

2.0 Update and Screening Assessment for Carbon Monoxide

2.1 The national perspective

The main source of carbon monoxide in the UK is road transport which accounted for 67% of total releases in 2000. Annual emissions of carbon monoxide have been falling steadily since the 1970's and are expected to continue to do so.

Modelling and monitoring undertaken at a national level indicates that existing national policies should generally be sufficient to achieve the current air quality objective for carbon monoxide.¹ There may however be some exceedances of the objective close to very busy roads.

2.2 The local perspective

In the First Stage Review and Assessment of Air Quality in York carbon monoxide was assessed against the following objective:

'An 8-hour running average of 10ppm, or less, to be achieved by the end of 2005'.

It was concluded that this objective would be met in York without the need for further action at a local level.

In the Second and Third Stage Review and Assessment of Air Quality in York carbon monoxide was assessed against a revised objective which was:

'An 8-hour running mean of 11.6mg/m³ (10ppm) or less to be achieved by the end of 2003.'

It was concluded that this objective would be met in York without the need for further action at a local level.

2.3 Scope of the update and screening assessment for carbon monoxide

For the purpose of this update and screening assessment carbon monoxide has been assessed against the current objective which is:

'10mg/m³ as a maximum daily 8-hour mean concentration to be achieved by the end of 2003.'

¹ DEFRA [Review and Assessment: Technical Guidance LAQM.TG \(03\)](#) 2003

In accordance with the air quality guidance note LAQM.TG(03) the following items have been considered:

- Carbon monoxide monitoring data
- Impact of ‘very busy’ roads

2.4 Assessment of carbon monoxide monitoring data for York

For the last Update and Screening Assessment (carried out in May 2003) the council obtained carbon monoxide monitoring data from the Institute of Transport Studies (ITS) at the University of Leeds. Researchers at ITS undertook some carbon monoxide monitoring in York as part of their wider research into the dynamics of street canyons. Analysis of this data showed that all recorded concentrations were well below the objective level at that time.

Since this time, City of York Council has installed a carbon monoxide analyser at Rawcliffe air quality monitoring station. The carbon monoxide concentrations recorded at this site are shown in Table 1 below.

Table 1 : 8 hour running mean carbon monoxide monitoring results from Rawcliffe air quality monitoring station in 2003, 2004 and 2005.

Year	Max 8 hr running mean (mg/m ³)*	Min 8 hr running mean (mg/m ³)*	% Data capture
2003	3.1	0.0	90%
2004	1.9	0.0	64%
2005	1.9**	0.0**	71% **

*Conversion factor of 1ppm = 1.16 mg/m³ (20⁰C and 1013mb)

** N.B. Only 9 months ratified data available for analysis

As can be seen from Table 1, all the results are well below the objective level for carbon monoxide which is 10mg/m³ measured as a daily maximum 8 hour running mean.

2.5 Assessment of carbon monoxide from traffic

2.5.1 Assessment procedure

National monitoring and modelling suggests that any breaches of the current objective for carbon monoxide will occur close to ‘very busy’ roads. For the purpose of assessing carbon monoxide from traffic local authorities are required to undertake the following:

1. Identify all 'very busy' roads in their area. Where 'very busy' roads are defined as:

- Single carriageway roads with daily average traffic flows which exceed 80,000 vehicles per day.
- Dual carriageway (2 or 3-lane) roads with daily average traffic flows which exceed 120,000 vehicles per day.
- Motorways with daily average traffic flows which exceed 140,000 vehicles per day.

At junctions flows should be added to give a combined total.

2. Identify if there is 'relevant' exposure within 10m of any 'very busy' road.

3. If 'relevant' exposure exists undertake DMRB modelling to predict annual mean concentrations in the current year at relevant locations.

4. If the DMRB modelling suggests potential for the carbon monoxide objective to be breached proceed to a detailed assessment.

2.5.2 Assessment of traffic in York

Traffic data derived from the council's SATURN transport model has been analysed to establish if any of the roads within the York network meet the criteria set to define a 'very busy' road. The SATURN model was extensively validated and refined during 2005 and provides the best estimate of current traffic flows around the city.

The road with the highest daily flows is the A64 to the south of the city which in some areas carries up to 40,500 vehicles per day.

The junction with the greatest traffic flow is the Grimston Bar interchange which when considered as a single junction carries approximately 66,000 vehicles per day.

None of the roads in York fit the definition of 'very busy' for the purpose of assessing against the carbon monoxide air quality objective. This indicates that the current air quality objective for carbon monoxide should be met in York without the need for further reductions in traffic emissions.

2.6 Conclusions from the update and screening of carbon monoxide

Based on this assessment it is concluded that City of York Council is not required to progress to a detailed assessment of carbon monoxide at this time. It should however undertake a further update and screening exercise for carbon monoxide in April 2009.