Reframing The United Kingdom’s Local Air Quality Management: From Diagnosis To Solutions

Abstract #119


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Presentation Overview

- Introduction to UK Air Quality Management
- National vs local measures
- Review and Assessment
- Air Quality Action Planning
- Local Transport Plans
- Defining the policy disconnects
- Conclusions
Local Air Quality Management in the UK

- Point source control no longer appropriate.
- Shift to effects- and source-based risk management control.
- Introduced human health effects-based Air Quality Objectives (AQOs).
- AQOs based on Expert Panel on Air Quality Standards’ recommendations.
- Local management, nationally co-ordinated.
Environment Act 1995

• Framework for identification and remediation of poor air quality at a national and local level.
• AQS sets out Air Quality Objectives (AQOs) for selected pollutants with significant public health risks.
• Local authorities (LAs) are required to review and assess local air quality against AQOs in Air Quality Regulations that are within their capability.
National vs Local Measures

• National measures intended to reduce background pollutant concentrations.
• Local measures intended to tackle local pollution hotspots.
• National measures focused on technical emissions reduction strategies, e.g. Euro standard vehicles.
• Nitrogen dioxide remains a significant problem – concentrations are not falling as expected due to national and EU measures.
• More emphasis on local measures to meet AQOs.
Air Quality Management Legislation

Environment Act 1995, part IV

National Air Quality Strategy (1997)
- The Air Quality Regulations 1997
  - Revised

- The Air Quality (England) Regulations 2000
- The Air Quality (Wales) Regulations 2000
- The Air Quality (Scotland) Regulations 2000
  - Amended

The Air Quality Strategy (2007)
- The Air Quality (Amendment) (England) Regulations 2002
- The Air Quality (Amendment) (Wales) Regulations 2002
- The Air Quality (Amendment) (Scotland) Regulations 2002
## Air Quality Objectives (1)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Applies</th>
<th>Objective</th>
<th>Measured as</th>
<th>Date to be achieved by</th>
<th>European obligations</th>
<th>Date to be achieved by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particles (PM(_{10}))</td>
<td>UK</td>
<td>50μg.m(^{-3}) not to be exceeded more than 35 times a year</td>
<td>24 hour mean</td>
<td>31 December 2004</td>
<td>50μg.m(^{-3}) not to be exceeded more than 35 times a year</td>
<td>1 January 2005</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>40μg.m(^{-3})</td>
<td>annual mean</td>
<td>31 December 2004</td>
<td>40μg.m(^{-3})</td>
<td>1 January 2005</td>
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<tr>
<td></td>
<td>UK (except Scotland)</td>
<td>25μg.m(^{-3})</td>
<td>annual mean</td>
<td>2020</td>
<td>Target value 25μg.m(^{-3})</td>
<td>2010</td>
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<tr>
<td></td>
<td>Scotland</td>
<td>50μg.m(^{-3}) not to be exceeded more than 7 times a year</td>
<td>24 hour mean</td>
<td>31 December 2010</td>
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<tr>
<td></td>
<td>Scotland</td>
<td>18μg.m(^{-3})</td>
<td>annual mean</td>
<td>31 December 2010</td>
<td></td>
<td></td>
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<tr>
<td>Particles (PM(_{2.5})) Exposure Reduction</td>
<td>UK (except Scotland)</td>
<td>25μg.m(^{-3})</td>
<td>annual mean</td>
<td>2020</td>
<td>Limit value 25μg.m(^{-3})</td>
<td>2015</td>
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<tr>
<td></td>
<td>Scotland</td>
<td>12μg.m(^{-3})</td>
<td>annual mean</td>
<td>2020</td>
<td>Target of 15% reduction in concentrations at urban background</td>
<td>Between 2010 and 2020</td>
</tr>
<tr>
<td></td>
<td>UK urban areas</td>
<td>Target of 15% reduction in concentrations at urban background</td>
<td></td>
<td>Between 2010 and 2020</td>
<td>Target of 20% reduction in concentrations at urban background</td>
<td>Between 2010 and 2020</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>UK</td>
<td>200μg.m(^{-3}) not to be exceeded more than 18 times a year</td>
<td>1 hour mean</td>
<td>31 December 2005</td>
<td>200μg.m(^{-3}) not to be exceeded more than 18 times a year</td>
<td>1 January 2010</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>40μg.m(^{-3})</td>
<td>annual mean</td>
<td>31 December 2005</td>
<td>40μg.m(^{-3})</td>
<td>1 January 2010</td>
</tr>
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<td>Pollutant</td>
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<tr>
<td>Ozone</td>
<td>UK</td>
<td>100μg.m⁻³ not to be exceeded more than 10 times a year</td>
<td>8 hour mean</td>
<td>31 December 2005</td>
<td>Target of 120μg.m⁻³ not to be exceeded more than 25 times a year averaged over 3 years</td>
<td>31 December 2010</td>
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<td>Sulphur dioxide</td>
<td>UK</td>
<td>266μg.m⁻³ not to be exceeded more than 35 times a year</td>
<td>15 minute mean</td>
<td>31 December 2005</td>
<td>350μg.m⁻³ not to be exceeded more than 24 times a year</td>
<td>1 January 2005</td>
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<tr>
<td></td>
<td>UK</td>
<td>350μg.m⁻³ not to be exceeded more than 24 times a year</td>
<td>1 hour mean</td>
<td>31 December 2004</td>
<td>125μg.m⁻³ not to be exceeded more than 3 times a year</td>
<td>1 January 2005</td>
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<tr>
<td></td>
<td>UK</td>
<td>125μg.m⁻³ not to be exceeded more than 3 times a year</td>
<td>24 hour mean</td>
<td>31 December 2004</td>
<td>Target of 1 ng.m⁻³</td>
<td>1 January 2005</td>
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<td>Polycyclic aromatic hydrocarbons</td>
<td>UK</td>
<td>0.25ng.m⁻³ B[a]P as annual average</td>
<td>31 December 2010</td>
<td>Target of 1 ng.m⁻³</td>
<td>31 December 2012</td>
<td>31 December 2012</td>
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<tr>
<td>Benzene</td>
<td>UK</td>
<td>16.25μg.m⁻³ running annual mean</td>
<td>31 December 2003</td>
<td>31 December 2003</td>
<td>5μg.m⁻³</td>
<td>1 January 2010</td>
</tr>
<tr>
<td></td>
<td>England and Wales</td>
<td>5μg.m⁻³ annual average</td>
<td>31 December 2010</td>
<td>31 December 2010</td>
<td>5μg.m⁻³</td>
<td>1 January 2010</td>
</tr>
<tr>
<td></td>
<td>Scotland, Northern Ireland</td>
<td>3.25μg.m⁻³ running annual mean</td>
<td>31 December 2010</td>
<td>31 December 2010</td>
<td>3.25μg.m⁻³</td>
<td>1 January 2010</td>
</tr>
<tr>
<td>1,3-butadiene</td>
<td>UK</td>
<td>2.25μg.m⁻³ running annual mean</td>
<td>31 December 2003</td>
<td>31 December 2003</td>
<td>10mg.m⁻³</td>
<td>1 January 2005</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>UK</td>
<td>10mg.m⁻³ running 8 hour mean/in Scotland as running 8 hour mean</td>
<td>31 December 2003</td>
<td>31 December 2003</td>
<td>10mg.m⁻³</td>
<td>1 January 2005</td>
</tr>
<tr>
<td>Lead</td>
<td>UK</td>
<td>0.5μg.m⁻³ annual mean</td>
<td>31 December 2004</td>
<td>0.5μg.m⁻³</td>
<td>31 December 2008</td>
<td>1 January 2005</td>
</tr>
</tbody>
</table>
Review and Assessment Process (1)

- Review & Assessment (R&A) is undertaken by local authorities (LAs), centrally managed at a national level.
- Exceedences of Air Quality Objectives (AQOs) identified in areas of public exposure.
- LAs required to designate Air Quality Management Areas (AQMAs).
- AQMA follows detailed assessment of air quality in accordance with central government guidance.
- LAs required to develop an Air Quality Action Plan (AQAP) to pursue the achievement of the AQOs.
- AQAP should include measures to be taken and time-scale for implementation.
Review and Assessment Process (2)

- Updating and Screening Assessment (2009/12/15)
- Review and Assessment Progress Report (2010/13/16)
- Review and Assessment Progress Report (2011/14/17)

When a problem is identified:
- Detailed Assessment
  - Problem? Yes – 4 months
  - Declare AQMA
    - 12 months
    - Further Assessment
      - Amend/Revoke Maintain AQMA
    - 18 months
      - Air Quality Action Plan
        - Air Quality Action Plan Progress Report

Repeat cycle

Opportunities for consultation with formal bodies
AQMAs

• Review and Assessment process began in 1998.
• Only a few AQMAs were anticipated.
  – End of the Round 1, 129 LAs had one or more AQMAs.
  – End of the Round 2, 192 LAs had one or more AQMAs.
  – End of Round 3, >200 LAs had one or more AQMAs.
• Currently 236 (58%) LAs with AQMAs (July 2010).
• 95% of AQMAs declared are due to traffic-related emissions.
• \( \text{NO}_2, \text{PM}_{10} \) and \( \text{SO}_2 \) exceedences account for all AQMAs.
Number of Local Authorities with AQMAs

End of Round 1

Round 2 Begins

2004 DA/PRs due

Round 3 Begins

2005 DA/PRs due

2007 DA/PRs due

2008 DA/PRs due

Round 4 Begins

DA/PRs due 2005

DA/PRs due 2007
Local Authorities with AQMAs across UK (March 2010)

- Northern Ireland = 11 (42%)
- Wales = 8 (36%)
- Scotland = 12 (38%)
- England = 172 (59%)
- Greater London Authority = 33 (100%)

Total UK = 236 (58%)

LAs with AQMAs (Not to scale)
UK AQMAs by Pollutant

- **NO₂**
- **PM₁₀**
- **SO₂**

(Not to scale)
AQMA Delineations

- Lancaster City Centre
- Stoke-on-Trent
- Barnsley
- Birmingham
- Wyre
- Breckland
A Typical AQMA

Public exposure
Further Assessment and Action Plans

• Further Assessment of air quality required by Section 84 of the Environment Act within 12 months of declaring AQMA. The assessment:
  ✓ confirms the AQMA decision;
  ✓ defines the AQMA boundaries;
  ✓ calculates source apportionment;
  ✓ supports Air Quality Action Plan

• The Air Quality Action Plan is expected within 12 to 18 months of the designation of the AQMA.
Local Transport Plan (LTP) in England

• The Transport Act 2000 requires most local transport authorities in England to produce and maintain an LTP.

• LTPs set out the authority's local transport strategies and policies, and an implementation programme.

• The second round was submitted in March 2006 for the period 2006-07 to 2010-11. Covers a five-year period.

• Used by the Department for Transport (DfT) to inform decisions on capital funding for local authorities.

Source: www.nottinghamcity.gov.uk
Air Quality as a Shared Priority in LTP2

- National Transport Strategy and Vision
  - Local Transport Strategy
    - Shared Priorities
      - Delivery Tools
        - Opportunities for air quality management

- LOCAL TRANSPORT ACT 2000
  - A New Deal for Transport
    - LOCAL TRANSPORT PLAN
      - Tackling Congestion
      - Delivering Accessibility
      - Ensuring Safer Roads
        - Better Air Quality
          - Air Quality Action Plan
            - Multi-disciplinary approach to LAQM
            - Land Use/Planning Integration
            - New Infrastructure
              - Enable funding for air quality management measures
              - Encourage inter-professional engagement between EHO and transport planners
### Defining the Policy Disconnects (1)

<table>
<thead>
<tr>
<th>Updating and Screening Assessment (2009/12/15)</th>
</tr>
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<tbody>
<tr>
<td><strong>Problem?</strong> Yes</td>
</tr>
<tr>
<td><strong>Problem?</strong> Yes – 4 months</td>
</tr>
<tr>
<td><strong>12 months</strong></td>
</tr>
<tr>
<td><strong>Further Assessment</strong></td>
</tr>
<tr>
<td><strong>Amend/Revoke Maintain AQMA</strong></td>
</tr>
</tbody>
</table>

#### Opportunities for consultation with formal bodies

- Diagnosis
- Solution

- **Review and Assessment Progress Report (2011/14/17)**
- **Repeat cycle**
- **Amend/Revoke**
- **Maintain AQMA**
- **Progress Report**
- **Declare AQMA**
- **Diagnosis**
- **Solution**
Defining the Policy Disconnects (2)

• Review & Assessment is successful as a diagnostic tool.

• Air Quality Action Planning is less successful as a solution as there:
  – A lack of reduction in specific traffic-related pollutant concentrations;
  – An absence of AQMA revocations.

• AQAP failures may be caused by political, economic, technical, and communication barriers.
Explaining the Failure of AQAPs

- There is a lack of:
  - political support,
  - public awareness,
  - local financial and personnel resources,
  - internal collaboration locally and nationally,
  - external collaboration and communication.
Concluding Remarks

• The amount and quality of information about local air quality has improved as diagnostic Review and Assessment process has developed.
• Decision makers now have access to a wealth of information to inform transport and land-use planning.
• Insufficient utilisation of air quality information for these purposes to the detriment of public health.
Thank you for your attention.

Any questions?

Please contact Jo Barnes using the details below: