

The effect of Pollution on Respiratory Health and Spread of Covid 19

As previously reported, improving the flow of traffic through the village will inevitably reduce pollution over time (more constant speeds and less stop/starting etc). We already have a much higher prevalence of asthma in the Thames Valley than most other parts of the country due to climatic influences as a result of our geographical position. It is accepted that pollution is also a trigger for asthma among other respiratory diseases all of which makes an unpleasant combination.

Attached is a summary of a report from King's College Environmental Research Group, School of Analytical, Environmental and Forensic Sciences, King's College, London - this piece of work reviews the impact of pollution on asthma, particularly in children.

Executive summary and Key Results April 2019

Key results Exacerbation of asthma by air pollution is estimated to lead to around **1,000 asthma admissions from 2014 - 2016 in children** in London, 10% of all asthma admissions in children in London. (Asthma admissions may have more than one cause e.g. air pollution may worsen response to an allergen.)

Children are more sensitive than adults, so the numbers for adults are smaller (**over 600 adult asthma admissions from 2014-2016**)

Chronic obstructive pulmonary disease (COPD) another respiratory disease, similar to asthma, particularly found in smokers is more common in the elderly, there can be some overlap between asthma and COPD. Results for the elderly therefore combined asthma and COPD.

Exacerbation of asthma and COPD by air pollution is estimated to lead to **over 2,500 asthma/COPD admissions from 2014-2016 in the elderly** in London.

The total across these age groups is over **4,000 air pollution-associated asthma admissions, with asthma admissions in children accounting for approximately one quarter** of all admissions.

The above estimates are based on levels of nitrogen dioxide (NO²) above 10 µg m⁻³. Whether concentrations below 10 µg m⁻³ have effects is much less certain given the more limited data at lower concentrations.

Calculations were also done for PM_{2.5} concentrations above 5µg m⁻³. This gave smaller results that probably overlap to some extent with those for NO². In fact, as NO² is a traffic pollutant, it may represent traffic PM better than PM_{2.5} does (total PM_{2.5} is heavily but not totally influenced by regional sources).

As the background evidence for effects of air pollution on asthma is mainly based on nitrogen dioxide, diesel PM and proximity to traffic, using the results for NO² as an indicator for traffic pollution was chosen for the overall summary of the results.

This is not to say that calculations using PM_{2.5} do not provide an indication of effects on asthma admissions. It was estimated that reduction of current PM_{2.5} levels down to the WHO guideline of 10 µg m⁻³ could have led to a reduction of 100 asthma admissions in children and around 850 asthma/COPD admissions in the elderly from 2014-2016. This may be a conservative estimate because policies reducing concentrations to 10 µg m⁻³ would probably reduce concentrations further in some place

One's natural inclination is to think that London is bound to be more polluted than say Whitchurch on Thames but a recent survey of 1300 sites across England has Chideock, just 3 miles from Dorset's Jurassic Coast, as being top of the worst air pollution list in England. The results are blamed on the A35 which runs or stutters through the village.

**data from English local authorities' air quality annual statistics which are submitted to the government.*

Additional information: <https://www.rac.co.uk/drive/advice/emissions/idling/>

The effect of pollution on the transmission of Covid - 19

It is well documented that pollution will increase the risk of respiratory disease longer term. As the world accepts pollution is a long term threat on many fronts there is more research and data being made public on the effect of pollution on the **transmission** of Covid - 19 (not just poorer outcomes in those who have been previously exposed to pollution and therefore have pre-existing respiratory disease).

These two articles explain how some of the epicentres throughout Europe are also some of the most polluted cities. It's not entirely clear at present why pollution increases the spread of COVID - one hypothesis is that the virus bonds with pollution particles and therefore hangs around in the atmosphere for longer.

<https://airqualitynews.com/2020/04/09/why-air-pollution-is-linked-to-a-faster-spread-of-coronavirus/>

<https://www.google.com/amp/s/api.nationalgeographic.com/distribution/public/amp/science/2020/04/pollution-made-the-pandemic-worse-but-lockdowns-clean-the-sky>

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