

Air pollution

The main pollutants to worry about are particulate matter (PM), nitrogen oxides and ground level ozone. Road transport, large fuel-burning plants such as power stations, and agriculture are key sources for one or more of these pollutants. The economic cost in the UK is estimated at £9–19 billion every year. Poor air quality is associated with poorer areas – urban areas close to busy roads.

Air Pollution in London

This is much worse than most of us realise and averages over twice legal limits and World Health Organisation (WHO) guidelines near our busiest streets. London is experiencing the biggest public health crisis since 1952 the year of the Great Smog which led to the Clean Air Act in the 1950s.

- ▲ Air pollution caused over 4,000 early deaths in London in 2008 – around the same number that died during the Great Smog.
- ▲ Traffic-related air pollution near busy roads could be responsible for 15–30% of all new cases of asthma in children.
- ▲ 1,148 schools in London are within 150 metres of roads carrying 10,000 or more vehicles per day and a total of 2,270 schools within 400 metres of such roads.¹
- ▲ long-term exposure to air pollution may have contributed to all 15,800 deaths due to cardiovascular causes in London in 2009 at an average additional loss of life for each of these adults of some three years.
- ▲ All London boroughs have Air Quality Management Areas (AQMA see below) where UK standards and objectives are currently not being met.²
- ▲ Air pollution hits poorer people, who often live near main roads, the hardest.

What the experts say

“Given that much of the impact of air pollution on mortality is linked with cardiovascular deaths, it is more reasonable to consider that air pollution may have made some contribution to the earlier deaths of up to 200,000 people in 2008” says COMEAP, Committee on the Medical Effects of Air Pollutants.³

COMEAP is a committee of experts chaired by J G Ayres, Professor of Environmental and Respiratory Medicine in the School of Health & Population Sciences at the University of Birmingham. These experts say particulate air pollution in the UK is likely to be a greater cause of ill health and death than environmental tobacco smoke or road traffic accidents; although by using modelling techniques they have made estimates of life-years gained by the population as a whole by reducing particulate air pollution, specifically PM_{2.5}, in preference to estimates of deaths. As well as cardiovascular effects particulates and other air pollutants cause or make worse lung cancer, other lung diseases and asthma.

What causes the health problems?

Particulate air pollution

Particulates are small particles of matter in the air: natural sources are from volcanoes, burning forests, dust clouds from deserts and even sea spray. Man-made sources are from burning fossil fuels in vehicles, homes and power stations. They are categorised by size – PM_{2.5} and PM₁₀, are particles with diameters of 2.5 or 10 microns respectively. The smaller PM_{2.5} particles are known to penetrate more deeply into the lungs.

Ozone

Ground level ozone from traffic can cause coughing, irritation of the airways and breathing discomfort. It can

aggravate asthma, emphysema and other respiratory diseases.

Nitrogen Oxides

Nitrogen Oxides, mainly nitrogen dioxide, inflames the lungs. In cities 80% come from vehicle emissions. It also is more of a problem for those with lung problems.

Environmental Legislation covering air quality

The European Union has set standards for controlling a variety of pollutants known to be harmful to health and the environment.⁴ In English law this is now the Air Quality Standards Regulations 2010. The standards are based on World Health Organisation guidelines, are legally binding and must not be exceeded. They set:

- ▲ A concentration level for the pollutant.
- ▲ An averaging period over which it is measured.
- ▲ The date by which the limit values are to be achieved.
- ▲ The number of times this can be exceeded per year for some pollutants only.

There is also:

- ▲ The Environment Act 1995.
- ▲ The Air Quality (England) Regulations 2000.

Air Quality Objectives

The Air Quality Objectives are policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of times they can be exceeded, within a specified timescale. The Objectives are set out in the UK Government Air Quality Strategy.

The Greater London Authority Act 1999 requires the London Mayor to prepare and review a London Air Quality Strategy to comply with legislation and provide information about measures to be taken by the Mayor, Transport for

London, and the London Development Agency. *Clearing the Air*,⁵ was published in December 2010 proposing measures to reduce emissions from transport and other sources.

Air Quality Management Area (AQMA)

If a Local Authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an Air Quality Management Area. The area may be just one or two streets or it could be almost the whole borough, for example the entire borough of Southwark, except for the area to the south of the A205, has been declared an AQMA, largely due to heavy traffic. The Local Authority must then put together a plan to improve air quality in that area – a Local Air Quality Action Plan.

The London Air Quality Network

The London Air Quality Network (LAQN) was formed in 1993 to coordinate and improve air pollution monitoring in London. The LAQN is facilitated by the Association of London Government on behalf of the 33 London Boroughs and is operated and managed by the Environmental Research Group (ERG) at King's College London. Each borough funds monitoring in its own area.

The core LAQN activities are funded by ERG itself. Defra funds ERG to operate the Marylebone Road monitoring site and to maintain eight of the LAQN sites.

Increasingly, these data are being supplemented by measurements from

local authorities surrounding London, thereby providing an overall perspective of air pollution in South East England.

They produce a website which contains information about air quality in and around Greater London. Measurements are collected either hourly or twice daily from continuous monitoring sites, processed and checked then placed on this website with an hourly update. <http://www.londonair.org.uk/> You can use this to find out the nearest monitoring point to where you live.

Find out more

Defra, the Department for Environment, Food and Rural Affairs, provides lots of information, which we have used in this factsheet, including a useful glossary with definitions of common terms used in descriptions of air pollution. See: <http://uk-air.defra.gov.uk/air-pollution/glossary/>

Get involved

The following campaigns are all putting out information and taking actions to raise awareness of this important public health issue:

Environmental Protection UK launched **Healthy Air Campaign** on 5 July 2011, the 55th anniversary of the Clean Air Act. Website: www.healthyair.org.uk/. It is a coalition of many organisations that have been tackling this issue including:

- ▲ **Clean Air in London's** mission is to achieve urgently and sustainably at least WHO recommended standards of air quality throughout London and elsewhere. Website: www.cleanairinlondon.org

- ▲ **Campaign for Better Transport's** website has a great video "Unfinished London" explaining why London's roads are so congested, and policies that have made things worse. The website has a local group directory with details of many London Action Groups. See: <http://www.bettertransport.org.uk/local/directory/>

- ▲ **Asthma UK** is the charity dedicated to improving the health and well-being of the 5.4 million people in the UK whose lives are affected by asthma. Website: www.asthma.org.uk/

- ▲ **Living Streets** is the national charity that stands up for pedestrians. They work to create safe, attractive and enjoyable streets, where people want to walk. One campaign is for more 20mph zones to reduce the number of pedestrians killed. Website: www.livingstreets.org.uk

- ▲ **Sustrans** is the pioneer of the 'Safe Routes' cycling concept in the UK. Website: www.sustrans.org.uk.

REFERENCES

- 1 Clean Air in London (July 2011), <http://www.cleanairinlondon.org/>
- 2 *Clearing the Air*, 1.2 The policy context, page 6.
- 3 COMEAP (2009), The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom, download at: <http://comeap.org.uk/membership/128-the-mortality-effects-of-long-term-exposure-to-particulate-air-pollution-in-the-uk.html>.
- 4 Directive 2008/50/EC on ambient air quality and cleaner air for Europe.
- 5 Greater London Authority, 2010, *Clearing the Air the Mayor's Air Quality Strategy*, 14.12.2010, download from: <http://www.london.gov.uk/publication/mayors-air-quality-strategy>.

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