

AVENUE COKING WORKS

AIR QUALITY AND ODOUR MONITORING PROGRAMME

Summary of Results: June 2009

1.0 Introduction

This summary presents the results of the monitoring programme for June 2009, and an assessment of these results.

Air quality results are evaluated by comparison with the assessment criteria that were developed in the Jacobs report 'The Avenue Air Quality Management Programme Strategy Document' Issue 1, June 2002, and reviewed in 2006. Odour results are evaluated by comparison with the assessment criteria described in Environment Agency and VDI technical guidance documents.

1.1 Alterations, Downtime and Technical Difficulties

During June 2009, the following amendments to the scope of routine fixed monitoring occurred due to equipment downtime:

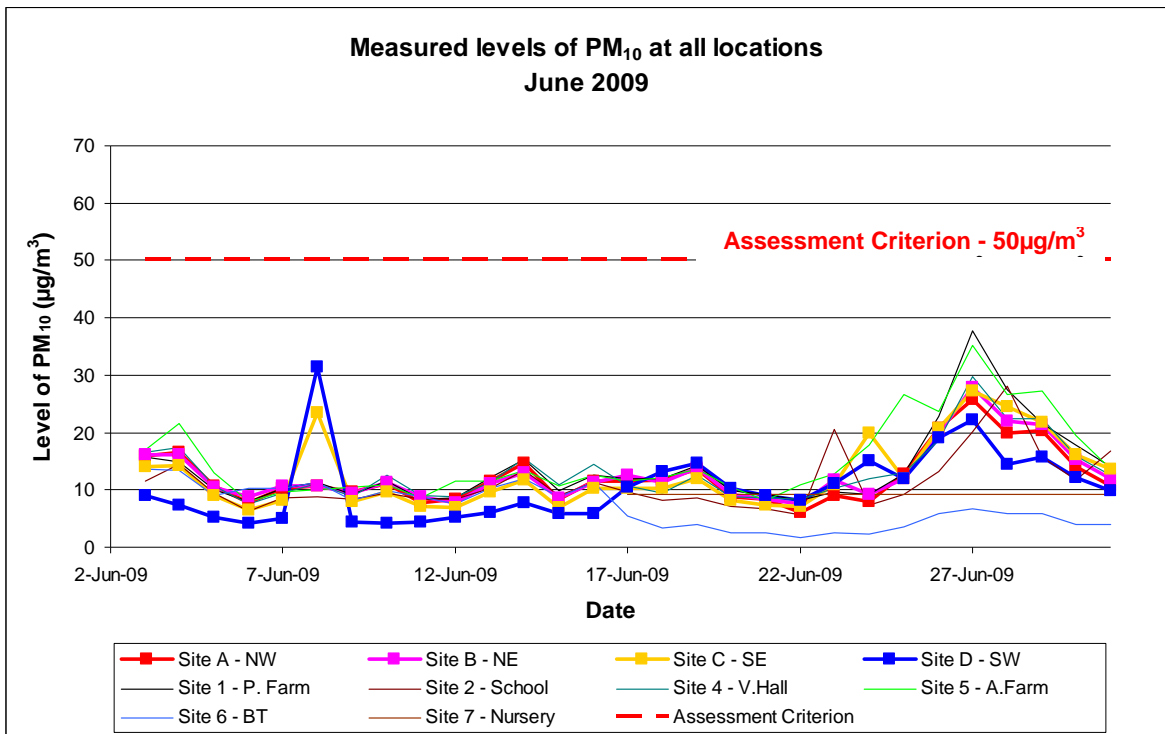
- a failure with the Mini-vol battery at station 7 resulted in the loss of PM₁₀, metals, cyanide, phenols, and PAH data during the first monitoring period. This was discovered and the battery replaced on 24 June.
- a laboratory error resulted in the loss of VOC data from station C for the second period.
- a scheduled power down resulted in the loss of PM₁₀ data at all on-site stations for 4 hours during 27 June.
- as reported previously, in order to determine the technical feasibility and impacts on quality of rationalising the types/number of automatic monitors used for sampling for metals, cyanide, PAHs and phenols (M-type, Hi-vol and Mini-vol samplers – as proposed by the Air Quality Management Plan prepared by the remediation contractor), a 'filter-splitting trial' is currently being undertaken. This comprises cutting the filter from the duplicate APM950 unit at station A into 4 and undertaking analyses for these determinands on each of the portions, over a period of three months. This trial began at the filter-changeover in mid-April; no duplicate metals results are therefore available for the month.

1.2 Results from Routine Air Monitoring

Of the substances monitored as part of the Avenue programme, statutory limits exist for benzene, PM₁₀, PM_{2.5}, NO₂ and SO₂. Graphs depicting monthly levels of these determinands against applicable assessment criteria are presented with the results, with the exception of benzene, as results for benzene are frequently below limits of detection (LODs). Although a statutory limit does not currently exist for deposited dust, a graph has also been prepared as this has been recognised as a potential issue at and around the Avenue site.

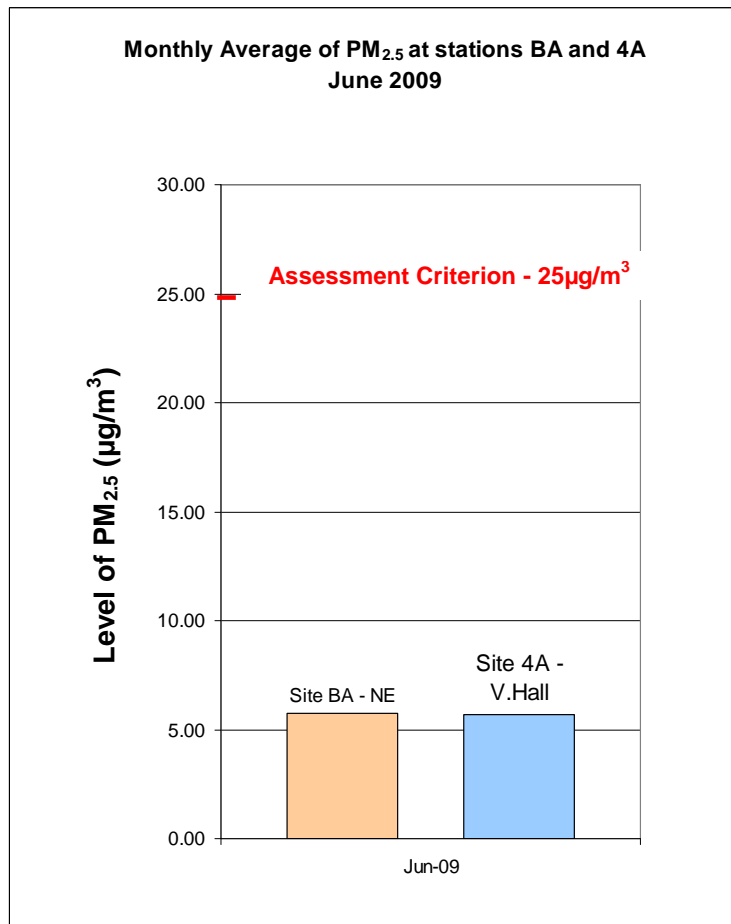
1.2.1 PM₁₀ Levels

The assessment level of 50µg/m³ was not exceeded during the month, with the highest result being 37.68µg/m³ at station 1 on 27 June.



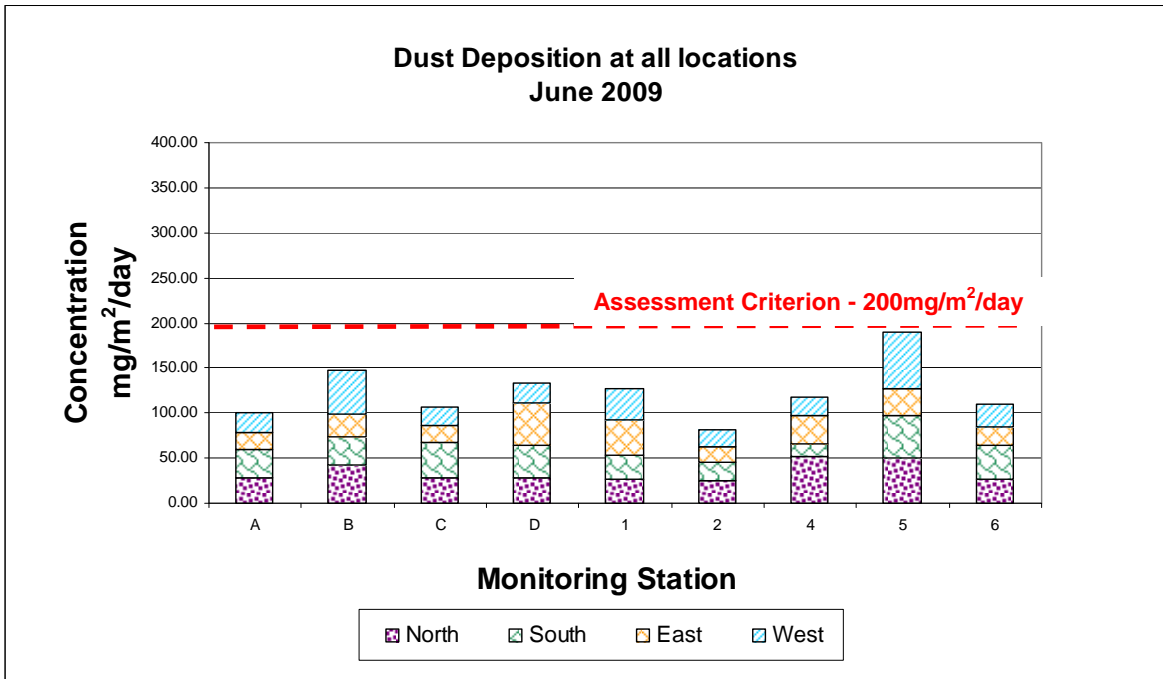
1.2.2 PM_{2.5} Levels

The assessment level of 25µg/m³ was not exceeded at on-site station B or off-site station 4 during the month, with the monthly mean result being 5.76µg/m³ for station B, and 5.67µg/m³ for station 4.



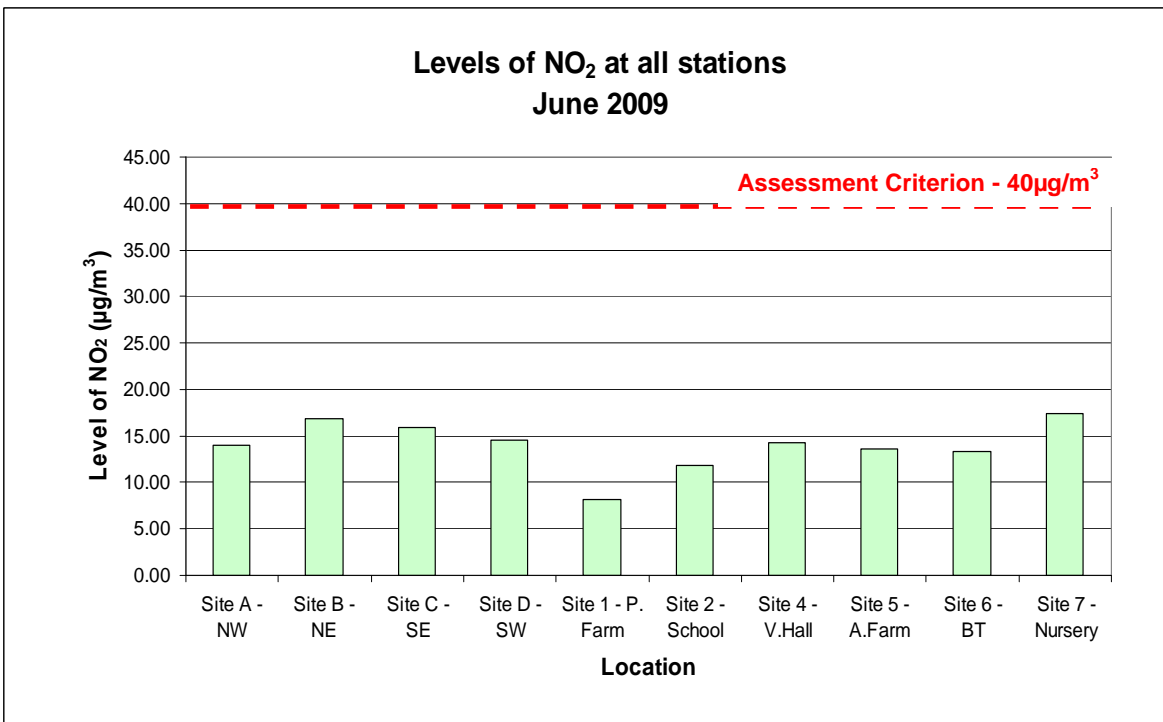
1.2.3 Deposited Dust

The assessment criterion level of 200mg/m²/day was not exceeded during the month, with the highest result being 190mg/m²/day recorded at station 5.



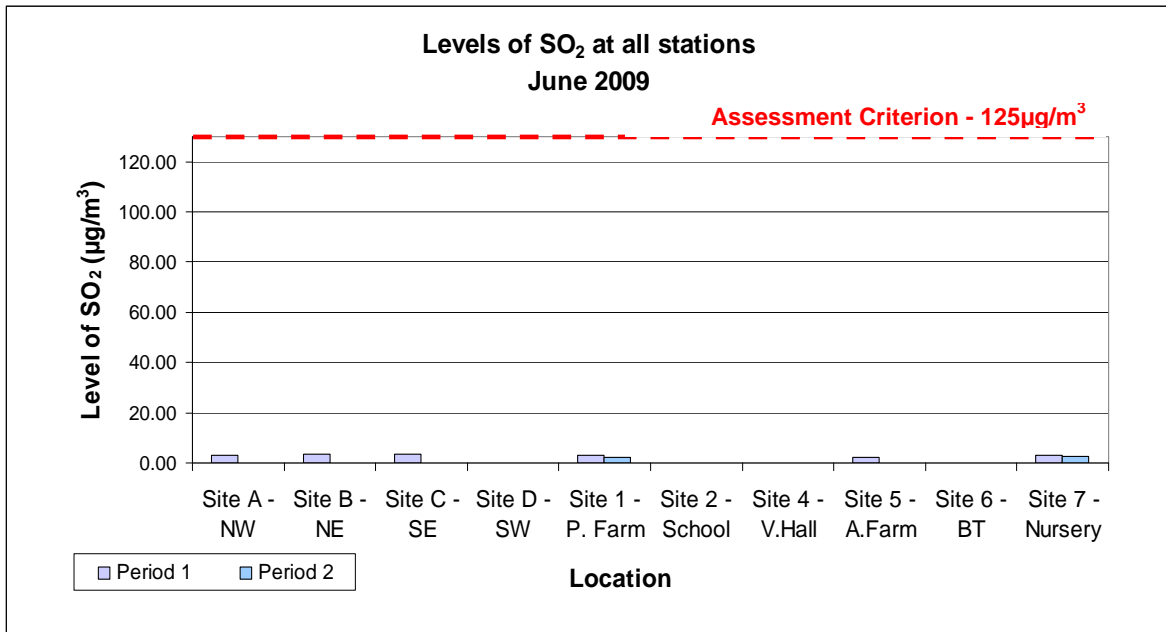
1.2.4 Nitrogen Dioxide

The assessment criteria level developed for NO₂ is 40µg/m³. No stations recorded NO₂ in exceedance of this level, with the highest NO₂ result being 17.38µg/m³, recorded at station 7.



1.2.5 Sulphur Dioxide

The assessment criteria levels developed for SO₂ is 125µg/m³. No stations recorded SO₂ in exceedance of this level, with the highest SO₂ level being 3.65µg/m³ at station C in the first monitoring period.



1.2.6 BTEX Compounds

The assessment criteria limits for benzene and toluene are 5µg/m³ and 1.9mg/m³ per fortnight, respectively. No stations recorded levels of benzene above the LOD this month, and the highest level of toluene was recorded at station 1 during the first period, with the result being 0.15µg/m³.

1.2.7 Metals

The only metal currently falling under the control of the UK Air Quality Strategy is lead, at a maximum concentration 0.5µg/m³ (annual mean). The highest level of lead was 0.01µg/m³, recorded at all on-site stations and off-site stations 1, 2, 4 and 5 during the second monitoring period.

Cadmium was recorded at levels around the applicable LOD (0.005µg/m³) at station 7 due to smaller sample volume as a result of downtime experienced at that station.

All other metals were below the assessment criteria developed for the site, and in many cases below LODs.

1.2.8 Cyanide

No National Air Quality Standard has been developed for cyanide; the assessment criteria suggested for the Avenue is a maximum concentration of 50µg/m³ per fortnight. No stations recorded cyanide levels above the LOD during either monitoring periods.

1.2.9 Phenol(s)

The assessment criteria limits for phenol and cresol are 48µg/m³ and 220µg/m³ per fortnight, respectively. The reporting of phenols is subject to a LOD of 0.2µg/m³ and no results were reported above this level.

1.2.10 PAHs

The maximum allowable fortnightly concentration of Coal Tar Pitch Volatiles is 0.48µg/m³, whilst for naphthalene the figure is 126µg/m³. No stations recorded concentrations in exceedance of these criteria during June 2009. The highest concentration of total coal tar pitch volatiles was 0.01799µg/m³, recorded at station B during the first monitoring period, whilst the highest naphthalene result was 0.0003µg/m³, recorded at station A during the second period.

1.2.11 Quality Control Samples

As part of the routine monitoring programme, quality control samples are submitted in the form of duplicates for all sample media and blanks for phenols, cyanide, metals, PAHs and BTEX. This is

to ensure that results generated are accurate and, essentially, reliable. The outcomes for June 2009 are as follows:

Media Blanks

The analysis of media blanks indicated no problems with the contamination of media used for the collection of samples during June 2009.

Duplicates

Duplicate PM10 samples taken at station A correlated well with original data during the month, with duplicate results ranging between 87% and 108% of original results.

Duplicate PAH results from station 1 correlated well with original results during both monitoring periods, with the exception of the duplicate result for dibenzo(ah)anthracene, which was 202% of the original.

Duplicate phenol samples were taken at station 1. No results were reported above the LOD of 0.2µg/m³ during both monitoring periods, and as a result the duplicate results correlated exactly with original results.

Duplicate results for BTEX, cyanide, SO₂ and NO₂ taken from stations 6, A and B correlated well with original results during both monitoring periods.

No duplicate metals results were available for analysis due the split filter trial, as described in Section 2.2.3.

No duplicate metals results were available for analysis due the split filter trial, as described in Section 1.1 above.

1.3 Results from Targeted Air Monitoring

Targeted monitoring is undertaken around specific site activities considered to have the potential to liberate airborne contaminants and also to monitor ambient conditions when no works are taking place. Due to the lack of potential for site activities to generate or liberate significant amounts of contaminative materials, targeted monitoring was not required during the month.

1.4 Results from Odour Monitoring

1.4.1 Odour Diaries

Background monitoring using odour diaries was suspended at the end of October 2008 following an 18 month period of monitoring; it was considered that a sufficient level of background data have been collected during this period. The odour diary programme is scheduled to resume prior to the remediation phase.

1.4.2 Sensory Field Odour Surveys

There were no records of 'medium' odour annoyance impact or higher during the month.

1.4.3 Complaints

No odour-related complaints were received during June 2009.