

**BLAENAU GWENT COUNTY BOROUGH COUNCIL**

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**LOCAL AIR QUALITY REVIEW  
AND ASSESSMENT  
PROGRESS REPORT 2004**



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**PUBLIC PROTECTION DIVISION**

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## **1.0 Introduction**

Part IV of the Environment Act 1995 Act requires each local authority periodically to review air quality in its area. The Air Quality Regulations 2000 (as amended) set out air quality objectives that have to be achieved by the end of 2005. Consequently, local authorities have to consider the existing quality of air and the likely future quality of air at the end of 2005, and assess whether the prescribed limits are likely to be achieved by the target date.

The specific pollutants which are prescribed in the Air Quality Regulations 2000 and whose levels therefore have to be reviewed and assessed are:

- Benzene,
- 1,3-butadiene,
- Carbon monoxide,
- Lead,
- Nitrogen dioxide,
- Particulates (PM<sub>10</sub>) and
- Sulphur dioxide.

In June 2003 each pollutant of concern was examined in the light of specific the Guidance Notes LAQM.TG (03), and it was concluded that in Blaenau Gwent it was unlikely that any of the Air Quality Objectives set out in the Air Quality Regulations 1997 would be exceeded by the end of 2005.

The next full Review and Assessment is due in 2006 and in each of the intervening years we are required to provide a progress report for the Welsh Assembly Government that looks at any new developments that could affect air quality.

This document represents the first of the progress reports for Blaenau Gwent.

## **2.0 Benzene**

### **Objectives**

The Government and the Devolved Administrations have adopted a running annual mean concentration of  $16.25\mu\text{g}/\text{m}^3$  as the air quality standard for benzene, with an objective for the standard to be achieved by the end of 2003. However, in light of the health advice from EPAQS and the Department of Health's Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC to reduce concentrations of benzene in air to as low a level as possible, additional tighter objectives have also been set. The additional objective is for an annual mean of  $5\mu\text{g}/\text{m}^3$  to be achieved by the end of 2010 in England and Wales.

These objectives apply to any locations where members of the public might be regularly exposed such as the building facades of residential properties, schools, hospitals, libraries, etc.

### **Sources of Benzene**

In the United Kingdom the main atmospheric sources of benzene are petrol-engine vehicles, petrol refining, and the distribution and uncontrolled emissions from petrol station forecourts without recovery systems.

### **Results of previous Review and Assessment**

In the Updating and Screening Assessment undertaken in 2003 it was concluded that there was little risk of the Air quality Strategy objective for benzene being exceeded by the end of the year 2010

### **Background concentrations**

Background levels of benzene within Blaenau Gwent are below  $0.1\mu\text{g}/\text{m}^3$  for 2003 and 2010 (<http://www.airquality.co.uk/>).

### **Monitoring data**

In 2002 only the Neath Port Talbot and Cardiff real time continuous monitoring sites were measuring Benzene in Wales and here it did not exceed the running annual average Air Quality (Wales) Regulations standard of  $16.25\mu\text{g}/\text{m}^3$ . The maximum running average was  $1.2\mu\text{g}/\text{m}^3$ .

The data summary in appendix 1 clearly shows a reduction in benzene concentrations since 1995.

## **Traffic flows**

An assessment carried out by Defra for the 2010 objective for benzene suggests that there may be a few locations close to busy roads, in areas with high background concentrations, that may be at risk of exceeding the objective. In Blaenau Gwent we have low background concentrations and none of our roads fall within the Defra definition of busy .

## **Industrial sources**

There are no industrial processes existing or planned that have the potential to emit significant quantities of benzene in this County Borough.

There are no industrial processes in neighbouring local authorities that significantly contribute to the ground level concentrations of benzene in this County Borough

## **Petrol stations**

Defra and the Devolved Administrations have recently investigated the potential impact of emissions arising from petrol stations. There are two possible major sources of benzene from evaporative emissions at petrol stations. The first when petrol vapour is displaced when filling underground storage tanks, termed Stage 1 emissions. The second when petrol vapour is displaced from vehicle petrol tanks during refuelling, termed Stage 2 emissions. All petrol stations with a petrol throughput of greater than 1000m<sup>3</sup>/annum were required to fit Stage 1 vapour recovery before 1 January 1999. Petrol stations with a throughput of less than 1000m<sup>3</sup>/annum are very unlikely to have any significant effect on the local concentrations of benzene. Stage 1 emissions are therefore, unlikely to have any significant influence on concentrations of benzene in the vicinity of petrol stations. As yet there are no legal requirements to fit Stage 2 vapour recovery systems at petrol stations.

The guidance indicates that the presence of a petrol station is only likely to have a significant influence on the concentrations of benzene close to residential properties where:

- Petrol throughput is more than 2000m<sup>3</sup>/annum.
- and
- Petrol pumps are less than 10m from residential properties, either horizontally or vertically.

In this Borough we have no petrol stations that meet the above criteria

## **Discussion**

A number of policy measures in place, or planned for the future, will continue to reduce emissions of benzene. Since January 2000. EU legislation has reduced the maximum benzene content of petrol to 1%, from the previous upper limit of 5%.

The European Auto-Oil programme will further reduce emissions for cars and light-duty vehicles, and emissions of benzene from the storage and distribution of petrol are controlled by vapour recovery systems.

Roadside levels of benzene next to even the busiest of congested roads are expected to be well below the air quality objective. As this authority has no major industrial processes, which handle, store or emit benzene there is no possible risk of exceeding the Air Quality Objective.

### **Conclusion**

We are satisfied that benzene concentrations remain low and there is little risk of the Air quality Strategy Objective being exceeded by the end of the year 2010

## **3.0 1, 3 - Butadiene**

### **Objectives**

The Government and the Devolved Administrations adopted an Air Quality Standard for 1,3 - Butadiene of  $2.25 \mu\text{g}/\text{m}^3$  measured as a running annual mean concentration. The objective was for the standard to be achieved by the end of 2003.

### **Sources of 1,3-butadiene**

The 1, 3 - butadiene in air derives solely from human activity. It is an important industrial chemical being used particularly in the manufacture of synthetic rubber for tyres. Apart from accidental releases from such industrial activities, the 1,3 - butadiene in the ambient air comes from combustion. This mainly derives from combustion of petrol and diesel fuel, but some also comes from house fires and the burning of other fossil fuels. 1,3 - butadiene is also present in cigarette smoke.

There is little or no preformed 1, 3 - butadiene in diesel or in petrol, either leaded or unleaded; the emissions in the exhaust gases being produced by the combustion process itself. The chemicals in petrol from which the 1,3 - butadiene is derived, higher olefins, have been present in increasing proportion in petrol over the last decade, and it is likely that the amounts of 1,3 - butadiene released into the atmosphere have therefore been rising. However 1,3 - butadiene is removed efficiently by catalytic converters on motorcars and this is likely to reverse any such trend.

### **Results of previous Review and Assessment**

In the Updating and Screening Assessment undertaken in 2003 it was concluded that there was little risk of the Air quality Strategy objective for 1,3-butadiene being exceeded by the end of the year 2010

### **Background concentrations**

The National Air Quality Archive indicates that 1,3- butadiene background concentrations for Blaenau Gwent are presently below  $0.1 \mu\text{g}/\text{m}^3$ . (<http://www.airquality.co.uk/>).

### **Monitoring data**

In 2002 only the Neath Port Talbot and Cardiff real time continuous monitoring sites were measuring 1,3 Butadiene in Wales and here it did not exceed the running annual average Air Quality (Wales) Regulations standard of  $2.25 \mu\text{g}/\text{m}^3$ . The data summary in appendix 2 clearly shows a reduction in 1,3- butadiene

concentrations since 1995.

### **Industrial sources of 1,3 butadiene**

There are no industrial processes existing or planned that have the potential to emit significant quantities of 1,3 Butadiene in this County Borough.

There are no industrial processes in neighbouring local authorities that significantly contribute to the ground level concentrations of 1,3 butadiene in this County Borough

### **Discussion**

Defra considers that existing national policies are expected to deliver the prescribed air objective for 1,3 - butadiene by the end of 2003. Roadside levels of 1,3 - Butadiene, next to even the busiest of congested roads are expected to be well below the air quality objective. As this authority has no major industrial processes, which handle, store or emit 1,3 - butadiene there is no possible risk of exceeding the Air Quality Objective.

### **Conclusion**

We are satisfied that 1,3- butadiene concentrations remain low and there is little risk of the Air quality Strategy Objective being exceeded.



## **4.0 Carbon Monoxide**

### **Objective**

The air quality objective for carbon monoxide is  $10\text{mg}/\text{m}^3$  to be measured as a maximum daily running 8-hour mean.

### **Sources of Carbon Monoxide**

Road transport is the main source of carbon monoxide in the UK. Annual emissions of this pollutant have been falling since the 1970s and this fall is expected to continue, (LAQM.TG(03)).

### **Results of previous Review and Assessment**

In the Updating and Screening Assessment undertaken in 2003 it was concluded that there was little risk of the Air quality Strategy objective for carbon monoxide being exceeded by the end of the year 2010

### **Background concentrations**

Background levels of carbon monoxide within Blaenau Gwent are below  $0.2\text{mg}/\text{m}^3$  ([www.airquality.co.uk/](http://www.airquality.co.uk/)).

### **Monitoring data**

The Council does not undertake any ambient carbon monoxide monitoring.

Data available from the Automatic Urban Network (AUN) sites in Wales show that the Air Quality Strategy Objective for carbon monoxide was not exceeded in Wales during 2002.

A summary of the 2003 monitoring data for the sites can be found in appendix 3.

### **Road Traffic**

It was noted in the Updating and Screening Assessment that none of the main roads in Blaenau Gwent had a current or projected average daily traffic flow greater than the government bench mark figures of, 80,000 for single carriageway roads and 120,000 for dual-carriageways. (LAQM.TG(03)). Since that time there have been no developments that have led to significant increases in traffic flows.

## **Conclusion**

We are satisfied that carbon monoxide concentrations remain low and there is little risk of the Air quality Strategy Objective for carbon monoxide being exceeded.

## **5.0 Lead**

### **Objective**

The Government and Devolved administrations have adopted an annual mean concentration of  $0.5 \mu\text{g}/\text{m}^3$  as the air quality standard for lead with an objective to be achieved by the end of 2004. In addition a lower air quality objective of  $0.25 \mu\text{g}/\text{m}^3$  is to be achieved by the end of 2008.

### **Sources**

Lead occurs in the earth's crust and is released naturally through various processes including weathering of rocks, volcanic activity, and uptake and subsequent release from plants. Anthropogenic sources of lead stem from its removal from the earth's crust. It is released into the atmosphere through the mining and smelting of ores, the production use, recycling and disposal of lead containing products the production of non-ferrous metals and the burning of fossil fuels.

Currently the dominant sources of airborne lead emissions are from petrol combustion at 1067 tonnes per annum. This results from the use of lead and an additive to increase the octane rating. In January 1986 the maximum permitted lead content of petrol was reduced considerably, and as a result lead emissions into the air from petrol engined road vehicles have more than halved since 1987. Under European Community legislation the marketing and sale of leaded petrol is to be banned except in a limited number of specified circumstances.

### **Results of previous Review and Assessment**

The Updating and Screening Assessment for Lead undertaken in early 2003 indicated that there was little risk of the 2004 and 2008 Air Quality Objectives being exceeded.

### **Background concentrations**

Defra estimates the ground level concentrations of lead in this region to be less than  $20 \text{ ng}/\text{m}^3$

### **Industrial Sources of Lead**

In the County Borough we have one industrial process identified by Defra as having the potential to release significant quantities of lead, i.e. Yuasa Batteries (UK) Ltd on the Rassau Industrial Estate.

This Company was recently required by the Environmental Agency to undertake an air dispersion modelling study that was to determine the ground level concentrations

of Lead emitted by the plant, and to compare them with National Air Quality Standards.

In addition deposition rates were determined for “specific receptors” in the vicinity of the site.

The study was completed in May 2003 using the Atmospheric Dispersion Modelling System, ADMS 3.1. in order to determine the effect of the prevailing metrological (met) conditions upon the predicted pollutant ground level concentrations. The results of the modelling study took into consideration the effects of surrounding topography and nearby buildings and used assumptions, which while valid, would nevertheless be expected to overestimate ground level concentrations.

All Predicted Environmental Concentrations although significant, fell below the prescribed UK National Air Quality Strategy Objectives. The three model runs for 1995, 96 and 97 resulted in a maximum average GLC of  $0.117\mu\text{g}/\text{m}^3$  this is 23.0% of the limit prescribed by the UK National Air Quality Strategy.

Met data for 1997 returned the highest annual average concentration. Calculated using an hourly average period without percentile calculations. The maximum average Ground Level Concentration was  $0.1167\mu\text{g}/\text{m}^3$ , combined with a background concentration of  $0.066\mu\text{g}/\text{m}^3$  the predicted environmental concentration lies at  $0.1827\mu\text{g}/\text{m}^3$  this level is 36.5% of the prescribed NAQS for Lead. This occurred at a location 270m Southwest of the group of stacks. Continued release of lead at this concentration with the implementation of stricter air quality standards in 2008 at a level of  $0.25\mu\text{g}/\text{m}^3$  will result in a predicted environmental concentration that is 73.0% of the NAQS.

The deposition rates were determined in a separate series of model runs generating results for both dry wet and total deposition. Deposition rates were determined for a number of sensitive receptors, all of which returned levels below that set in guidance note IPPC-H1

A summary of results together with a plan showing predicted ground level concentrations of lead can be found in appendix 4.

It should be noted that a report received from the Environment Agency in November 2003 showed that subsequent results from the on-site ambient lead monitor have exceeded the AQ objective. The matter has been discussed with the Environment Agency and they have grave doubts over the validity of the readings, as low lead concentrations in stack emissions do not correlate with the high ambient results obtained. The agency suspects that the monitor is seriously over-reading and plans are underway to replace it.

Therefore for the purpose of this progress report the latest ambient monitoring results shall be disregarded and we shall review the situation when the new equipment is installed.

There are no industrial processes in neighbouring local authorities that significantly contribute to the ground level concentrations of lead in this County Borough.

**Discussion**

The information supplied by the Environment Agency indicates that neither the 2004 nor the 2008 air quality objectives are likely to be exceeded as a consequence of the operations at the Yuasa Battery plant.

**Conclusion**

The Updating and Screening Assessment for Lead indicates that there is little risk of the 2004 and 2008 Air Quality Objectives being exceeded.

## 6.0 Nitrogen Dioxide

### Objective

The Government and Devolved Administrations have adopted two air quality standards for nitrogen dioxide (NO<sub>2</sub>), as an annual mean concentration of 40 µg/m<sup>3</sup> and a 1-hour mean concentration of 200µg/m<sup>3</sup> not to be exceeded more than 18 times per year. The objectives to be achieved by the end of 2005.

The first Air Quality daughter Directive also set limit values for nitrogen dioxide which have been transposed into UK legislation. The Directive includes a 1-hour limit value of 200 µg/m<sup>3</sup> .not to be exceeded more than 18 times per year, and an annual mean limit value of 40 µg/m<sup>3</sup>, both to be achieved by 1st January 2010.

### Sources of nitrogen dioxide

Currently the greatest contribution of oxides of nitrogen in the United Kingdom is from motor vehicles, at over 1 million tonnes per annum. About half a million tonnes are contributed by non-nuclear power stations and the rest, save for about three percent from domestic sources, is derived mainly from industrial activity. Generally, ground level concentrations of nitrogen dioxide outdoors are influenced more by emissions from motor vehicles than by sources such as power stations which disperse pollutants from tall stacks. Of the transport sources, petrol combustion in cars is currently responsible for a greater proportion than diesel, though this relationship is changing with the progressive introduction of the catalytic converter into petrol vehicles. The overall emissions of oxides of nitrogen into the air in the United Kingdom are estimated to have increased slowly from 1970 to 1989 and to have declined to 1970 levels since then. Urban traffic nitrogen dioxide emissions are estimated to fall by about 20% between 2000 and 2005, and by 46% between 2000 and 2010.

In terms of the exposures of individuals to nitrogen dioxide, there are two important sources, combustion outdoors and combustion within the home. Since most people in the United Kingdom spend more time indoors than out, it follows that indoor levels can be the major determinant of an individual's exposure, even though domestic emission of oxides of nitrogen comprises only a small proportion of the total national emissions. The major indoor source is cooking with gas, although kerosene heaters and cigarette smoke can also contribute significantly. In homes with gas cookers concentrations of nitrogen dioxide may be higher than outdoors, and much higher in kitchens for short periods of time when the cookers are in use. In homes that do not have gas cookers or other un-flued combustion appliances, concentrations of nitrogen dioxide are strongly influenced by outdoor concentrations

## **Results of previous Review and Assessment**

In the Updating and Screening Assessment undertaken in 2003 it was concluded that there was little risk of the 2005 and 2010 Air quality Strategy objectives for nitrogen dioxide being exceeded.

## **Background concentrations**

Background levels of nitrogen dioxide within Blaenau Gwent are below 30 µg/m<sup>3</sup> ([www.airquality.co.uk/](http://www.airquality.co.uk/)).

## **Monitoring data**

The Public Protection Division undertakes diffusion tube monitoring at fifteen sites throughout the Borough, four of which provide information for the National NO<sub>2</sub> survey.

We currently use two laboratories, Harwell Scientifics for National Survey tubes, and Cardiff Scientific Services for all others. Their bias adjustment factors are 0.78 and 0.93 respectively therefore the concentration results they provide both over-read.

The diffusion tube data provided in this report has not been corrected as the bias adjustment factors may not have been valid when the concentrations were measured.

The most recent diffusion tube results indicate that the highest measured annual mean concentration is 21 µg/m<sup>3</sup>, which is well inside the Air Quality (Wales) Regulations standard of 40µg/m<sup>3</sup>

A full summary of monitoring data can be found in appendix 5.

## **Road Traffic**

Apart from the A465, the traffic flows in Blaenau Gwent remain relatively low. Information obtained from Capita Gwent Consultancy confirms our belief that we have no arterial roads with an AADT flow of 10,000 vehicles or more, and certainly we have no 'busy' roads or junctions as defined in LAQM.TG. (03).

The 'dualling' of the A465 between Tredegar and Merthyr is continuing with completion due at the end of 2004. The DRBM modelling for this development indicates a maximum predicted NO<sub>2</sub> level for 2005 of 26.52 µg/m<sup>3</sup> against the Air Quality (Wales) Regulations standard of 40µg/m<sup>3</sup>.

Although the traffic is expected to increase by a factor of 1.072 by 2010 the level of NO<sub>2</sub> is expected to reduce to a maximum of 20.68µg/m<sup>3</sup> at the identified receptors.

We have 2 open air bus stations, one in Brynmawr the other in Tredegar. Both have less than 120 bus movements per day and both are more than 20 metres from residential property.

There is no airport in Blaenau Gwent

### **Discussion**

As a result of the Updating Screening and Assessment completed in 2003 we were satisfied that it was unlikely that NO<sub>2</sub> limits would be exceeded at relevant locations near any of our existing or proposed road networks. Since the assessment we have not been made aware of any road or industrial developments that would cause us to change our view.

### **Conclusion**

We are satisfied that nitrogen dioxide concentrations remain low and there is little risk of the Air quality Strategy Objective for nitrogen dioxide being exceeded by the end of the year 2010



## **7.0 Particles (PM<sub>10</sub>)**

### **Objective**

The Government and Devolved Administrations have adopted two air quality objectives for fine particles (PM<sub>10</sub>), which are equivalent to the EU stage 1 limit value. The objectives are 40µg/m<sup>3</sup> as the annual mean, and 50µg/m<sup>3</sup> as the fixed 24 hour mean to be exceeded no more than 35 days per year, to be achieved by the end of 2004. equivalent.

The EU has also set indicative limit values for PM<sub>10</sub>, which are to be achieved by 1st January 2010. These Stage 2 limit values are considerably more stringent, and are 20 µg/m<sup>3</sup> as the annual mean, and 50 µg/m<sup>3</sup> as the 24-hour mean to be exceeded on no more than 7 days per year. The Welsh Assembly Government has introduced provisional objectives to be achieved by the end of 2010 that are broadly in line with the Stage 2 limit values, although it is not intended that these objectives will be brought into Regulation for the purpose of Local Air Quality Management at this time.

### **Sources of PM<sub>10</sub>**

Particles in the air may arise from a wide variety of sources, either natural or man-made. Biological sources are ubiquitous, and particularly in rural areas considerable numbers of pollen grains, fungal spores and their fragments contribute to the total mass of airborne particles. Man-made airborne particles result mostly from combustion processes, from the working of soil and rock, from many other industrial processes and from the abrasion of road surfaces by motor vehicles.

### **Results of previous Review and Assessment**

In the Updating and Screening Assessment undertaken in 2003 it was concluded that there was little risk of the Air quality Strategy objective for PM<sub>10</sub> being exceeded by the end of the year 2004. However projected figures for the 2010 objective seem to show that the annual mean of 20µg/m<sup>3</sup> could be exceeded due to the proposed upgrading of the A465 Head of the Valleys road..

### **Background concentrations**

Background levels of PM<sub>10</sub> for 2010 within Blaenau Gwent are expected to be below 18 µg/m<sup>3</sup>. ([www.airquality.co.uk/](http://www.airquality.co.uk/)).

## **Monitoring data**

No monitoring has been undertaken in the County Borough.

### **Road Traffic**

In undertaking the Updating and Screening Assessment in 2003, calculations of PM<sub>10</sub> at 5 receptors adjacent to the proposed route of the A465 in 2004 and 2010 were carried out using a screening model prepared for the Design Manual for Roads and Bridges (DMRB), which is published by the Highways Agency. The model requires input data on annual average daily traffic (AADT), annual average speeds, the proportion of different vehicles types, the type of road and the distance from the centre of the road to the receptor. For this particular exercise however we used the peak traffic flow rather than the AADT to predict the worse case scenario.

Capita Gwent Consultancy provided most of this information, and where predicted increases in traffic were required the Highways Agency Tempo 4.2.3 model was used. The background PM<sub>10</sub> concentrations needed for the model were downloaded from the Defra Air Quality web site.

The receptors chosen were examples of the relatively few properties that fall within a 40 metre distance of the proposed roads and they represented the points of maximum relevant exposure. (i.e. those locations where the highest concentrations of PM<sub>10</sub> would be expected)

The results obtained from the DRMB model indicated a maximum predicted annual mean PM<sub>10</sub> level for 2004 of 24.21µg/m<sup>3</sup> with the fixed 24-hour mean limit of 50µg/m<sup>3</sup> being exceeded a maximum of 12 days a year. Although the traffic is expected to increase by a factor of 1.072 by 2010 the level of PM<sub>10</sub> is expected to reduce to a maximum of 20.68 µg/m<sup>3</sup> with the fixed 24-hour mean limit of 50µg/m<sup>3</sup> being exceeded a maximum of 3 days a year. A summary of the DMRB modelling results, and details about the receptor points we considered may be found in Appendix 3.

It is important to note that apart from the A465 the traffic flow flows in Blaenau Gwent are relatively low. Information obtained from the Capita Gwent Consultancy confirms our belief that we have no arterial roads with an AADT flow of 10,000 vehicles or more, and certainly we have no 'busy' roads or junctions as defined in LAQM.TG. (03).

## **Discussion**

The Updating Screening and Assessment in 2003 considered existing and/or proposed emission sources of PM<sub>10</sub> as identified in the Checklist, Box 8.4 contained in LAQM.TG (03). It was demonstrated that there was no industrial or domestic sources that singly or together were likely to emit significant quantities of PM<sub>10</sub>. Our investigations into traffic emissions arising from the upgrading of the A465 Head of the Valleys Road indicated that the 2004 objectives would be

easily achieved. However projected figures for the 2010 objective showed that the annual mean of  $20\mu\text{g}/\text{m}^3$  was likely to be exceeded.

Since the Updating Screening and Assessment there have been no developments in the County Borough that would result in significant changes in  $\text{PM}_{10}$  levels. Furthermore we are not aware of any proposed developments that are likely to give rise to sustained elevated  $\text{PM}_{10}$  concentrations in the immediate future..

### **Conclusion**

From the information available we are satisfied that the Air Quality Objective for  $\text{PM}_{10}$  will not be exceeded by the end of 2004.

## 8.0 Sulphur Dioxide

### Objective

The Government and Devolved Administrations have adopted a 15 minute mean of  $266\mu\text{g}/\text{m}^3$  as an air quality standard for sulphur dioxide with the objective not being exceeded more than 35 times in a year by the end of 2005. Additional objectives have also been set which are equivalent to the EU limit values specified in the First Air Quality Daughter directive. These are for a 1-hour mean objective of  $350\mu\text{g}/\text{m}^3$  to be exceeded no more than 24 times per year, and a 24-hour mean objective of  $125\mu\text{g}/\text{m}^3$  to be exceeded not more than 3 times per year, to be achieved by the end of 2004.

### Sources of sulphur Dioxide

From the time of the Industrial Revolution until the early 1960s, the main source of sulphur dioxide emissions in towns and cities was the domestic, commercial and industrial burning of coal. However, this pattern of emission in the United Kingdom has changed significantly since the 1960s. Following the Clean Air Act of 1956 and subsequent moves to the increased use of energy sources such as natural gas and electricity, emissions in towns have fallen considerably. The generation of electricity by combustion of fossil fuels has now become concentrated in large power stations with tall chimneys, situated mainly in rural areas rather than close to towns as was formerly the case. Restructuring of the industrial base and increased energy efficiency have also contributed to a decrease in emissions over the past two decades.

### Results of previous Review and Assessment

In the Updating and Screening Assessment undertaken in 2003 it was concluded that there was little risk of the Air quality Strategy objective for sulphur dioxide being exceeded by the end of the year 2005.

### Background concentrations

Background levels of sulphur dioxide within Blaenau Gwent are below  $4\mu\text{g}/\text{m}^3$  ([www.airquality.co.uk/](http://www.airquality.co.uk/)).

### Monitoring data

In the absence of monitoring within Blaenau Gwent we look to information obtained from real-time continuous monitoring carried out by Welsh Authorities. Here we see that none of the sites exceeded either the 15-minute mean, one-hour mean or annual mean Air Quality (Wales) Regulations standards for sulphur dioxide. Furthermore, all concentrations measured at each site fell within the

Defra pollutant level classification band of 'Low'. See appendix 6 for available monitoring data.

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### **Industrial Sources of Sulphur Dioxide**

The aluminium diecast process at Yamada, Victoria Park Industrial Estate, Ebbw Vale is the only Part B process that has been identified by Defra as likely to release quantities of SO<sub>2</sub>. However this process uses natural gas and production of SO<sub>2</sub> does not impact significantly within the Authority's area..

Since the closure of the Corus tinplate works in Ebbw Vale in 2002, we have no boilers greater than 5MW in Blaenau Gwent.

There are no industrial processes in neighbouring authorities that significantly contribute to the ground level concentrations of sulphur dioxide in this Borough.

### **Domestic Emissions of Sulphur Dioxide**

Domestic emissions of SO<sub>2</sub> are not significant as we do not have more than 100 houses burning solid fuel in any area of 500m x 500m in the County Borough..

### **Railway locomotives**

It is proposed that in 2005-6 a new rail passenger service will be provided for the Ebbw Fawr valley, with a 'Parkway' station at Victoria, Ebbw Vale. At this time it is expected that there will be 10 trains per day and none would be at the station for any longer than it takes to unload and load passengers.

The nearest residents to the site of the proposed station would be about 100 metres away.

### **Discussion**

During 2002 none of the continuous monitoring sites in Wales exceeded either the 15-minute mean, one-hour mean or annual mean Air Quality (Wales) Regulations standards for sulphur dioxide. Furthermore, all concentrations measured at each site fell within the Defra pollutant level classification band of 'Low'.

In the Updating Screening and Assessment undertaken in 2003 it was demonstrated that it was unlikely that the Air quality objective would be exceeded and since that time there have been no industrial or domestic developments that would significantly increase sulphur dioxide concentrations.

**Conclusion**

We are satisfied that sulphur dioxide concentrations remain low and there is little risk of the Air quality Strategy Objective for sulphur dioxide being exceeded by the end of the year 2005.

## **9.0 Executive Summary**

### **Benzene**

The risk of the Air Quality objective for benzene being exceeded by the end of 2010 is considered to be negligible.

**Therefore no detailed assessment is required.**

### **1,3 Butadiene**

The risk of the Air Quality objective for 1,3 butadiene being exceeded is considered to be negligible.

**Therefore no detailed assessment is required.**

### **Carbon Monoxide**

The risk of Air Quality objective for carbon monoxide being exceeded is considered to be negligible.

**Therefore no detailed assessment is required.**

### **Lead**

The risk of Air Quality objective for lead being exceeded by the end of the year 2004 is considered to be negligible.

**Therefore no detailed assessment is required.**

### **Nitrogen Dioxide**

The risk of Air Quality objective for nitrogen dioxide being exceeded by the end of the year 2005 is considered to be negligible.

**Therefore no detailed assessment is required.**

### **Particles**

The risk of the Air Quality objective for PM<sub>10</sub> being exceeded by the end of the year 2004 is considered to be negligible.

**Therefore no detailed assessment is required.**

## **Sulphur Dioxide**

The risk of the Air Quality objective for sulphur dioxide being exceeded by the end of the year 2005 is considered to be negligible.

**Therefore no detailed assessment is required.**



## **10.0 Appendices**

## **Appendix 1**

Extract from the 8<sup>th</sup> Wales Air Quality Annual Report providing monitoring data for benzene from Neath Port Talbot and Cardiff continuous monitoring sites 2002.

## **Appendix 2**

Extract from the 8<sup>th</sup> Wales Air Quality Annual Report providing monitoring data for 1,3 butadiene from Neath Port Talbot and Cardiff continuous monitoring sites 2002.

### **Appendix 3**

Extract from the 8<sup>th</sup> Wales Air Quality Annual Report providing monitoring data for Carbon monoxide from continuous monitoring sites in Wales for 2002.

## **Appendix 4**

Extract from EPA Public Register providing details of ground level concentrations of lead around the Yuasa battery plant at Rassau Industrial site Ebbw Vale (April 2002)

## **Appendix 5**

Extract from the 8<sup>th</sup> Wales Air Quality Annual Report providing Monitoring data for nitrogen dioxide from diffusion tube monitoring sites in Blaenau Gwent for 2002. /03.

## **Appendix 6**

Extract from the 8<sup>th</sup> Wales Air Quality Annual Report providing Monitoring data for sulphur dioxide from continuous monitoring sites in Wales for 2002.