



DERBY CITY COUNCIL

COUNCIL CABINET
25 APRIL 2006

ITEM 9

Cabinet Member for Environment and Direct Services

Detailed Assessment of Air Quality in Derby - Benzene

SUMMARY

- 1.1 Council Cabinet (15 June 2004) previously considered a report entitled 'Updating and Screening Assessment of Air Quality', and recommended that detailed assessments be carried out for the 3 air pollutants of greatest significance in the City. These assessments represented a major undertaking for Environmental Health and Trading Standards. This is the first of two reports on the outcome and considers levels of benzene in the city. The second report will consider nitrogen dioxide and PM₁₀ particulate (traffic) pollution.
- 1.2 Subject to any issues raised at the meeting, I support the following recommendation.

RECOMMENDATION

- 2.1 That Members note that benzene levels in the area of Spondon to the North and East of Acetate Products Ltd are currently elevated and above the 2010 Air Quality Objective level, although gradually reducing.
- 2.2 That an Air Quality Management Area need not be declared in Spondon at present.
- 2.3 That Members agree to the reports proposals for public consultation on this matter.

REASONS FOR RECOMMENDATION

- 3.1 Monitoring data shows a gradual reduction in benzene levels in Spondon. If the current trend continues, levels are likely to be within the government's objective for benzene before the 2010 target date. Air Quality Management Areas need only be declared where pollution levels are unlikely to meet government objectives.
- 3.2 DEFRA requires all Local Authorities to consult with statutory consultees, stakeholders and the general public on the outcome of Detailed Assessment reports.



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Report of the Director of Environmental Services

Detailed Assessment of Air Quality in Derby - Benzene

SUPPORTING INFORMATION

- 1.1 Full copies of the Detailed Assessment report are available on request, or via CMIS or in the Members Rooms. The contents of the report are summarised below.
- 1.2 Benzene is a volatile, organic chemical and a genotoxic human carcinogen (i.e. a substance that is able to cause harmful changes to DNA, which may lead to the formation of malignant tumours). Studies of industrial workers exposed to benzene over a prolonged period, have demonstrated that there is an increased risk of leukaemia associated with their working lifetime exposure. Elevated levels of benzene in the environment are therefore a significant public health issue.
- 1.3 National Air Quality Objectives have been set by government for annual average benzene levels to be achieved by the years 2003 and 2010. These are based on benzene concentrations that are considered to pose an exceedingly small risk to human health.
- 1.4 As is shown in the table below, the 2003 objective for benzene was an annual average concentration of $16.25\mu\text{g}/\text{m}^3$. The 2010 National Air Quality Objective for benzene is stricter i.e. an annual average of $5\mu\text{g}/\text{m}^3$

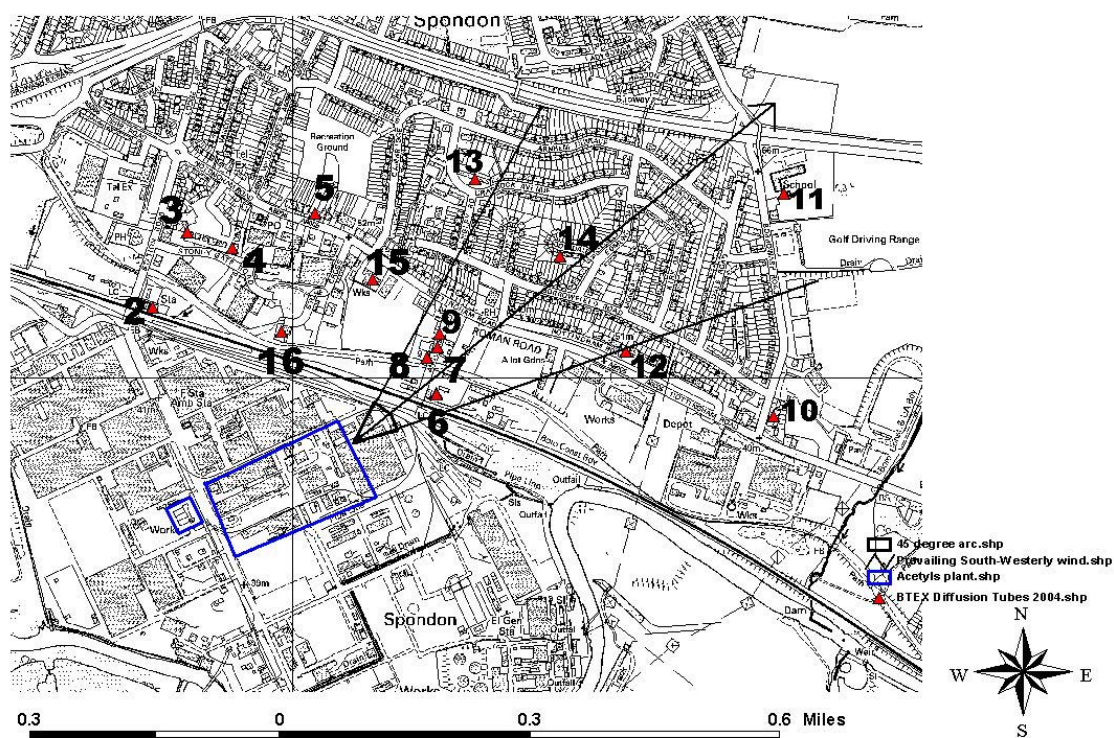
Summary of the National Air Quality Objectives for Benzene

Pollutant	Concentration	Measurement	Target Date
Benzene	$16.25\mu\text{g}/\text{m}^3$	Annual mean	31 Dec 2003
	$5\mu\text{g}/\text{m}^3$	Annual mean	31 Dec 2010

- 1.5 Atmospheric benzene is present almost entirely as a result of human activities. With the exception of a few industrial processes, such as Acetate Products Ltd, the main source of atmospheric benzene emissions in the UK is from the refining, distribution and combustion of petrol. Background levels of benzene in all areas of the city apart from Spondon are well within government targets.

- 1.6 Prior to 2004, there was limited data available on benzene levels in Spondon. The data indicated, however, that whilst levels were within the 2003 target, they exceeded the 2010 objective. The Council's monitoring network was therefore expanded from 5 locations to 18 in 2004, to study the extent of the impact on the local community. A joint project was undertaken with Acetate Products whereby both organisations co-located monitors and shared data. This substantially enhanced the validity of the data obtained.
- 1.7 The main source of benzene is from the Acetyls plant in the north-eastern corner of the site. With prevailing winds generally from the south-west, 50% of monitoring locations were selected within a 45 degree arc, downwind of the site in order to determine the dispersion 'footprint' and the effects of dilution with increasing distance from the source – see location map.

Location Map - Benzene Monitors 1



- 1.8 Data obtained has confirmed that the highest levels of benzene in Spondon are experienced in Angler's Lane and that levels currently exceed the 2010 objective. The trend, however, appears to be that levels are decreasing year-on-year. It should be noted that because the air quality objective is an annual average, accurate assessment of this trend can only be confirmed by continued long term monitoring.
- 1.9 Acetate Products monitor benzene levels within their site boundary, using a sophisticated real-time analyser. This helps the company pinpoint the sources of any emissions as they occur, so that appropriate remedial action can be taken.

- 1.10 A series of meetings have been held with Acetate Products and the Environment Agency (which is responsible for regulating polluting emissions from the site) with a view to reducing emissions at source. Acetate Products have set up an Emissions Reduction Team tasked with leak detection and repair, elimination of significant point sources and process activity emissions. The team has already achieved significant success in this respect.
- 1.11 The Environment Agency's Authorisation for the site includes a condition, which states: 'the operator shall improve the authorised process to ensure that no emissions from that process could cause a breach of the National Air Quality Objective of a benzene annual mean average of $5 \mu\text{g}/\text{m}^3$ at all points of relevant public exposure'. Coupled with an improvement in measured levels and an ongoing commitment from Acetate Products to maintain its emission reduction programme, it is considered likely that the 2010 objective for benzene will be achieved in Spondon.
- 1.12 DEFRA requires Local Authorities to consult statutory consultees, stakeholders and the general public on the outcome of air quality detailed assessments. It is proposed that the majority of statutory consultees and stakeholders will be invited to submit comments on electronic copies of the full report. The report will also be posted on the Council's web-site and hard copies made available at libraries and other council buildings with public access. A more intensive, targeted approach is proposed for residents in the Spondon area, including the use of leaflets with tear-off reply slips and posters in buildings where the public regularly congregate.

OTHER OPTIONS CONSIDERED

2. Air Quality Management Areas need only be declared where pollution levels are unlikely to meet government objectives. Current evidence indicates that benzene pollution levels in Spondon will meet the objectives before the 2010 deadline. Therefore, declaration of an Air Quality Management Area is not appropriate at present. The situation will, however, need to be kept under regular review.

For more information contact: Julian de Mowbray Tel. 715228 e-mail julian.demowbray@derby.gov.uk

Background papers: Full report: Detailed Assessment of Air Quality in Derby – Benzene (pdf version via CMIS at <http://cmis.derby.gov.uk/CMISWebPublic/Binary.ashx?Document=6500> ; hard copies available on request from Julian de Mowbray)

List of appendices: Appendix 1 – Implications

IMPLICATIONS

Financial

1. None

Legal

2. None

Personnel

3. None

Equalities impact

4. None

Corporate objectives and priorities for change

5. Improve the quality of life in Derby's neighbourhoods by making Derby cleaner and greener.

Build healthy and independent communities by improving the health of our communities.