

Tackling ambient air pollution

Levelling up lung health briefing

24 May 2022



Air pollution is damaging public health. Short-term exposure to high concentrations of air pollution causes Air pollution is the largest environmental threat to public health, resulting in up to 36,000 premature deaths across the UK each year, increasing cases of asthma and triggering COPD flare ups.¹ It has also been linked to the increased likelihood of developing heart conditions², strokes³, mental health issues⁴ and dementia⁵.

There is no safe amount of air pollution for anyone to breathe in, and levels in the UK are extremely damaging to public health. The level of exposure to air pollution has become a postcode lottery, with some areas enduring much higher levels than others. While air pollution can affect us all, we know that pregnant women, children, older people, people living with lung conditions and those on the lowest incomes are being hit the hardest. This is having a significant and avoidable impact on our NHS, with an estimated additional 20,000 hospital admissions each year linked to high air pollution episodes⁶ at a cost to our NHS of around £20 billion per year.⁷ Just as the health impact of air pollution is not felt evenly, this economic cost is likely to be felt more deeply in hospitals and GP surgeries located in poorer, urban areas with higher levels of pollution.

The change we need to see

By 2030, we need to see annual average levels of PM2.5 lower than 10µg/m³ in every part of the UK. This would have a significant impact in levelling up public health and wellbeing.

Fine particulate matter (PM2.5) is one of the most dangerous pollutants to human health. It is the tiny particles of solids and liquids in the air, such as dust or dirt, that can get deep into our lungs and into the blood stream. Concentrations of PM2.5 are particularly high in cities and large towns in London, the South and East of England. The main sources of PM2.5 are industrial combustion (27%), domestic wood and coal burning (25%) and road transport (13%).⁸

If we are going to successfully level up lung health, and increase healthy life expectancy, we need to reduce levels of PM2.5 across the whole country. Public Health England calculated that for every 1µg/m³ reduction in PM2.5, we would prevent around 50,900 cases of coronary heart disease, 16,500 strokes, 9,300 cases of asthma and 4,200 lung cancers over an 18-year period.⁹

Under its obligations in the Environment Act, the government is mandated to set a number of new targets, including an average annual concentration target for PM2.5.

This target must be set at 10µg/m³ and achieved by 2030 at the latest in order to protect public health and ensure levelling up is a success. A new report by the Clean Air Fund has modelled how this might be achieved and notes that the government’s policies in the current Clean Air and Net Zero Strategies are likely to help us reach this target in almost all places.¹⁰

	By the end of 2022	By 2025	By 2027	By 2030
Ambient air quality	<p>Deliver ambitious PM2.5 targets in line with World Health Organization (WHO) interim targets of 10µg/m³ to be achieved by 2030 at the latest.</p> <p>Commitment to a public health awareness raising campaign</p>	<p>A new air quality alerts system that protects everyone who is vulnerable to the impacts of air pollution.</p> <p>A significant reduction in PM2.5 emissions from domestic combustion to below 10% of annual emissions.</p>	<p>Deliver a national monitoring system that covers every community in the UK, providing free access to air pollution data for everyone.</p>	<p>Average annual PM2.5 levels to be no more than 10µg/m³ in any community across the country.</p>

Monitoring and data sharing

We can only successfully reduce ambient air pollution when we improve our ability to monitor it in every community across the country.

By 2025 at the latest, we need to have begun developing a network PM2.5 monitors across the country. There are currently just 89 monitors that measure PM10 and PM2.5 on the Automatic Urban and Rural Network (AURN).¹¹ It is this network that the government proposes to use to measure PM2.5 concentrations under the Environment Act (2021). This network is not detailed enough to understand how levels of PM2.5 are affecting individuals. Improving PM2.5 monitoring must be a priority for national and local governments.

The overall powers and funding for installing and maintaining these should be given to local authorities, as they will know where in their areas the monitors may be best placed. All data should be open-access and available via a simple visual tool that maps pollution across the country.

By 2027, we need to have at least 100 monitors in each local authority area. These need to be both diffusion tubes and advanced monitors capable of giving a mixture of average levels of PM2.5 as well as live readings to help highlight hotspots and peak hours. The Breathe London network was able to install, maintain and insure air quality sensors at 139 sites between December 2020 and September 2021.¹² This network also has a simple online tool for accessing the data. There is no reason why every local authority could not have the same sort of network by 2027 if supported by appropriate funding from central government.

By 2030, there should be a national network of monitors across every community that can show us real-time air pollution data. This network should demonstrate that average levels of PM2.5 are below $10\mu\text{g}/\text{m}^3$ in every community.

Wood burning

The government recently imposed a ban on household coal and wet wood, following evidence that domestic burning of fuel was one of the major contributors to PM2.5 levels across the UK.

If these are not effective at reducing domestic combustion's contribution of PM2.5 to acceptable levels, government should legislate to ban wood burning in urban environments before the end of 2025. This would immediately reduce PM2.5 levels in highly populated areas, having a disproportionate impact on those places that are most polluted.¹³ The government should also work to identify the 0.6% of households still burning solid fuel as their main form of heating and ensure that they are prioritised for financial support to install an appropriate green alternative, such as ground source heat pumps, solar panels or hydrogen boilers.¹⁴

Industrial roadmaps

The largest emitter of PM2.5 is the construction and mechanical industries. In the 2018 Clean Air Strategy, the government committed to working with industry to develop "ambitious sector roadmaps [...] to secure further emissions reductions from industry by 2030 and beyond".¹⁵ We need to see these roadmaps published and include legally binding agreements between government and industrial companies by 2025 at the latest.

To help achieve this, UKRI should seek to prioritise any R&D spending that will help construction and mechanical industries to reduce PM2.5 levels. This would also help to increase R&D spending, achieving Mission 2 in the Levelling Up White Paper to increase R&D investment outside of London and the Greater South East by "at least 40%".¹⁶

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ASTHMA+ LUNG UK

Asthma + Lung UK 18
Mansell Street London
E1 8AA

0300 222 5800
info@asthmaandlung.org.uk AsthmaAndLung.org.uk

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