Building public understanding of air pollution

Public health: an update and way forward
London: 24 October 2012

Simon Birkett, Founder and Director, Clean Air in London

www.twitter.com/CleanAirLondon
www.cleanairinlondon.org
Summary

• Is air pollution still a problem?
• What is poor air quality?
• Health impacts
• Legal framework, responsibilities and breaches
• Sources
• Solutions
• Health and Wellbeing Boards: assess and address air pollution

2013 is the European Commission’s ‘Year of Air’
Great Smog of 1952

- 5-8 December 1952: Great Smog. Estimated 4,075 premature deaths (and perhaps up to 12,000 in total)
- Until the 1960s London suffered from terrible coal smoke smogs
Is air pollution still a problem?

• “The rate of decline in some air pollutants is now levelling off.... air pollution still reduces life expectancy by an average of six months, with social costs estimated at £8 to 17 billion per year.” Defra, July 2010. CAL emphasis

• “Air pollution in the UK has declined significantly over recent decades through measures to reduce pollution.... However, the rate of reduction is now levelling off for some key pollutants such as oxides of nitrogen.” Defra, December 2010

• “Our air – air quality is good across 99% of the UK, but air pollution continues to harm human health particularly in some urban areas.” Defra, July 2010
Worst smog episode since 2006 on eve of Olympics

London Air Quality Network [www.londonair.org.uk]
Forecasting

These pages provide air pollution forecast information from Defra and the Devolved Administrations. Here you will find daily updated forecasts of UK air pollution concentrations for up to 24 hours ahead. Forecasts are issued for sixteen urban areas and sixteen UK regions; these cover roadside, urban background and rural locations.

**Latest UK Air Pollution Forecast**

Air pollution is expected to be Low at all locations in all regions for the next 24 hours as a period of unsettled weather affects the UK.

The situation is expected to remain unchanged for the following 2 days.

Forecast valid until 25th October 2012
**Latest pollution summary**

Click on the map regions below to view latest air pollution data for regions and agglomerations. Other pages in this section provide data for specific monitoring sites, and view data across Europe. You can also find out the health advice for each pollution band.

Click a coloured region from the map to view the latest data for a specific region. The coloured regions show the maximum pollution index measured or forecast.

**Latest Summary**

The following summary shows you how many automatic monitoring sites from the AURN are in each health banding.

- **Low:** 114
- **Moderate:** 11
- **High:** 6
- **Very High:** 0

Latest data: 24/10/2012 07:00:00 | Summary from 130 monitoring sites

* Use the Forecasting section of UK-AIR to view detailed air pollution forecasts for the UK.

Follow UK-AIR on Twitter | RSS Air Pollution Forecast

**Air pollution alerts**

There are currently no air pollution alerts issued. This page will update with information about alerts when issued.

**Regions**

You can quickly jump to a specific region by choosing from the dropdown list below.

- Central Scotland

© Crown copyright | Terms & conditions | Privacy | Cookies Policy | Accessibility | Help

Air Pollution
Recorded Helpline 0800 55 66 77
London Air Quality Network:
Smog episode on 24 October 2012
### London Air Quality Network: Health advice

You are on this page: Air Quality Bands Health Information

<table>
<thead>
<tr>
<th>Air pollution banding</th>
<th>Value</th>
<th>Accompanying health messages for at-risk groups and the general population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>At-risk individuals</strong> *</td>
</tr>
<tr>
<td>Low</td>
<td>1-3</td>
<td>Enjoy your usual outdoor activities.</td>
</tr>
<tr>
<td>Moderate</td>
<td>4-6</td>
<td>Adults and children with lung problems, and adults with heart problems, who experience symptoms, should consider reducing strenuous physical activity, particularly outdoors.</td>
</tr>
<tr>
<td>High</td>
<td>7-9</td>
<td>Adults and children with lung problems, and adults with heart problems, should reduce strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also reduce physical exertion.</td>
</tr>
<tr>
<td>Very High</td>
<td>10</td>
<td>Adults and children with lung problems, adults with heart problems, and older people, should avoid strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often.</td>
</tr>
</tbody>
</table>

* Adults and children with heart or lung problems are at greater risk of symptoms. Follow your doctor's usual advice about exercising and managing your condition. It is possible that very sensitive individuals may experience health effects even on Low air pollution days. Anyone experiencing symptoms should follow the guidance provided in section B on the "How to use the air quality index" page, using the link below.

See how to use the daily air quality index  How the index is calculated  What the bands mean  Video - Daily Air Quality Index
What is air pollution?

• Several ambient air pollutants
  – Nitrogen dioxide (NO₂)
  – Tropospheric ozone (O₃)
  – Particulate matter: ultrafine (PM₀.₁); fine (PM₂.₅); coarse (PM₂.₅-₁₀) and PM₁₀
  – Sulphur dioxide (SO₂)
  – Others e.g. benzo(a)pyrene
• Smaller particles penetrate deeper into lungs and bloodstream
• Mortality (death) and morbidity (sickness). Acute (shorter time) and chronic (longer time)
Protecting public health

• “Since 1900, the average lifespan of persons in the United States has lengthened by over 30 years; 25 years of this gain are attributable to advances in public health”, Journal of the American Medical Association, 1999

• “Public health experts agree that environmental risks constitute 25% of the burden of disease.” WHO, 2011
Assessment of Deaths Attributable to Air Pollution:
Should We Use Risk Estimates based on Time Series or on Cohort Studies
Health impacts in context

• Annual deaths:
  – Smoking, 79,100 attributable deaths in England in 2011
  – Long-term exposure to PM$_{2.5}$, 29,000 attributable deaths in the UK
  – Alcohol related deaths, between 15,000 and 22,000 deaths in England
  – Obesity, 9,000 premature deaths in England

• 1,901 people killed in road accidents in GB in 2011
Health impacts: short and long-term exposure; young and old people

• Health impacts of long-term exposure to ‘invisible’ air pollution identified in mid-1990s and later

• Aphekom project: Living near busy roads could be responsible for some 15-30% of all new cases of asthma in children; and of chronic obstructive pulmonary disease and coronary heart disease in adults 65 years of age and older

• What next?
London schools within 150m and 400m of busy roads

*Roads carrying over 100,000 vehicles per day*
## EU legal standards compared to WHO guidelines

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Legal standard</th>
<th>WHO guideline</th>
</tr>
</thead>
</table>
| **Fine particulate matter (PM$_{2.5}$)** | 1. 25 µg/m$^3$ annual mean to become limit value in 2015  
2. 20 µg/m$^3$ exposure concentration obligation based on 3-year average by 2015  
3. Exposure reduction target in percentage by 2020 | 25 µg/m$^3$  
24-hour mean  
10 µg/m$^3$ |
| **Particulate matter (PM$_{10}$)**  | 35 days over 50 µg/m$^3$ since 2011  
40 µg/m$^3$ since 2011  
50 µg/m$^3$ 24-hour mean  
20 µg/m$^3$ | |
| **Nitrogen dioxide (NO$_2$)**      | 18 hours over 200 µg/m$^3$ since 2010  
40 µg/m$^3$ since 2010  
200 µg/m$^3$  
40 µg/m$^3$ | |
Concentration and trends – Mayor’s Air Quality Strategy
NO$_2$ annual mean concentrations for 2008
Air quality responsibilities

• UK breaching its legal responsibilities
• Legal action expected to commence shortly
Sources of air pollution in London
Emissions, source *Mayor’s Air Quality Strategy 2010*

- Diesel cars 21.7x PM$_{10}$ and 2.1x NOx of petrol cars (DfT 2009)

*World Health Organisation has classified diesel exhaust as carcinogenic for humans*
Solutions

Clean Air in London has proposed 45 measures

Adaptation and mitigation

• Political leadership
• Massive campaign to build public understanding
• Clean up transport
• Build low emission cities including buildings
• Technology and behavioural change
• Protect the most vulnerable

People need to be warned about the dangers of air pollution and given advice about protecting themselves and reducing pollution for themselves and others
Boris’ Pollution Suppressor
Reducing pollution by monitors used to report legal breaches

© 2012 Simon Birkett and Clean Air in Cities Limited
Don’t forget indoor air quality: European citizens spend over 90% of their time indoors on average

If your hospital or workplace has a mechanical ventilation system or air conditioning (i.e. it is likely to contain the necessary ducting) please ask:

“What is the procedure for cleaning of air filters in the ventilation system? Does our ventilation system include regularly maintained air filters that comply with European standard EN 13779 and, if not, why not?”

For more information visit www.keepthecityout.co.uk

Note: a building may have ventilation, air conditioning and/or air filters
Engagement and education

• Content, content, content...
  - Popular topics include: London and UK are the worst in Europe; death and serious illness; legal action by the European Commission; Olympics; smog; and ‘cover-ups’

• Communication, communication, communication....
  - Website. Popular categories include: guides; and action e.g. ‘10 steps’
  - Twitter. Immediate, powerful and high ‘return on effort’
  - Media. Television, radio, online and print. Stories, briefings and quotes. Must be willing to respond quickly
Health and Wellbeing Boards

Others (non-statutory)

Elected rep (Councillor)

Health watch (NGO) rep

Clinical care commissioning group rep

Local authority (Directors of: Social Services; Children’s Services; and Public Health)

Health and Wellbeing Board

Joint Strategic Needs Assessment

Health and Wellbeing Strategy

Public Health Outcomes Framework

London: 24 October 2012
Clean Air in London
Public health outcomes framework for 2013-2016

• Metrics for Health and Wellbeing Boards from 2013 include Domain 3: Health protection; 3.1 Air pollution:

“The mortality effect of anthropogenic particulate air pollution (measured as fine particulate matter, PM$_{2.5}$) per 100,000 population”

• Committee on the Medical Effects of Air Pollution (COMEAP) recommends Mortality Burden is expressed as: attributable deaths; total years of life lost; and attributable fraction

$PM_{2.5}$: 12.5 µg/m$^3$ (2009); 13.0 µg/m$^3$ (2010); 13.5 µg/m$^3$ (2011)
Air pollution among other public health risks

From a presentation by Dr William Bird of Natural England
Summary

• Is air pollution still a problem?
• What is poor air quality?
• Health impacts
• Legal framework, responsibilities and breaches
• Sources
• Solutions
• Health and Wellbeing Boards: assess and address air pollution

2013 is the European Commission’s ‘Year of Air’
Building public understanding of air pollution

Public health: an update and way forward
London: 24 October 2012

Simon Birkett, Founder and Director, Clean Air in London

www.twitter.com/CleanAirLondon
www.cleanairinlondon.org
Supplementary slides for reference
Assessment of Deaths Attributable to Air Pollution: Should We Use Risk Estimates based on Time Series or on Cohort Studies

Health impacts

• Public health risks:
  – *Smoking was responsible for 79,100 attributable deaths in England in 2011.* DoH, 2012. “Men who quit smoking by 30 added 10 years to their life.” NHS, July 2010
  – *Long-term exposure to PM$_{2.5}$: 29,000 attributable deaths in the UK at an average loss of 11.5 years.* COMEAP, December 2010
  – “There are between 15,000 and 22,000 alcohol-related deaths every year in England. Most of these deaths are premature: on average, every man in this group loses 20 and every woman 15 years of life compared with the average.” DoH, June 2008
  – “*Obesity is responsible for 9,000 premature deaths each year in England, and reduces life expectancy by, on average, 9 years.*” DoH, September 2007
• *1,901 people killed in road accidents in GB in 2011.* DfT, 2012
Attributable deaths by London borough in 2008

Inner London has highest pollution. Outer London shows more early deaths as borough size is bigger (incl. non-anthropogenic)

Note: Provisional calculations prepared by Campaign for Clean Air in London (30 June 2010 as at 12 noon)

<table>
<thead>
<tr>
<th>Boroughs ranked by average concentration of PM2.5</th>
<th>Boroughs ranked by total estimated premature deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tot pop</td>
<td>PM2.5</td>
</tr>
<tr>
<td>City of London</td>
<td>0.155</td>
</tr>
<tr>
<td>Camden</td>
<td>207,189</td>
</tr>
<tr>
<td>Kensington and Chelsea</td>
<td>169,015</td>
</tr>
<tr>
<td>Tower Hamlets</td>
<td>231,664</td>
</tr>
<tr>
<td>Haringey</td>
<td>195,114</td>
</tr>
<tr>
<td>Waltham Forest</td>
<td>226,706</td>
</tr>
<tr>
<td>Southwark</td>
<td>276,838</td>
</tr>
<tr>
<td>Hammersmith and Fulham</td>
<td>178,836</td>
</tr>
<tr>
<td>Hackney</td>
<td>223,347</td>
</tr>
<tr>
<td>Lambeth</td>
<td>201,783</td>
</tr>
<tr>
<td>Wandsworth</td>
<td>263,051</td>
</tr>
<tr>
<td>Newham</td>
<td>201,861</td>
</tr>
<tr>
<td>Enfield</td>
<td>251,256</td>
</tr>
<tr>
<td>Ealing</td>
<td>217,721</td>
</tr>
<tr>
<td>Brent</td>
<td>277,863</td>
</tr>
<tr>
<td>Hackney</td>
<td>223,055</td>
</tr>
<tr>
<td>Lewisham</td>
<td>269,202</td>
</tr>
<tr>
<td>Hounslow</td>
<td>228,905</td>
</tr>
<tr>
<td>Greenwich</td>
<td>236,450</td>
</tr>
<tr>
<td>Merton</td>
<td>192,068</td>
</tr>
<tr>
<td>Redbridge</td>
<td>252,553</td>
</tr>
<tr>
<td>Barnet</td>
<td>329,752</td>
</tr>
<tr>
<td>Richmond upon Thames</td>
<td>164,519</td>
</tr>
<tr>
<td>Beckenham and Dagenham</td>
<td>172,357</td>
</tr>
<tr>
<td>Kingston upon Thames</td>
<td>154,205</td>
</tr>
<tr>
<td>Croydon</td>
<td>341,021</td>
</tr>
<tr>
<td>Sutton</td>
<td>169,100</td>
</tr>
<tr>
<td>Hillingdon</td>
<td>253,432</td>
</tr>
<tr>
<td>Bexley</td>
<td>216,945</td>
</tr>
<tr>
<td>Havering</td>
<td>216,896</td>
</tr>
<tr>
<td>Havering</td>
<td>230,470</td>
</tr>
</tbody>
</table>

Greater London (per CCAL) | 7,073,219 | 4.271 | Greater London (per Mayor) | 7,073,217 | 4.267

London: 24 October 2012
Clean Air in London
32
Nitrogen dioxide is not just a molecule

“Nitrogen dioxide (NO₂), for example, is a product of combustion processes and is generally found in the atmosphere in close association with other primary pollutants, including ultrafine particles. It is itself toxic and is also a precursor of ozone, with which it coexists along with a number of other photochemically generated oxidants. Concentrations of NO₂ are often strongly correlated with those of other toxic pollutants. Its concentration is readily measured but needs interpretation as a potential surrogate for a set of sources and the resulting mixture. Achieving guideline concentrations for individual pollutants, such as NO₂, may therefore bring public health benefits that exceed those anticipated on the basis of estimates of a single pollutant’s toxicity.”

‘Update of WHO air quality guidelines’ (AQG) published in 2008
Current legal situation

• Member State obligation. Key roles for Mayor and local authorities
• PM$_{10}$: UK obtained (unlawfully) time extension until 2011 to comply with PM$_{10}$ daily limit value in London. Breached, in any event, in Neasden Lane in 2011 and more widely in 2012
• NO$_2$: only three of 43 UK zones complied by 2010 deadline. No plan to comply in 16 zones before 2020 (or 2025 in London). Four of nine zones have already breached time extensions. London worst capital city in Europe
• ‘Clean Air in London’ complaint considered under EU Pilot
• Infraction expected soon. Fines would be final sanction at 5$^{th}$ stage
• UK population weighted PM$_{2.5}$: 12.0 $\mu$g/m$^3$ in 2009); 13.0 $\mu$g/m$^3$ in 2010 and 13.5 $\mu$g/m$^3$ in 2011 i.e. a steady and significant worsening of this key metric
Concentrations of nitrogen dioxide ($\text{NO}_2$) in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)

- EU limit value for NO2 from 1 January 2010
- Required NO2 reduction
- EU limit value plus margin of tolerance for NO2 from 1 January 2010
Widespread breaches of nitrogen dioxide laws

Current status of infraction action

<table>
<thead>
<tr>
<th>Zone code</th>
<th>Zone name</th>
<th>Population exposed to 40ug/m³ NO₂</th>
<th>Compliance expected?</th>
<th>Compliance by EN13725 with low invasion (zone scored?)</th>
<th>Main climatic or geographical factors</th>
<th>Time extension requested</th>
<th>Time extension granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>06.01.01</td>
<td>Brentford West</td>
<td>886,090</td>
<td>18.95</td>
<td>No</td>
<td>Yes, high winds, low pressure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06.01.02</td>
<td>West Feltham</td>
<td>1,200,985</td>
<td>18.93</td>
<td>No</td>
<td>Yes, high winds, low pressure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06.01.03</td>
<td>Brentford East</td>
<td>56,176</td>
<td>18.95</td>
<td>No</td>
<td>Yes, high winds, low pressure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06.01.04</td>
<td>Harmondsworth</td>
<td>183,000</td>
<td>18.95</td>
<td>Yes, high winds, low pressure</td>
<td>Yes, high winds, low pressure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06.01.05</td>
<td>Bracknell</td>
<td>20,000</td>
<td>18.95</td>
<td>Yes, high winds, low pressure</td>
<td>Yes, high winds, low pressure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06.01.06</td>
<td>Greenford</td>
<td>10,000</td>
<td>18.95</td>
<td>Yes, high winds, low pressure</td>
<td>Yes, high winds, low pressure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06.01.07</td>
<td>Ascot</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.08</td>
<td>Windsor</td>
<td>20,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.09</td>
<td>Ascot</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.10</td>
<td>Sindelton</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.11</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.12</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.13</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.14</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.15</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.16</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.17</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.18</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.19</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.20</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.21</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.22</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.23</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>06.01.24</td>
<td>Woking</td>
<td>1,000</td>
<td>18.95</td>
<td>No</td>
<td>No, low pressure</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Notes:
1. In non-compliant units, weekly assessment scores at least part of the zone does not comply with the NO₂ annual mean limit.
4. All references to facts that DEFRA sources have been applied in the zone.

London: 24 October 2012
Clean Air in London

36
Key issues: ‘Year of Air’ in 2013

UK has highest % age of zones exceeding LV+MOT

Nitrogen dioxide 2009
Annual limit value for the protection of human health
- ≤ limit value
- Limit value - margin of tolerance
- > margin of tolerance
- Zone designated, data missing
- Area not designated
- Geospatial information missing
- Outside data coverage
Sources of air pollution in London

Mayor’s Air Quality Strategy 2010

- Emissions (not concentrations). Based on 2008 estimates
- $\text{PM}_{10}$ (Central London)
  - Road transport 79%. Cars 23%; taxis 20%; LGVs 10%. Buses <10%
  - Tyre and brake wear 35%
- $\text{PM}_{2.5}$ (Greater London)
  - Road transport 80%; industrial and commercial gas combustion
  - LGV, cars and taxis 20% each. Buses 5%
  - Tyre and brake wear 25%
- Oxides of nitrogen
  - Road transport 46%; domestic gas 22%
  - Commercial gas, industry, airport and rail 7-8%
  - Cars 35%; HGVs 30%; buses 21%
- DfT 2009: Diesel versus petrol cars (g/mile): 21.7x $\text{PM}_{10}$; and 2.1x NOx

*World Health Organisation has classified diesel exhaust as carcinogenic for humans*
Key issues: ‘Year of Air’ in 2013
We need continuity and the tightening of health and legal protections

Defra, Red Tape Challenge, Environment Theme proposals (19 March 2012):

Working in partnership with other Member States, we will also use the European Commission review of air quality legislation, expected in 2013, to seek:

• Amendments to the Air Quality Directive which reduce the infraction risk faced by most Member States, especially in relation to nitrogen dioxide provisions.

• Simplifications to the legal framework (e.g. through reducing requirements for Member States) to reduce costs and administrative burdens to local authorities and businesses whilst maintaining or improving health and ecosystem protection.

• Requirements that are strictly proportional to evidence on costs and benefits

‘Clean Air in London’ emphasis
‘The London Matrix’: Clean air urgently and sustainably in all large cities

<table>
<thead>
<tr>
<th></th>
<th>Air quality</th>
<th>Climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>London (or any city)</td>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>Rest of world</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

London: 24 October 2012
Clean Air in London
10 steps for ‘Clean Air in Cities’

1. Investigate
2. Protect yourself (i.e. adaptation)
3. Reduce pollution for yourself and others (i.e. mitigation)
4. Research
5. Lobby
6. Campaign
7. Oppose unlawful developments and situations
8. Spread the word
9. Support ‘Clean Air in London’
10. Feedback ideas

We need to protect public health and encourage sustainable development
Useful links

• Clean Air in London - http://cleanairinlondon.org
• London air quality monitoring and info www.londonair.org.uk
• Air quality alerts - www.airtext.info, www.airalert.info/
• Air quality and health science - http://comeap.org.uk/
• Healthy Air Campaign - http://healthyair.org.uk/
• UK Government air quality pages - http://uk-air.defra.gov.uk/
• Mayor’s air quality pages - www.london.gov.uk/improving-air-quality
• Environmental Audit Select Committee report on air quality - http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenvaud/1024/102402.htm
• BBC http://www.bbc.co.uk/news/uk-england-london-13863502