

22 October 2014

Environmental Audit Committee may have been misled by the Mayor of London's evidence about nitrogen dioxide (NO₂) levels in London relative to other cities

Mayor has unfairly criticised King's College London scientists for their reported comments

Separately, a new survey for Clean Air in London of 100 MPs found a lack of understanding of the health impacts of air pollution relative to other risks. Labour and Liberal Democrats did better than Conservatives

Clean Air in London (CAL) considers the Mayor of London's evidence to the Environmental Audit Committee (EAC) for the 'Action on air quality' inquiry including the oral hearing on 10 September 2014 may have misled it.

Key evidence submitted in writing by the Mayor and commented upon by him at the hearing related to revelations by King's College London (KCL) and The Sunday Times that, in essence, many roads in central London will tend to have the highest nitrogen dioxide (NO₂) concentrations of anywhere in the world. There was widespread media coverage of this matter following The Sunday Times' story.

In written evidence, the Mayor implied that this was 'scare mongering' and stated that 'claims that London's air quality is the worst in the world are inaccurate and should be refuted as it can negatively impact on people's willingness to walk and cycle more'.

In CAL's considered opinion the Mayor has made statements to the EAC and elsewhere the effect of which is to distract people from the original revelation i.e. to suggest media coverage was about air quality in general not the highest NO₂ in particular. Perhaps worse, the 155 page report published by the Mayor on 10 or 11 September and submitted to the EAC, which took well over a year to produce, focused on average air pollution levels of many sorts and as far as CAL can see did not mention or identify a single monitoring site in the whole world reporting higher annual or hourly levels of NO₂ than reported in Oxford Street (or Brixton Road where NO₂ levels are also exceptionally high). In any event CAL has been unable to verify the Mayor's claims not least because section 5.2 of the AMEC report, referred to as describing the methodology on which they seem to be based, does not exist in the published report.

Further, CAL was sent by the Greater London Authority (GLA), following a related Freedom of Information request, a copy of a letter from the GLA to KCL dated 14 July 2014 (Appendix 1) which appears to do the opposite of encouraging and supporting KCL for highlighting bravely and honestly the extraordinary levels of NO₂ in London i.e. it seems to criticise and intimidate KCL (which KCL may feel unable to admit). CAL has therefore decided, given the exceptional nature of this situation, to disclose correspondence it had with the Mayor's office in December 2012 (Appendix 2) after it expressed concerns about the Mayor lobbying for changes to air pollution laws, the effect of which would be to weaken those laws.

CAL hopes that by publishing these two communications it will encourage more transparency and scrutiny of communications between the Mayor or his office and those seeking in good faith to highlight issues of great importance to London.

Given the nature of issues, CAL hopes the EAC will invite the Mayor to attend a further oral evidence hearing at which he would be asked to address the concerns raised in this letter.

Set out below is more information on the above.

Health

The Government and the Mayor have downplayed the health impacts of NO₂, failing to mention that it is the only 'modern' molecule within the whole gaseous component of air pollution subject to World Health Organisation (WHO) guidelines and British and European Union legal limits.

Whereas the particle component of air pollution is regulated by its total mass concentration, gases other than NO₂ are largely ignored. It is vital therefore that levels of NO₂ are reduced to avoid: its direct health effects and those of other toxic pollutants from combustion; and its contribution with nitrogen monoxide as a precursor to the formation of deadly particles. Sulphur dioxide, which is also regulated, has been largely eliminated as a problem by the use of ultra-low sulphur fuels.

In February 2014, a review and meta-analysis of long-term studies of the impacts of NO₂ concluded "There is evidence of a long-term effect of NO₂ on mortality as great as that of PM_{2.5}" and "An independent effect of NO₂ emerged from multipollutant models".

<http://erj.ersjournals.com/content/early/2014/02/20/09031936.00114713.abstract>

Given the exceptionally high levels of NO₂ in cities like London compared to PM_{2.5} in Chinese or Indian cities, it is possible therefore that mortality in those cities attributable to NO₂ will be higher – perhaps much higher – than that for fine particles (PM_{2.5}) (which has long been understood to be the biggest risk from invisible air pollution) e.g. more than 4,300 attributable deaths per year in London. CAL would like to know whether the Mayor or the GLA Group has commissioned or is aware of work on mortality estimates for NO₂ in London and if so for an indication of the scale of them.

Please note that whereas some 75% of PM_{2.5} and PM₁₀ in London originates from outside the city, the position with NO₂ is broadly the opposite i.e. some 75% originates from within the city and is therefore a better indicator as a pollutant of the Mayor's 'success' in reducing air pollution.

The Sunday Times

Two articles appeared in The Sunday Times on 6 July 2014. Selected quotes are shown below.

The first was on the front page titled 'Oxford Street worst in the world for diesel pollution'

<http://www.thesundaytimes.co.uk/sto/news/article1430984.ece> (subscription)

David Carslaw, who researches vehicle emissions and urban air quality at King's College London, said: "To my knowledge this [level] is the highest in the world in terms of both hourly and annual mean. NO₂ concentrations [in Oxford Street] are as high as they have ever been in the long history of air pollution."

The article emphasised its focus on NO₂, not other pollutants such as PM_{2.5} or PM₁₀, by stating:

'The average levels of NO₂ [in Oxford Street] are higher than those recorded in Chinese and Indian cities. However, London has lower levels of particulates, which are leftovers from unburnt fuel that create haze and smogs.'

The second on page 8 was titled 'Diesel fumes choke Tox-ford Street'

http://www.thesundaytimes.co.uk/sto/news/uk_news/article1430986.ece (subscription)

David Carslaw of King's College, who researches vehicle emissions, said that Oxford Street's annual mean of 135mcg [micrograms per cubic metre] was more than three times the EU limit and that levels had exceeded the hourly limit of 200mcg 1,568 times.

"To my knowledge this is the highest in the world in terms of both hourly and annual mean. NO₂ concentrations [in Oxford Street] are as high as they have ever been in the long history of air pollution," he said.

While Oxford Street is the world's worst hotspot for NO₂, many other places in Britain are breaching EU rules. In central Glasgow NO₂ levels have averaged 67mcg this year and peaked at 213mcg. In Bath they averaged 48mcg and reached 269mcg.

Boris said: Such measures have been considered in London but a spokeswoman for Boris Johnson, the mayor, said that while NO₂ might be high, levels of other pollutants such as particulates were "lower than in many world cities". Johnson has announced an ultra-low-emissions zone in central London but not until 2020.

The article explained the connection between NO₂ and diesel exhaust.

Confirmation by King's College London

On 10 July 2014 KCL published a helpful explanation of its findings and reasoning. See:

<http://www.londonair.org.uk/london/asp/news.asp?NewsId=OxfordStHighNO2&StartIndex=11>

Written evidence from the Mayor

The Mayor submitted written evidence to the EAC dated 28 August 2014.

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environmental-audit-committee/action-on-air-quality/written/11957.html>

Executive summary – para 1.7

*The Mayor has also taken a lead in raising awareness about air pollution, including through a £1 million no engine idling campaign launched in 2011, on-going support for airTEXT, working with schools and a new public awareness campaign called Breathe Better Together, launching in September. **In raising awareness about pollution it is important to do this in a responsible way rather than scare-mongering. Recent claims that London’s air quality is the worst in the world are inaccurate and should be refuted as it can negatively impact on people’s willingness to walk and cycle more.** Research from Barcelona has suggested that for most people the health benefits of physical activity outweigh the health impacts of air pollution by 77:1. **[CAL emphasis.]***

Comparisons to other European and world cities

*7.1 **There have been a number of inaccurate press reports recently about air quality in London compared to other world and European cities.** The GLA will shortly be publishing a comprehensive comparative report of city air quality as part of our efforts to better assess progress in improving air quality. **[CAL emphasis.]***

7.2 In assessing air quality it is important to remember that a proper assessment can only meaningfully take place by looking at the full range of pollutants which affect human health (particulate matter, carbon monoxide, lead, sulphur dioxide etc). Focusing on NO₂ does not by itself give a satisfactory understanding of a city’s performance in tackling air pollution. Additional weight should be given to those air pollutants where evidence suggests they have a more significant impact on human health.

7.3 It is also important to remember that London has the most comprehensive monitoring network of any city in the world. London also has a proud history of locating its monitors in the most polluted places (often on the central reservation of the road or at kerbside). Some cities – especially those where resources may be limited or air pollution is less of a priority – have smaller networks, locate them at “background” sites or may not monitor pollution at all.

7.4 The preliminary results from the report show that average levels of NO₂ across monitoring sites near busy roads in Stuttgart, Paris, Munich, Rome and Milan are all higher than those recorded for London. Mexico City’s levels are nearly double those of London, and Hong Kong, Istanbul, Beijing and Shanghai all have higher average readings as well.

AMEC report

A report by AMEC titled ‘Comparison of air quality in London with a number of world and EU cities’ was published by the GLA on 10 or 11 September 2014. See:

<https://www.london.gov.uk/priorities/environment/publications/comparison-of-air-quality-in-london-with-a-number-of-world-and>

<https://www.london.gov.uk/sites/default/files/Comparison%20of%20Air%20Quality%20in%20World%20Cities%20Slide%20Deck%20FINAL.pdf>

The published version of the AMEC report calculates a City Index for NO₂ for each year (2008 – 2012) and the five year average in Table 10.1 on page 55. This seems to form the basis of the claims by the Mayor.

The introductory text before the table says “The method described in section 5.2 has been applied to monitored data for the selected cities to calculate indices, to rank the cities by concentrations of individual pollutants.” Very oddly, Section 5.2 does not exist in the published final report and the underlying data for the calculations was not published or practically assessable. CAL has been unable therefore to establish the basis for the Mayor’s claims.

In CAL’s opinion, *inter alia* the report:

- was already out of date by the time it was published i.e. up to 2012 in September 2014 (note for example that the Oxford Street monitor was not operational until 2013). Note also that the Brixton Road monitor was not operational for periods during 2011, 2012 or 2013;
- used new and complex methodology without publishing a practically auditable trail of methodology or underlying data;
- failed to identify a single monitoring station reporting higher levels of NO₂ than reported at one or more monitoring stations in London e.g. Putney High Street, Brixton Road and Oxford Street; and
- failed completely to address the fundamental point made by KCL i.e. that many roads in central London will tend to have the highest NO₂ concentrations of anywhere in the world.

CAL has been saying and publishing evidence since 2012 that London had reported the highest levels of NO₂ of any capital city in Europe.

In CAL’s opinion therefore, there are serious questions about the value of the report being presented by the Mayor in the context of the debate and concern about actual monitored levels of NO₂ in London. Worse, the Mayor’s statements on the issue, presumably based at least in part on the report, seem to downplay the serious health risks faced by Londoners relative to other European cities.

Please note that CAL is not criticising in any way AMEC or its employees rather that the Mayor failed properly to commission the report or draw appropriate conclusions from it.

Oral evidence from the Mayor to the EAC

The Mayor gave oral evidence to the EAC on 10 September 2014. The transcript can be read here:

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environmental-audit-committee/action-on-air-quality/oral/12461.pdf>

Opening remarks

“The final point I would like to make is that London, contrary to what you may have read in the papers, is by no means the worst polluted city in the world, let alone even in Europe. Mexico City has roughly double the problem that we do. Hong Kong, Istanbul, Shanghai, Beijing are all way ahead of us, or behind us if you like. In Europe you might look at Stuttgart, Paris, Rome, Milan

that are much worse than us. Even a city like Munich has worse air pollution than London. So I welcome the opportunity to be here and to clear the air on that one.”

Actual monitored levels of NO₂

Levels of actual monitored levels of NO₂ at the worst sites in London and Marylebone Road can be seen on the excellent London Air Quality Network website managed by KCL. The links below show air pollution levels in 2014 (and earlier years) and graphs of NO₂ levels since 2008.

Oxford Street – data then graph. Note site began operation in 2013

http://www.londonair.org.uk/london/asp/publicstats.asp?region=0&site=WM6&la_id=&network=All&postcode=&MapType=Google&VenueCode=

<http://www.londonair.org.uk/london/asp/advgraphssiteplot.asp?CBXSpecies2=NO2m&day1=1&month1=jan&year1=2008&day2=16&month2=oct&year2=2014&period=hourly&graphtype=Image&Submit=plot+the+graph&site=WM6&res=6>

Brixton Road – data then graph. Note: site was not in operation for most of 2012 and 2013

http://www.londonair.org.uk/london/asp/publicstats.asp?region=0&site=LB4&Maptype=Google&mapview=all&statyear=2014&la_id=&zoom=9&lat=51.475&lon=-0.11982399999999416&laEdge=N

<http://www.londonair.org.uk/london/asp/advgraphssiteplot.asp?CBXSpecies2=NO2m&day1=1&month1=jan&year1=2008&day2=16&month2=oct&year2=2014&period=hourly&graphtype=Image&Submit=plot+the+graph&site=LB4&res=6>

Marylebone Road – data then graph. Note: Mayor is believed to be operating targeted electronic measures to reduce air pollution from traffic near this site

http://www.londonair.org.uk/london/asp/publicstats.asp?region=0&site=MY1&Maptype=Google&mapview=all&statyear=2014&la_id=&zoom=9&lat=51.475&lon=-0.11982399999999416&laEdge=N

<http://www.londonair.org.uk/london/asp/advgraphssiteplot.asp?CBXSpecies3=NO2m&day1=1&month1=jan&year1=2008&day2=16&month2=oct&year2=2014&period=hourly&graphtype=Image&Submit=plot+the+graph&site=MY1&res=6>

Putney High St (not façade) – data then graph. Note: Putney Bridge closed for months in 2014

http://www.londonair.org.uk/london/asp/publicstats.asp?region=0&site=WA7&Maptype=Google&mapview=all&statyear=2014&la_id=&zoom=8&lat=51.55020981949534&lon=-0.6567807871093692&laEdge=N

<http://www.londonair.org.uk/london/asp/advgraphssiteplot.asp?CBXSpecies2=NO2m&day1=1&month1=jan&year1=2008&day2=16&month2=oct&year2=2014&period=hourly&graphtype=Image&Submit=plot+the+graph&site=WA7&res=6>

CAL is concerned that the trend for NO₂ reported by the Marylebone Road monitor appears to be diverging from that of other monitors in London. CAL would like to know whether the Mayor or the GLA Group has used or encouraged special measures to reduce NO₂ near the monitor used to report the highest levels of this pollutant to the European Commission i.e. the Marylebone Road monitor used for reporting compliance with Directive 2008/50/EC.

Letter from Mayor to KCL

CAL submitted a Freedom of Information request to the GLA on 13 July 2013 requesting copies of communications between the GLA and KCL in relation to The Sunday Times story. The GLA subsequently volunteered the attached letter to KCL which was dated 14 July 2014 (Appendix 1).

The Mayor's office made *inter alia* a number of statements including:

"I look forward to continuing to work with King's ERG and *trust that in future more rigour will be applied to public statements made by members of the Group's staff.*" [CAL emphasis]

CAL has decided exceptionally therefore to publish correspondence it had with the Mayor's office in December 2012 (Appendix 2). As part of a long email exchange CAL said:

"*I do not accept that my tweeting was false or that it may give rise to a claim for defamation by the Mayor as you seem to imply.*" [CAL emphasis]

The Mayor's office replied:

"*There were no threats, veiled or otherwise meant in my email. The Mayor would never seek to silence anyone – he is a journalist after all!! He does, however, think that criticism should be fair and based on fact and I don't know how much more forcefully we can deny the allegation that we are seeking to weaken Europe's AQ laws.*" [CAL emphasis]

CAL hopes that by publishing these two communications it will encourage more transparency and scrutiny of communications between the Mayor or his office and those seeking in good faith to highlight issues of great importance to London.

Survey of MPs understanding of public health risks

100 MPs responded to a survey for CAL by DODS (Appendix 3). They were asked to 'Rank the following risk factors in terms of the number of early deaths attributable to them in the UK annually: air pollution; alcoholism; obesity; road traffic accidents; and smoking (excluding passive smoking)'.

Responses showed:

- Air pollution was ranked as the lowest risk factor by respondents, with an average ranking of 4.1 out of 5 (with 5 denoting fifth rank). Although this represents a slight improvement on 2013 it is too small to say that there has been a definite change in MPs' attitudes.
- Labour and Liberal Democrat respondents placed air pollution fourth of the five factors, ahead of road traffic accidents. Conservatives placed it fifth. This is a change on 2013, when all three parties placed it fifth.
- Unlike 2013, respondents from London were less likely than average to see air pollution as a major factor in premature deaths. Those representing constituencies in the capital scored air pollution at 4.4, 0.3 points higher than the average ranking. In 2013, respondents from London scored air pollution lower than the overall average (meaning that they were more likely to see it as a threat).

Officially published estimates for public health risks are:

Air pollution	28,969 in the UK (2010); average 12 years
Alcoholism	15,000 to 22,000 in England; average men 20 years, women 15 years
Obesity	9,000 in England; average nine years
Road traffic accident deaths	1,713 killed in Great Britain (2013)
Smoking	Nearly 80,000 in in England (2011); average 10 years

<http://cleanair.london/health/clean-air-in-cities-index/>

<http://cleanair.london/health/guide-to-health-impacts-invisible-air-pollution-is-the-biggest-public-health-failing-or-cover-up-for-decades/>

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRC_E_010.pdf

http://cleanair.london/wp-content/uploads/CAL-186-Health-issues_DH-estimates-for-alcoholism_dh_085312.pdf

http://cleanair.london/wp-content/uploads/CAL-186-Health-issues_DH-estimates-for-obesity-2007.pdf

http://cleanair.london/wp-content/uploads/CAL-186-Health-issues_DH-estimates-for-smoking_dh_091384.pdf

<https://www.gov.uk/government/statistics/reported-road-casualties-in-great-britain-main-results>