

Air pollution – hot and dirty

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Levels of air pollution in the UK have been much in the news, particularly the higher levels around London.

As poor air quality is associated with poor health, rising levels of air pollutants are a cause for legitimate concern. Air pollution is a mix of gases and particles which arise from natural sources, industry and, most importantly, motor vehicles. Air pollution episodes usually occur during periods of high pressure especially when pollutants are trapped close to the ground not allowing upwards escape to the atmosphere. These typically occur during the summer and the last few weeks have seen some modest increases in air pollution as a result, particularly in London.

When we talk about air pollution we really mean two things: ozone and particles. Particles are described as either PM10 or PM2.5 which indicate the size of the particulate matter (PM) in the air, the 10 and 2.5 referring to the diameter of each particle in micrometres (1 micrometre is 1 millionth of a metre). Small is bad from a health perspective.

- Ozone is formed by the action of uv light on vehicle emissions and so invariably goes up during hot spells. In Bloomsbury during the last week, hourly levels of ozone reached levels of around $80\mu\text{g}/\text{m}^3$ - the Air Quality Standard (AQS) for ozone is 50ppb. At first glance this might give rise to concern but for two factors: the units used are different – easily converted as $1\text{ppb} = 2\mu\text{g}/\text{m}^3$ – but why should we have to remember to do the correction
- the AQS is measured (appropriately) over 8 hours not 1

So mischievous (or unaware) individuals will sometimes flag the 1 hour peak levels as an exceedance of the AQS which is not so – it is always crucial to consider exactly how and when these values are reported.

Why the fuss?

Although air pollution data are sometimes misreported this should not disguise the fact that there are real reasons for the UK to take this issue seriously.

- The UK is on track for significant fines from the EU for exceeding the AQ limit for nitrogen dioxide (another vehicle associated gas) at a number of places in the UK
- Most importantly poor air quality is associated with poor health – indeed the AQSs are health based. Exposure to air pollution, in particular to particles and ozone can trigger deaths from heart and chronic lung disease and attacks of asthma.

As researchers we are trying to understand to what extent this effect occurs. This, curiously, is not easy as air pollution interacts with other factors in causing death or a hospital admission. However, we can say that air pollution contributes to some tens of thousands of deaths each year even if it is not the sole cause.

The potential health risks alone demonstrate why the UK needs to keep downward pressure on pollutant levels by all means possible.

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COMEAP (Dept of Health's Committee on Medical Effects of Air Pollutants): www.dh.gov.uk/ab/comeap/index.htm (<http://www.dh.gov.uk/ab/comeap/index.htm>)

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