

AVENUE COKING WORKS
AIR QUALITY AND ODOUR MONITORING PROGRAMME
Summary of Results: August 2009

1.0 Introduction

This summary presents the results of the monitoring programme for August 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 August 2009, the following amendments to the scope of routine fixed monitoring occurred due to equipment downtime:

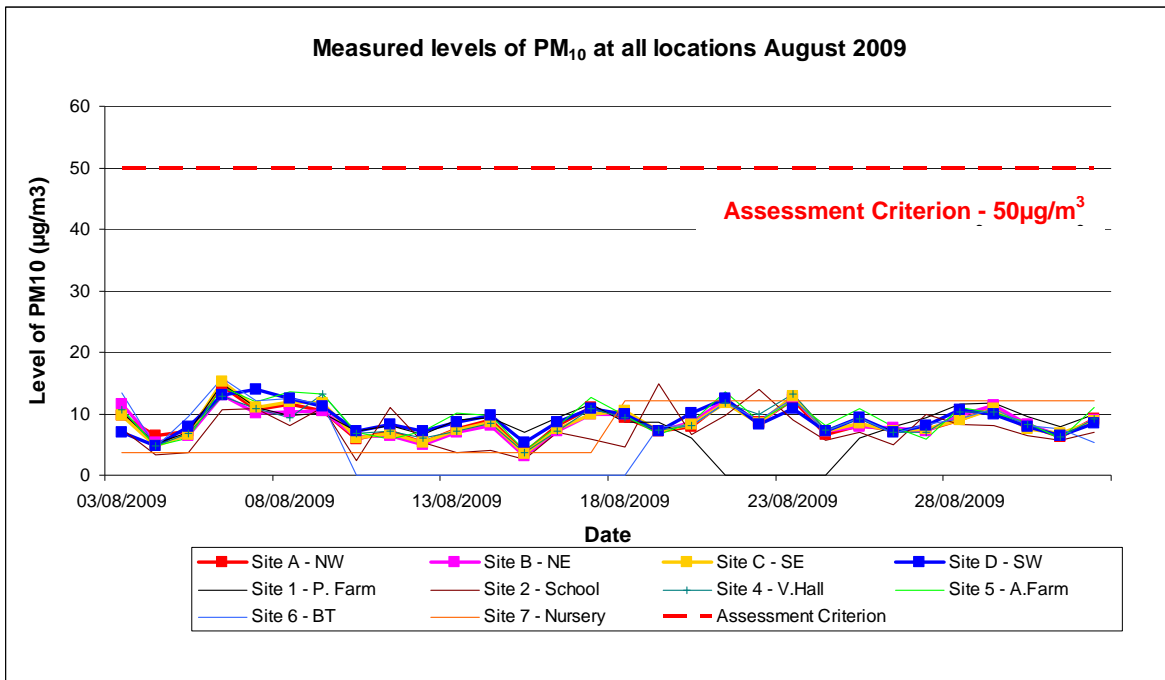
- A power failure occurred at station 6 on 9 August, meaning that no data were reported for this period. The power was reinstated on 18th August.
- There was a power failure at station 1 between 21 and 24 August; no data have therefore been reported for this period.
- Due to an internal QA/QC issue the laboratory has been unable to report any SO₂ results for the second monitoring period.

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.

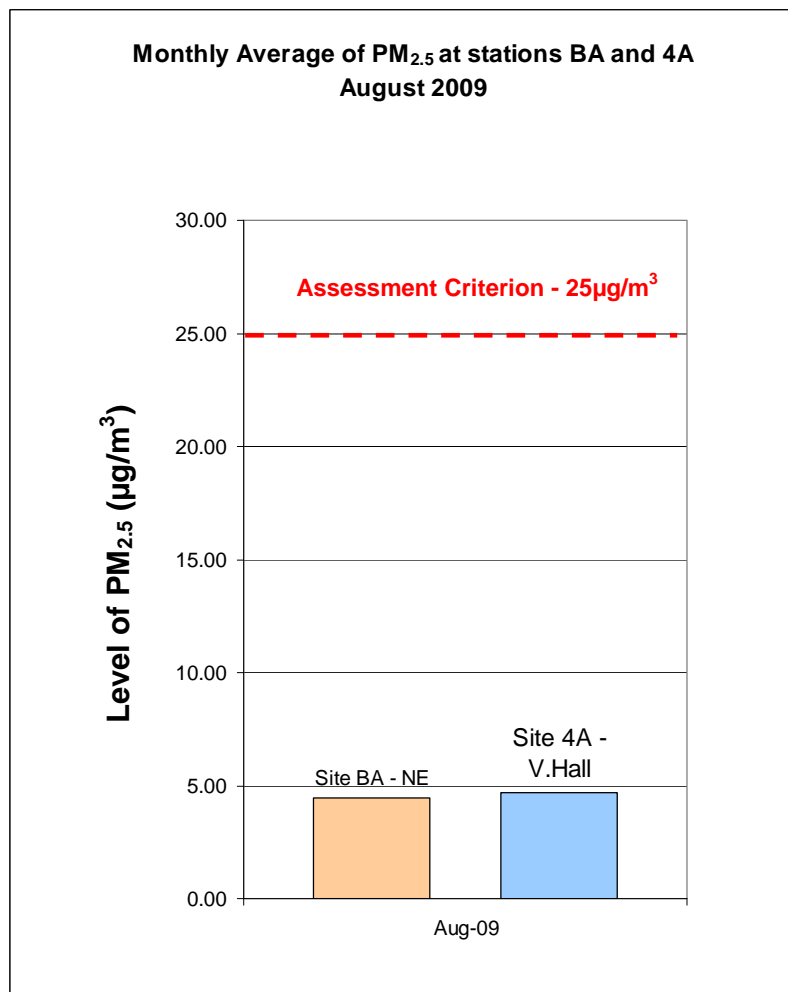
PM₁₀ Levels

The assessment level of 50µg/m³ was not exceeded during the month, with the highest result being 15.7µg/m³ at station 6 on 6 August.



1.2.1 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 4.44µg/m³ for station B, and 4.67µg/m³ for station 4.

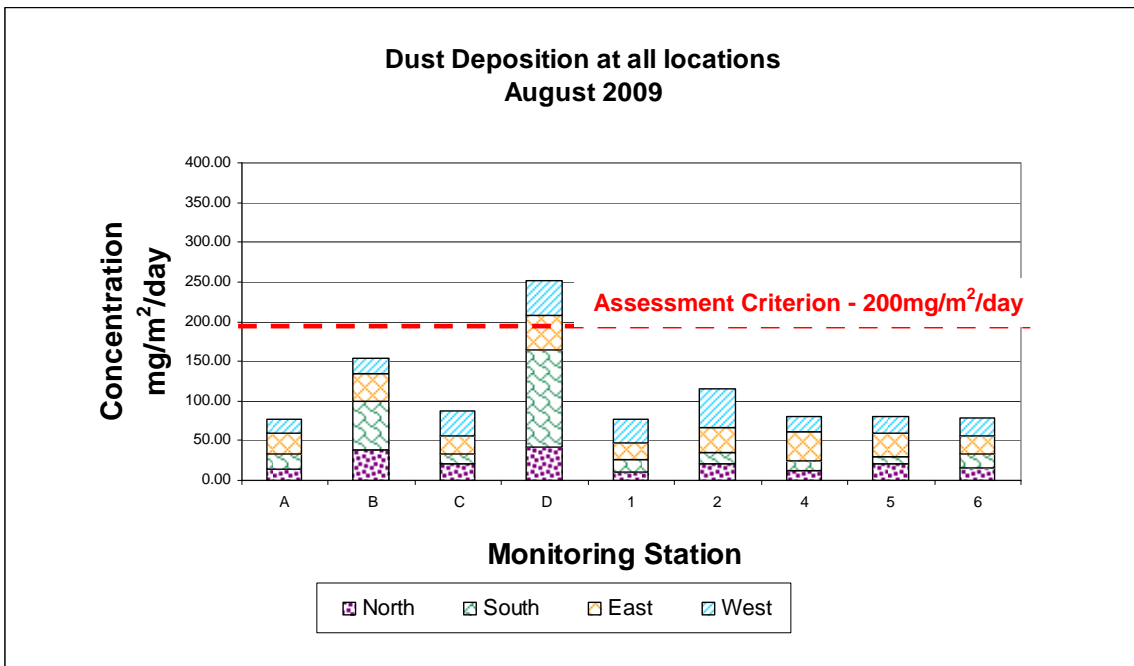


1.2.2 Deposited Dust

The assessment criterion level of 200mg/m²/day was exceeded at on-site station D during the month, with the result being 251mg/m²/day. No other exceedances were recorded.

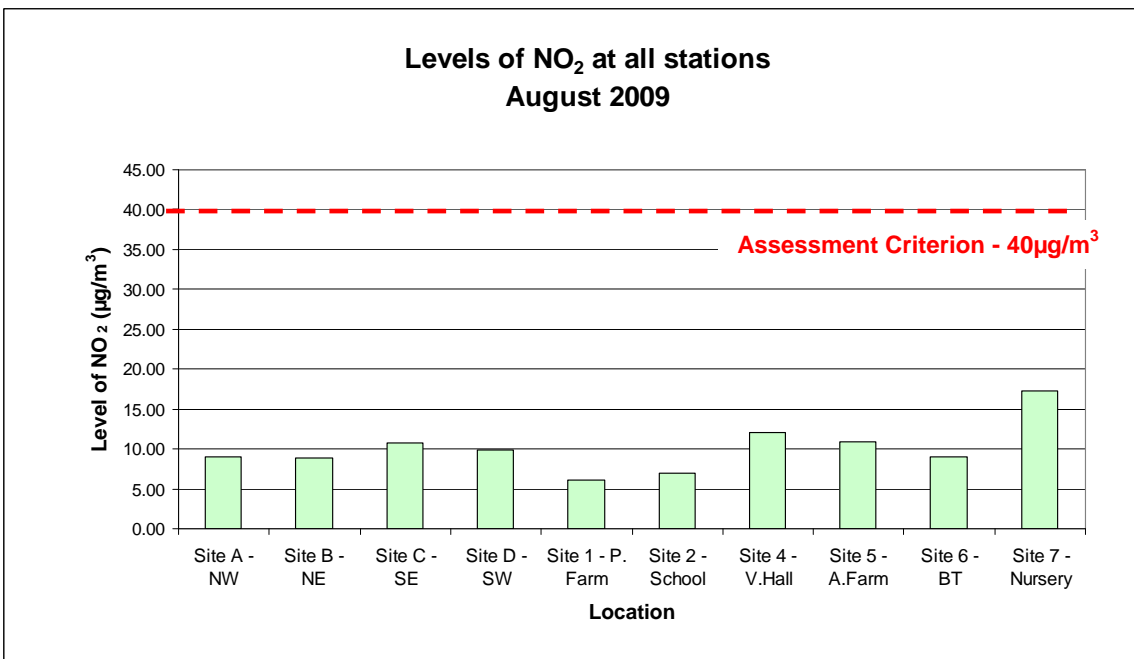
A review of the evidence suggests that the source of the dust is not related to activities or conditions on the Avenue site. There were no activities on the site that would be expected to generate or liberate significant amounts of dust. In addition, approximately half of the total dust collected was from a southerly direction, whereas most of the site is located to the east and north of the monitoring station. And finally, petrographic analysis of deposits from the easterly and westerly directions (analysis is not undertaken on dust collected from the southern quadrant) comprised plant and animal fragments, which (apart from in the case of vegetation strimming) would not be expected to arise from the site).

This evidence collectively suggests that the source of the dust may be activities or conditions associated with the agricultural fields located to the south and west of the monitoring station.



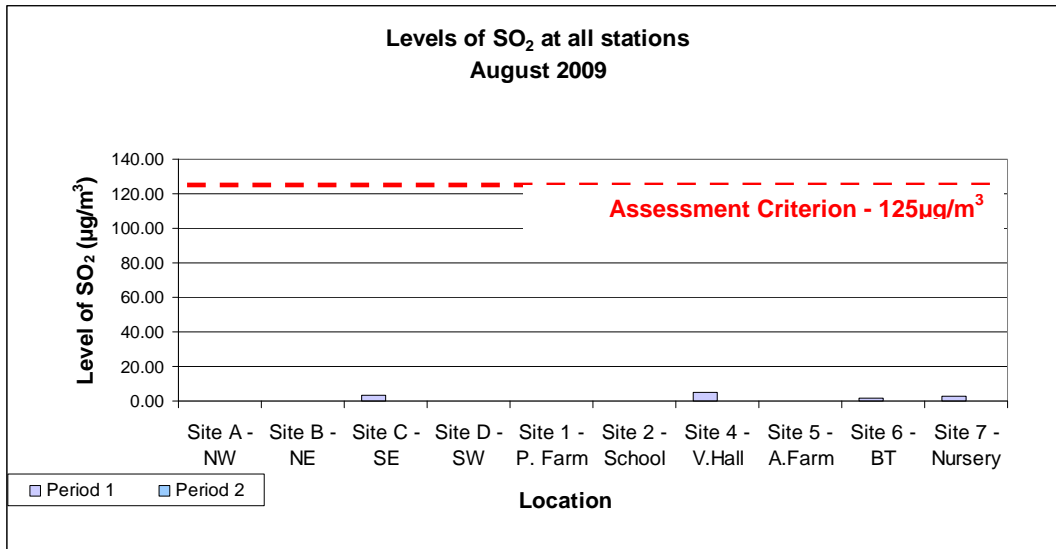
1.2.3 Nitrogen Dioxide

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 17.3µg/m³, recorded at station 7.



1.2.4 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 5.14µg/m³ at station 5 in the first monitoring period. As reported previously no results are available for the second monitoring period.



1.2.5 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. The only station at which toluene was recorded above the LOD was station 6 during the first period, with the result being 0.031mg/m³.

1.2.6 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 off-site station 2 during the second monitoring period.

Cadmium was recorded at levels around the applicable LOD (0.005µg/m³) at station 6 in the first period and station 1 in the second due to the smaller sample volumes as a result of downtime experienced at those stations.

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

1.2.7 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.

1.2.8 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.

1.2.9 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 August 2009. The highest concentration of total coal tar pitch volatiles was 0.0916µg/m³, recorded at station B during the first monitoring period, whilst the highest naphthalene result was 0.00120µg/m³, at station 7 during the second period.

1.2.10 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 August 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 August 2009.

Duplicates

Duplicate PM₁₀ samples taken at station A correlated well with original data during the month, with duplicate results ranging between 78% and 108% of original results.

Duplicate metals results taken at station A correlated poorly in the first period but reasonably well in the second period. The first period duplicates for chromium, manganese and lead were between 200 and 1000% higher than the original results, whereas zinc was only 50%. In the second period the only exception was the lead result, where the duplicate was only a third of the original result.

Duplicate PAH results from station 1 correlated very poorly with original results in the first period, with acenaphthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)/(k)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene and total PAHs results all being more than double the original results. In the second period correlation was reasonably good.

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

The first period SO₂ result showed poor correlation with the original result (26%). No results were reported for the second period.

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

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

No surveys yielded odour records at or above odour annoyance impact level 'medium'.

1.4.3 Complaints

No odour-related complaints were received during August 2009.