionals, government bodies and other key users. The group is considering the nature, uptake and impact of an air quality information system that seeks to both reduce people's exposure to air pollution and encourage personal action to reduce emissions.

The UKHSA, the UK Health Forum and Imperial College London have developed a modelling tool that estimates the costs to the NHS and the social care system of exposure to particulate matter (PM_{2.5}) and nitrogen dioxide (NO₂), two of the pollutants to be tackled under the Government's Clean Air Strategy. The tool will estimate the NHS and social care costs associated with air pollution in a

specified local authority or district council. More information on this can be found at www.gov.uk/government/publications/air-pollution-a-tool-to-estimate-healthcare-costs.

In 2019, the UKHSA published an evidence-based review on interventions to reduce air pollution, including recommendations to significantly reduce harm from air pollution at local level, including urban areas. Further information on this can be found at <https://www.gov.uk/government/publications/improving-outdoor-air-quality-and-health-review-of-interventions>.

The UKHSA and Public Health Wales reviewed the scientific evidence on people's exposure to air pollutants during transport. It is intended that findings from this work can be useful in developing consistent evidence-based public health risk communications on this subject, as well as informing transport and planning policy and practice, especially in urban areas. More information on the evidence review can be found at www.sciencedirect.com/science/article/abs/pii/S2214140521000943.

I hope this reply is helpful.

Yours sincerely,

H Percy
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