

# VitaMins Health: Air Pollution - a major mortality driver or just a lot of hot air?

**We may have moved on since the days of the infamous ‘pea-souper’ smog clouds of the 1950s, but air pollution is still a major driver for ill health and mortality, especially in inner city areas.**

The Royal College of Physicians<sup>1</sup> estimates that around 40,000 deaths per year in the UK are caused by outdoor air pollution with exposure linked to a host of ailments including cancer, asthma, stroke and heart disease, diabetes, obesity and even dementia (a recent study showed that the likelihood of dementia is increased by living less than 50m from a major road<sup>2</sup>). They also claim the effects result in a cost of around £20 billion every year due to health service demand and loss of working hours.

## How bad is the problem?

The EU has set out [legal limits](#) for concentrations of a number of different pollutants in the air we breathe. Based on [2017 data](#) published by the European Environment Agency, the UK is actually within the EU limits for the majority of these pollutants and overall levels of the main air pollutants in the UK have been falling since 2000<sup>3</sup>.

However, every year around January time, there is a big splash in the media about air pollution as the UK breaks the legal limits for Nitrogen Dioxide (NO<sub>2</sub>) for the entire year. The UK broke these annual limits by 6 January every year from 2008 to 2017. This year we managed to last until 30 January<sup>4</sup>, but despite this improvement, the High Court has reportedly ruled that the UK’s plans to improve air pollution is unlawful<sup>5</sup>.

## What’s the deal with NO<sub>2</sub>?

NO<sub>2</sub> is produced by road traffic and the combustion of fossil fuels. It is therefore more prevalent in areas where traffic density is high and the difference in concentration levels between urban and rural areas is significant; despite certain areas breaking the annual limit in the first month of the year, much of the country comes nowhere near this level.

Some of the country is therefore exposed to illegal levels of NO<sub>2</sub> – which has a marked effect on mortality rates. A Danish longitudinal study<sup>6</sup> highlighted that a doubling of NO<sub>2</sub> levels resulted in mortality rates increasing by around 26%. This effect was compounded by poor diets; participants who ate less than 200g of fruit per day suffered an increase in mortality rates of around 45%.

<sup>1</sup> Royal College of Physicians (2016), Every breath we take: the lifelong impact of air pollution.

<sup>2</sup> Chen et al (2017) Living near major roads and the incidence of dementia, Parkinson’s disease, and multiple sclerosis: a population-based cohort study.

<sup>3</sup> EEA (2017) Air quality in Europe - 2017 report EEA Report No 13/2017

<sup>4</sup> <http://www.bbc.co.uk/news/uk-england-london-42681113>

<sup>5</sup> <http://www.bbc.co.uk/news/science-environment-43141467>

<sup>6</sup> Raaschou-Nielsen et al (2012) Traffic air pollution and mortality from cardiovascular disease and all causes: a Danish cohort study Environmental Health.



## Is that the only thing to worry about?

The other main concern is *particulate matter*, the collection of solid and liquid particles in the air such as smoke or pollen. It is categorised by the size of the particles, the measures PM10 and PM2.5 denoting particles with diameters of less than 10µm and 2.5µm respectively. These particles can get lodged in organs causing a host of problems, especially to the lungs and heart, with finer particles penetrating deeper into the body.

The UK does not currently breach the EU legal limits for PM10 or PM2.5. However, there is no safe concentration of these particles to breathe, leading many to focus on the more conservative [guidelines](#) set out by the World Health Organisation. Unfortunately, the UK regularly breaches these limits with the BBC recently reporting on the worst offending places in the country<sup>7</sup>, although again concentrations have been steadily decreasing since 2000<sup>2</sup>.

## What does this mean for pension schemes & insurers?

Despite efforts to reduce air pollution, the levels of certain pollutants in the UK air have remained dangerously high for a sustained period of time, affecting the health and mortality rates of the population.

The effects of air pollution will be experienced very differently depending on where individuals live and work, with urban areas much more heavily affected. Keeping up to date post code data and comparing individuals with experience in the Vita Bank will help pension schemes and insurers identify any emerging effects.

It will be important to monitor the development of political pressures to improve air quality. There has been a large focus recently on reducing vehicle emissions and there has even been a suggestion to ban wood burning stoves, but there is still a long way to go. Perhaps a move to electric cars or knock-on effects of other efforts to address climate change will provide significant improvements to air quality.

Also worth monitoring is the take up of mobile technology in reducing the effects of air pollution. A number of apps are available that allow people to monitor levels of air pollution around them, with the potential to adjust their behaviours accordingly (for example, changing the route they walk to work). Early adopters of technology are likely to be the first to realise any available benefits.

What do you think? Please join the discussion in the Friends of Club Vita group on LinkedIn.

## About: VitaMins Health

Health behaviours and levels of morbidity are key drivers for future mortality rates and can be thought of as key components of the “longevity pipeline”. The levels of health and morbidity in a population today will be stored up and reflected in how long people live in the future.

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<sup>7</sup> <http://www.bbc.co.uk/news/health-43964341>