



Department
for Environment
Food & Rural Affairs

Call for Evidence on Future PM_{2.5} Concentrations

Summary of responses and government response

Date: July 2021

We are the Department for Environment, Food and Rural Affairs. We're responsible for improving and protecting the environment, growing the green economy, sustaining thriving rural communities and supporting our world-class food, farming and fishing industries.

We work closely with our 33 agencies and arm's length bodies on our ambition to make our air purer, our water cleaner, our land greener and our food more sustainable. Our mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state than we found it.



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Background

The Environment Bill, currently passing through Parliament requires government to set legally binding environmental targets for England in four priority areas including air quality. In the [‘Environment Bill - environmental targets’](#) policy paper published by Defra on 19th August 2020, the government indicated its intention to set two air quality targets relating to fine particulate matter (PM_{2.5}), as this is the air pollutant of greatest harm to human health. It is proposed that one target will be based on the annual mean concentration of PM_{2.5} as stated in Clause 2 of the Environment Bill, and the other would be on population exposure reduction. The development of these targets will be informed by evidence and analysis, including input from independent experts.

The Air Quality Expert Group (AQEG), together with the Committee on the Medical Effects of Air Pollutants (COMEAP), are providing independent technical advice to Defra throughout the development of the air quality targets. At the request of Defra, AQEG sought input from the wider research community on future PM_{2.5} concentrations in England via a Call for Evidence. This information will be used to provide context and interpretation of model runs conducted specifically to inform target setting.

Responses

The AQEG call for evidence on future PM_{2.5} concentrations was published on 19th November, and was open until 17th December 2020. The questions asked were:

1. What evidence can you provide that would be informative of how the annual average PM_{2.5} concentration in England might change in future years?
2. What evidence could you provide on the main sources for PM_{2.5} and the factors which drive changes in concentrations of PM_{2.5} and how these might change in the future?
3. What are the main uncertainties in determining future PM_{2.5} concentrations?
4. What evidence do you have on how population exposure might change in the future?

Twenty-one responses were received in total. These were mainly from academics and consultants carrying out different types of air quality modelling, although there were also responses from commercial organisations, local government and NGOs.

Several academic and commercial consultants involved in air quality research submitted evidence that was wide ranging in nature and drew on predominantly peer reviewed publications as well as some unpublished data. Such respondents largely presented findings and outputs from their own modelling studies, employing a wide range of modelling methodologies. Illustrative examples were also presented based on air quality monitoring, source apportionment studies and impact factors of primary and secondary components. The range of modelling studies submitted was the basis of a workshop and a more detailed summary of the findings are summarised in the associated note.

Some responses were received that looked more closely at PM_{2.5} levels in London and made comparisons to monitoring data and source apportionment as well illustrative examples of how discrete modelling is effective at modelling PM_{2.5} in urban areas.

Local authority responses provided local assessment perspectives based on both monitoring and modelling assessments undertaken and provided associations to real world actions being considered to reduce PM_{2.5} in their area.

Further responses were provided from commercial organisations involved in either the manufacture and marketing of air quality monitoring equipment or equipment marketed as beneficial to reducing emissions from key sources of PM_{2.5}.

Responses from NGOs presented highlighted supporting views regarding the importance of taking action on PM_{2.5}, as well as highlighting published information from a range of sources.

Workshop and AQEG Summary Note

AQEG undertook a review of all of the evidence received and selected respondents to present their research to them at a workshop on 1st February 2021. The presenters were modellers from academia and consultancy which members felt could provide fresh evidence or perspectives relating to PM_{2.5} modelling.

The responses to the call for evidence highlighted that different models focused on different aspects of the modelling, for example primary or secondary PM, or the impact of climate change, and that all had their strengths and weaknesses. As AQEG noted, "... different models are typically optimised for particular tasks, and there is no single 'best' model". There were also differences in the emissions data used as input into the models and assumptions made about the future. There were, however, a number of commonalities between the findings of the most advanced models for future PM_{2.5} concentrations, with all models projecting reductions and highlighting specific challenges in reducing concentrations in central London. The scale and distribution of reductions differed depending on the model inputs and assumptions, whilst the scale of challenge in London was sensitive to emissions assumptions and the base year used.

Following the workshop AQEG produced a [note summarising the evidence and their recommendations to Defra](#).

This call for evidence has been used to inform the target setting process and we will continue to work closely with experts and seek advice on technical aspects as targets are further developed.

Statement from Defra

"We would like to thank everyone who responded to the call for evidence for their submissions. We will take into consideration the information and recommendations provided by AQEG, when developing the evidence for the air quality targets."

John Newington, Head of Evidence, Air Quality and Industrial Emissions, Defra