



Environment Group

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To all consultees

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Date: 30 August 2002

Dear Sir/Madam

**IMPLEMENTATION IN SCOTLAND OF DIRECTIVE 2000/69/EC RELATING TO LIMIT VALUES FOR BENZENE AND CARBON MONOXIDE IN AMBIENT AIR**

I enclose a copy of a consultation document which seeks views on proposals to transpose Directive 2000/69/EC relating to limit values for benzene and carbon monoxide in ambient air into Scottish law.

The Scottish Executive intends to transpose the Directive, referred to as the second Air Quality Daughter Directive, by an amendment to the Air Quality Limit Values (Scotland) Regulations 2001. A draft of the proposed Regulations is included in the consultation paper. Comment is invited on the contents of the consultation paper and the draft Regulations.

**Responses**

Comments should be sent to either by post or email to:

Claire Dodd  
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Email: [air.quality@scotland.gsi.gov.uk](mailto:air.quality@scotland.gsi.gov.uk)

no later than 8 November 2002

The Executive may wish to make some or all responses public, unless a respondent specifically asks for his or her response to be treated as confidential. If you wish your response to remain confidential, please make this clear.

If you believe that there are organisations, not on the attached list but that may have an interest in these proposals, I would be grateful if you would let me know.



The consultation paper can also be accessed on the Internet via the Scottish Executive's website: <http://www.scotland.gov.uk/views/views.asp>. Further copies of the consultation paper are available on request from either the above address; Fax: 0131 244 0211; Tel: 0131 244 7621 or E-mail: <mailto:air.quality@scotland.gsi.gov.uk>.

Yours faithfully

Claire Dodd



*The Environment Group is part of the Scottish Executive Rural Affairs Department*

## CONTENTS

Introduction

Summary

Background

    Benzene

    Carbon monoxide

Requirements of Directive 2000/69/EC

Transposition of Directive 2000/69/EC

Future levels of benzene

Future levels of carbon monoxide

Benzene derogation

Preliminary assessment

Action plans and Aarhus Convention

Costs and benefits

Enforcement, sanctions, monitoring and review

Amendments to SSI 2001/224

Comments on proposals for implementation

Draft Air Quality Limit Values (Scotland)(Amendment) Regulations

**[Annex A Directive 2000/69/EC](#)**

Annex B Consultation List

## **Introduction**

This consultation paper seeks views on the proposed Air Quality Limit Values (Amendment) (Scotland) Regulations. The amended Regulations have the effect of transposing the European Community Directive 2000/69/EC (the second daughter Directive) which sets health based limit values for carbon monoxide and benzene, to be achieved by 2005 and 2010 respectively. Similar papers covering England, Wales and Northern Ireland will be issued by the Department of Environment, Food and Rural Affairs and the other devolved administrations.

**Section 1** of the paper introduces the framework into which Directive 2000/69/EC fits and the pollutants covered by the Directive.

**Section 2** of the paper summarises the requirements of the second Daughter Directive and explains what measures will be needed to meet those requirements.

**Section 3** contains the draft Air Quality Limit Values (Amendment) (Scotland) Regulations

**Annex A** contains a copy of Directive 2000/69/EC

### **Comments invited**

The consultation paper is being sent to a wide range of air quality policy stakeholders. A list of consultees is attached at Annex B. The consultation paper is also available on the Scottish Executive website at the following address <http://www.scotland.gov.uk/views/views.asp>

The Scottish Executive proposes to transpose Directive 2000/69/EC by amending the existing Air Quality Limit Values (Scotland) Regulations SSI 2001 No 224.

Comments are invited on:

- whether the proposed amendments fully transpose the requirements of Directive 2000/69/EC; and
- whether there is a need to transpose the derogation of the benzene limit value.

The Scottish Executive welcomes all responses to the consultation paper. The deadline for responses is 8 November 2002. Respondents should note that the Scottish Executive may wish to make some or all responses public, unless a respondent specifically asks for his or her response to be treated as confidential. Responses, queries or complaints should be posted, faxed or e-mailed to:

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## **Summary**

This consultation paper seeks views on the proposed Air Quality Limit Values (Scotland) Amendment Regulations 2002, (“the proposed Regulations”). The proposed Regulations have the effect of transposing European Council (EC) Directive 2000/69/EC relating to limit values for benzene and carbon monoxide in ambient air.

Directive 2000/69/EC, (“the Second Daughter Directive”), sets limit values for benzene and carbon monoxide. The values are set out in Schedule I of the proposed Regulations which can be found in section 3 of this consultation paper.

Air pollution can have a significant adverse impact on human health and the environment. The principal aim of Directive 2000/69/EC is to achieve and maintain a high degree of protection for public health and the environment against the adverse effects of ambient air pollution.

The proposed regulations are necessary in order to transpose the requirements of Directive 2000/69/EC into Scottish law and to place the legal obligation on Scottish Ministers to ensure the limit values and other obligations of the Directives are met.

## SECTION 1

### Background

1. The Air Quality Framework Directive, adopted on 27 September 1996, provides a framework for subsequent (“daughter”) Directives to set long term air quality objectives for 12 pollutants in the form of ambient limit values. The Air Quality Framework Directive's main objectives are to:
  - define and establish objectives for ambient air pollution in the Community designed to avoid, prevent and reduce harmful effects on human health and the environment as a whole;
  - assess ambient air quality in Member States on the basis of common methods and criteria;
  - obtain adequate information on ambient air quality and ensure that it is made available to the public; and
  - maintain ambient air quality where it is good and improve it in other cases.
  
2. The second Daughter Directive, Council Directive 2000/69/EC sets limit values for benzene and carbon monoxide for the protection of human health. It was adopted on 16 November 2000. A copy of the Directive is available at Annex A. The Directive requires that Member States must:
  - take steps to achieve the limit values for the pollutants in the Daughter Directive by the specified dates;
  - carry out preliminary assessments of concentration of the pollutants on the basis of common methods and criteria;
  - carry out full assessments against the limit values and Margins of Tolerance (MOT)<sup>a</sup> for the pollutants using the common criteria and techniques for measurement and assessment;
  - draw up action plans in zones and agglomerations where levels of the pollutants exceed the temporary Margins of Tolerance during the period between the coming into force of the Directive and the dates when the limit values must be met;
  - measure concentrations of the pollutants against the limit values, and where exceeded, inform the public; and
  - maintain ambient air quality where it is good and improve it in other cases.

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<sup>a</sup> Margins of Tolerance are concentrations, at levels set higher than the Directive’s limit values, which decrease over time in stages to meet the limit value by the attainment date and trigger certain actions by Member States if exceeded during that period.

## **Benzene**

### Sources

3. Benzene is a volatile organic compound. In the UK the main atmospheric source is petrol. Since 1 January 2000, EU legislation requires that the amount of benzene in petrol is below 1% and it is presently about 0.6% by volume on average for fuel sold in the UK.

### Current levels

4. The annual mean concentrations for benzene recorded in urban background locations in the UK in 2000 ranged between  $1.17\mu\text{g}/\text{m}^3$ , which was recorded at the Edinburgh monitoring site, and  $2.44\mu\text{g}/\text{m}^3$ . Higher concentrations may occur at roadside locations. Projections show that emissions of benzene from road transport are expected to decrease by 79% between 1995 and 2010. This decrease is more than previously expected as a result of the introduction of lower maximum benzene content levels in January 2000.

### Health effects

5. Benzene is a recognised genotoxic human carcinogen. Because it is a genotoxic carcinogen, no absolutely safe level can be specified for ambient air concentrations of benzene. In their 1994 report, the Expert Panel on Air Quality Standards (EPAQS) recommended an air quality standard of  $16.25\mu\text{g}/\text{m}^3$  as a running annual mean, a level which they concluded represents an exceedingly small risk to health.

## **Carbon monoxide**

### Sources

6. Carbon monoxide is a gas formed by the incomplete combustion of carbon containing fuels. In general, the more efficient the combustion process, the lower the carbon monoxide emission. The main outdoor source of carbon monoxide in UK is petrol-engined vehicles. This source accounts for about 69% of UK emissions.

### Current levels

7. In 2000, at roadside and kerbside sites, where pollution levels are likely to be highest, measured concentrations in the UK recorded ranged from  $2.9\text{mg}/\text{m}^3$  to  $7.5\text{mg}/\text{m}^3$ . The highest concentration at a Scottish monitoring site was  $5\text{mg}/\text{m}^3$  measured at Glasgow kerbside.

### Health effects

8. The main threats to human health from exposure to carbon monoxide are the formation of carboxyhaemoglobin, which substantially reduces the capacity of the blood to carry oxygen and deliver it to the tissues, and blockage of important biochemical reactions in cells. People who have an existing disease which affects the delivery of oxygen to the heart or brain (eg coronary artery disease – angina) are likely to be at particular risk if these delivery systems are further impaired by carbon monoxide.

9. The World Health Organisation (WHO) air quality guideline for carbon monoxide as the concentration at which health effects arising from exposure to carbon monoxide are unlikely to be observed is  $10\text{mg/m}^3$ . In their 1994 report, EPAQS recommended an air quality standard of 10ppm ( $11.6\text{mg/m}^3$ ) as a running 8-hour mean. At present, there is no conclusive evidence of health effects occurring at concentration below the levels recommended by WHO and EPAQS

## Section 2

### Requirements of the second daughter directive

10. The second Daughter Directive (2000/69/EC) must be transposed into Scottish law by 13 December 2002.
11. The Directive sets health based limit values for carbon monoxide and benzene to be achieved by 2005 and 2010 respectively. Temporary margins of tolerance are defined for each pollutant that decrease at a prescribed rate until the limit value is reached at the attainment date. If the limit value plus the margin of tolerance is exceeded in a zone or agglomeration then plans or programmes must be implemented in order to attain the limit value and to reduce air pollution (the table below shows the limit values and margins of tolerance).

Pollutant	Limit value	Margin of Tolerance (MOT)	Attainment of limit value
Benzene	5µg/m <sup>3</sup> (averaged over 1 calendar year)	5µg/m <sup>3</sup> (100%) on 13 December 2000, reducing on 1 January 2006 and every 12 months thereafter by 1µg/m <sup>3</sup> to reach 0% by 1 January 2010	1 January 2010
Carbon monoxide	10mg/m <sup>3</sup> (maximum daily 8 hour mean)	6mg/m <sup>3</sup> on 13 December 2000, reducing on 1 January 2003 and every 12 months thereafter by 2mg/m <sup>3</sup> to reach 0% by 1 January 2005	1 January 2005

12. Directive 2000/69 contains a provision for a derogation of the benzene limit value where it can be demonstrated that the limit value is difficult to achieve because of site-specific dispersion or climatic characteristics, or because achieving the limit value would entail severe socio-economic problems. In order to obtain the derogation the UK Government must provide the European Commission with details about the problem with meeting the limit value and outline future measures to achieve the limit value. The European Commission may grant the derogation for a limited period of up to five years with a temporary limit value of 10µg/m<sup>3</sup>.
13. The Air Quality Framework Directive and the second Daughter Directive contain requirements for monitoring. Under Article 5 of the Air Quality Framework Directive Member States are required to undertake a preliminary investigation of ambient air quality, prior to implementation, in order to establish estimates of the overall distribution and levels of pollutants, and to identify additional monitoring requirements which may be necessary.
14. The Directive sets upper and lower assessment thresholds, in zones and agglomerations in which the upper assessment threshold is exceeded monitoring is mandatory, in other zones and agglomerations a combination of monitoring and

modelling techniques may be used, and where levels are below the lower assessment threshold modelling alone may be used.

15. Information on air pollution levels in zones and agglomerations must be made available to the public and to the European Commission. Information to the public must be updated regularly and should indicate exceedances of the limit values and an assessment of the situation and possible impacts on human health.
16. Where there is a risk of the limit values being exceeded Member States are required to draw up action plans indicating measures to be taken in the short term. Similarly, when the limit value plus the margin of tolerance is exceeded plans or programmes must be implemented to ensure that the limit value is met by the attainment date. These plans or programmes must be made available to the public and a list of zones and agglomerations where the exceedances occurred must be given to the European Commission.

### **Transposition of the second daughter directive**

17. There is a legal requirement on the UK to achieve the limit values by the due dates set in Directive 2000/69/EC. The obligation to meet the limit values in Scotland is placed on Scottish Ministers.
18. The Local Air Quality Management (LAQM) system, which came into force in 1997, places a statutory duty on local authorities to regularly review and assess air quality in their area against the objectives set out in Regulations. Where the objectives are unlikely to be achieved by the due dates in the Regulations, local authorities are required to designate air quality management areas and prepare and implement remedial action plans.
19. New national objectives for benzene and carbon monoxide were consulted on in September 2001 (the consultation document explaining the amendments can be found at <http://www.scotland.gov.uk/library3/environment/airqual.pdf>). These objectives have been given statutory force by the Air Quality (Scotland) Amendment Regulations 2002 SSI No 297. The new objectives are more stringent than those set out in Directive 2000/69/EC, therefore achieving the national objectives will mean achieving the limit values. Measures and actions taken at national and local levels in pursuit of the revised objectives in the Air Quality Strategy (AQS) are expected to be sufficient to ensure that the limit values for benzene and carbon monoxide are achieved. The new objectives, set out in the table below, are in line with the limit values set by the second Daughter Directive.

Pollutant & (Maximum Exceedances Permitted per Year)	New Air Quality Objective		Daughter Directive	
Benzene	3.25µg/m <sup>3</sup> (running annual mean)	end 2010	5µg/m <sup>3</sup> (averaged over 1 calendar year)	1 January 2010
Carbon monoxide	10 mg/m <sup>3</sup> (maximum daily 8 hour mean)	end 2003	10mg/m <sup>3</sup> (maximum daily 8 hour mean)	1 January 2005

20. Whilst the LAQM arrangements will provide a means for achieving improvements in air quality which are expected to secure the national objectives and Daughter Directive's limit values, they do not place an absolute obligation on local authorities to meet the objectives. The second Daughter Directive places an absolute obligation on EU Member States to achieve the limit values by the due date. In transposing the Directives into national legislation, it is necessary to place an obligation on an individual or organisation with the powers to ensure that the limit values will be achieved.
21. It is for this reason that it is proposed to transpose the Directives into national legislation by means of regulations under the section 2(2) of the European Communities Act 1972 which will place the obligation for achieving the limit values on Scottish Ministers. Scottish Ministers have a wide range of powers under existing legislation, including powers of direction to local authorities, the Scottish Environment Protection Agency and other organisations which can, if necessary, be used to ensure that any necessary action to improve air quality and achieve the Directive's limit values is taken
22. The Scottish Executive proposes to transpose the second Daughter Directive by amending the Air Quality Limit Values (Scotland) Regulations (2001) which implemented the first Daughter Directive (Directive 99/30/EC) and the Framework Directive. The draft Air Quality Limit Values (Scotland) Amendment Regulations can be found in Section 3. The amended Regulations will apply to Scotland only
23. The proposed amendments prescribe the limit values and thresholds set for benzene and carbon monoxide in Directive 2000/69/EC and the dates by which these must be met, and place a duty on Scottish Ministers to ensure these are achieved.

### **Future levels of benzene**

24. A number of policy measures already in place or planned for future years will contribute to a continued reduction in concentrations of benzene in ambient air. Measures agreed under the European Auto-Oil programme will reduce further the emission limits for cars, light vans and heavy-duty vehicles sold from 2001 and 2006 and reduce the sulphur content of fuels by 2005. Emissions of benzene from petrol vapour are being reduced by existing legislation which controls emissions during the storage and distribution of petrol. Benzene emission levels at petrol station forecourts can be reduced further by the use of petrol vapour recovery controls during vehicle refuelling.
25. It was estimated that the European limit value for benzene was exceeded at some 22 road links in Scotland in 1999 but modelling work shows that on the basis of current policies the European limit value for benzene will be met throughout Scotland by 2010.

## **Future levels of carbon monoxide**

26. The range of transport measures discussed above will also contribute to reducing emissions of carbon monoxide further. The introduction of tighter European vehicle emissions and fuel quality standards will make a significant contribution towards reducing emissions of carbon monoxide. So too will the policy measures in the Scottish Executive's Transport Delivery Report aimed at tackling congestion and local authority traffic management schemes introduced through the local air quality management arrangements. The phased introduction of Best Available Technique (BAT) through the Pollution Prevention and Control (PPC) regime of integrated permitting, being phased in until 2007, should also have an impact at reducing carbon monoxide emissions from industrial processes.
27. Indications, from the results of work to update the emission inventory and modelling projections for all major road links, are that existing policy measures should be sufficient to ensure that roadside concentrations of carbon monoxide in all areas of Scotland are below 10mg/m<sup>3</sup> by 2005.

*Do you consider that the Regulations in Part 3 fully transpose the requirements of Directive 2000/69/EC*

## **Benzene Derogation**

28. Directive 2000/69 allows for a derogation of the benzene limit value (paragraph 12). However as current levels of benzene in ambient air (Paragraph 4) indicate that the derogation will not be needed the Scottish Executive does not propose to transpose this provision.

*The Scottish Executive has not transposed the benzene derogation into the implementing Regulations. Do you foresee any difficulty with this?*

## **Preliminary Assessment**

29. The Scottish Executive along with the other UK administrations has carried out the Preliminary Assessment required by Article 5 of the Air Quality Framework Directive and a summary is given in paragraphs 30-31 below.
30. Benzene and carbon monoxide levels have been assessed throughout the UK by a combination of monitoring and modelling (the full report will be available at <http://www.scotland.gov.uk/environment/airquality/publications.asp> in due course). The minimum number of additional automatic monitoring locations in areas with high estimated pollutant concentrations have been identified and are summarised for Scotland in the table below. Fixed monitoring will be supplemented by information from other sources in all zones and agglomerations. Monitoring stations already available in the current monitoring network have also been taken into account.

<b>Benzene</b>	
Agglomerations	1
Other Zones	0
<b>Total</b>	<b>1</b>
<b>Carbon monoxide</b>	
Agglomerations	0
Other Zones	1
<b>Total</b>	<b>1</b>

31. The additional monitoring needed for formal compliance with the Directive will be satisfied by a process of affiliation of existing local authority monitoring stations and by direct funding of new monitoring sites.

### **Action Plans/Aarhus Convention**

32. The Aarhus Convention<sup>a</sup> commits the UK to put in place appropriate provisions for the public to participate during the preparation of plans and programmes relating to the environment, within a transparent and fair framework. This commitment includes action plans or programmes drawn up under Article 8(3) of the Air Quality Framework Directive, in zones and agglomerations in which air quality limit values are exceeded.

33. The Executive intends to meet this obligation with regard to the Framework Directive and relevant Daughter Directives by extending existing public consultation best practice:

- The Executive will issue the proposed plan or programme for public consultation. This will involve circulating the plan or programme to key stakeholders and making the document available on the Executive's website. The standard twelve week consultation period will be observed.
- A summary of substantive points raised, and the SE reaction to these, will also be made available on the Executive website.

### **Costs and Benefits**

34. The requirement to meet the limit values in Directive 2000/69/EC was taken into account in updating the objectives in the Air Quality Strategy. The benefits and costs of complying with the second Daughter Directive's limit values to protect human health will, therefore, not be greater than those for the achievement of the

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<sup>a</sup> Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matter 25<sup>th</sup> June 1998

objectives for the pollutants in the Air Quality (Scotland) Amendment Regulations 2002 SSI No 297.

35. Measures are already in place to achieve the Air Quality Strategy's objectives which will ensure that the limit values for the two pollutants covered by the second daughter Directive will be achieved. These will be met through a mixture of national and local measures (see paras 24 & 26 above). There should be no additional cost to industry or small businesses as a result of the proposed Regulations over and above those costs associated with achieving the national air quality objectives in the AQS. The costs of the additional measuring and assessment, to meet the requirement of the Directive, will be met by central Government.
36. Likewise no additional benefits over and above those benefits associated with achieving the national air quality objectives in the AQS will result from achieving the limit values set in these Regulations.
37. The Directive sets criteria for the numbers of fixed sampling points required. To meet these requirements, it will be necessary to expand the present air quality monitoring network. In Scotland, 2 new measuring stations are required. With the addition of the 2 new monitors there will be 7 automatic carbon monoxide monitors and 2 benzene monitors across Scotland. The estimated set up cost of the new monitoring stations and upgrades to existing sites is £8000 with an annual running cost of £9000. The costs of the additional measuring and assessment, to meet the requirements of the Directive, will be met by central Government

### **Enforcement, Sanctions, Monitoring and Review.**

38. Scottish Ministers will assess compliance with the proposed regulations, limit values and obligations in Directive 2000/69/EC, through the UK's national monitoring network and system of Local Air Quality Management provided by the Environment Act 1995. The European Commission will review progress on implementing Directive 2000/69/EC in 2004 in the light of scientific progress and emerging evidence on health effects.

### **Amendments to SSI 2002/224**

39. It is also proposed to make a number of other amendments to SSI 2002/224. These make some clarificatory amendments, correct minor omissions or typographical errors in the regulations. The detailed changes are shown in the draft amendment regulations.

### **Comments on Proposals for Implementation**

40. Your comments are invited on these proposals for implementing the requirements of Directive 2000/69/EC in Scotland.



SCOTTISH STATUTORY INSTRUMENTS

2002 No.

**ENVIRONMENTAL PROTECTION**

The Air Quality Limit Values (Scotland) (Amendment) Regulations 2002

*Made*

2002

*Laid before the Scottish Parliament*

2002

*Coming into force*

*[13th December] 2002*

The Scottish Ministers, in exercise of the powers conferred upon them by section 2(2) of the European Communities Act 1972<sup>(a)</sup> and of all other powers enabling them in that behalf hereby make the following Regulations:

**Citation, commencement and extent**

- 1.—(1) These Regulations may be cited as the Air Quality Limit Values (Scotland) (Amendment) Regulations 2002 and shall come into force on [13th December] 2002.
- (2) These Regulations extend to Scotland only.

**Responsibility for implementation of the Air Framework Directive**

3. – For the purposes of Article 3 (implementation and responsibilities) of Council Directive 96/62/EC on ambient air quality assessment and management<sup>(b)</sup> ‘the Air Framework Directive’, the Scottish Ministers shall be the competent authority in Scotland responsible for –

- (a) implementation of that Directive;
- (b) assessment of ambient air quality;
- (c) approval of measuring devices (methods, equipment, networks and laboratories);
- (d) ensuring accuracy of measurement by measuring devices and checking the maintenance of such accuracy by those devices, in particular by internal

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<sup>(a)</sup> 1972 c.68. Section 2(2) was amended by the Scotland Act 1998 (c.46), Schedule 8, paragraph 15(3). The function conferred upon the Minister of the Crown under Section 2(2) of the European Communities Act 1972, insofar as within devolved competence, was transferred to the Scottish Ministers by virtue of section 53 of the Scotland Act 1998.

<sup>(b)</sup> OJ No L 296, 21.11.96, p.55.

quality controls carried out in accordance with applicable quality assurance standards, including European standards;

- (e) analysis of assessment methods; and
- (f) co-ordination within Scotland of European Community-wide quality assurance programmes.

### **Amendment of the Air Quality Limit Values (Scotland) Regulations 2001**

**3.—**(1) The Air Quality Limit Values (Scotland) Regulations 2001<sup>(a)</sup> are amended as follows.

(2) In regulation 2 (definitions), in the definition of “relevant pollutants”, for “and lead;” there is substituted “, lead, benzene and carbon monoxide;”.

(3) In regulation 5 (classification of zones)—

- (a) in paragraph (4) between “zone” and “are” there is inserted “over a representative period”, and
- (b) in paragraph (7) for “classified” there is substituted “designated”.

(4) In regulation 6 (review of classifications) there is inserted at the end (3)—

“(3) In this regulation, “classification” includes any designation under regulation 5(7).”.

(5) In regulation 7 (methods of assessment of ambient air quality)—

- (a) in paragraph (4)—
  - (i) between “5(1)(a)” and “the” there is inserted “in relation to a relevant pollutant”, and
  - (ii) “in respect of a relevant pollutant” is deleted.
- (b) in paragraph (6)—
  - (i) in sub-paragraph (b) “and” is omitted,
  - (ii) in sub-paragraph (c) for “,” after “PM<sub>10</sub>” there is substituted “;”, and
  - (iii) after sub-paragraph (c) there is added—
    - “(d) the sampling and analysis of benzene; and

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<sup>(a)</sup> S.S.I. 2001/224.

(e) the analysis of carbon monoxide.”.

(c) in paragraph (9) for “and oxides of nitrogen” there is substituted “, oxides of nitrogen, benzene and carbon monoxide”.

(6) In regulation 11 (public information)–

(a) after paragraph (3) there is added–

“(3A) Information on ambient concentrations of benzene as an average value over the last 12 months, shall be updated –

(a) where practicable on a monthly basis;

(b) in all other cases, as a minimum on a three-monthly basis.

(3B) Information on ambient concentrations of carbon monoxide, as a maximum running average over eight hours, shall be updated–

(a) where practicable on an hourly basis;

(b) in all other cases, as a minimum on a daily basis.”.

(b) in sub-paragraph (4)(a) for “particular” there is substituted “relevant”, and

(c) in paragraph (6) for “the map of zones prepared under regulation 2(1) and any revision of it” there is substituted “the map mentioned in the definition of “zone” in regulation 2”.

(7) In regulation 12(5) before “Directive 80/779/EEC of 15th July 1980” there is inserted “Annex IV to”.

(8) In Schedule 1 (LIMIT VALUES, MARGINS OF TOLERANCE ETC.)–

(a) in PART I in paragraph 1.1 (Limit values for sulphur dioxide) in the table in the fourth column (Margin of tolerance) for “470 $\mu\text{g}/\text{m}^3$  on 19th July 2001 reducing on 1st January of each following year by 30 $\mu\text{g}/\text{m}^3$  to reach 350 $\mu\text{g}/\text{m}^3$  by 1st January 2005” there is substituted–

“60 $\mu\text{g}/\text{m}^3$  on 1st January 2003, reducing on 1st January of each following year by equal amounts to reach 0 $\mu\text{g}/\text{m}^3$  by 1st January 2005.”,

(b) in PART II in paragraph 2.1 (Limit values for nitrogen dioxide and oxides of nitrogen), in the table in the fourth column (Margin of tolerance),

- (i) for “290  $\mu\text{g}/\text{m}^3$  on 19th July 2001, reducing on 1st January of each following year by 10 $\mu\text{g}/\text{m}^3$  to reach 200 $\mu\text{g}/\text{m}^3$  by 1st January 2010” there is substituted–

“70 $\mu\text{g}/\text{m}^3$  on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 $\mu\text{g}/\text{m}^3$  by 1st January 2010.”

- (ii) for “58  $\mu\text{g}/\text{m}^3$  on 19th July 2001, reducing on 1st January of each following year by 2 $\mu\text{g}/\text{m}^3$  to reach 40 $\mu\text{g}/\text{m}^3$  by 1st January 2010” there is substituted–

“14 $\mu\text{g}/\text{m}^3$  on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 $\mu\text{g}/\text{m}^3$  by 1st January 2010.”

- (c) in PART III (PARTICULAR MATTER) in the table in the fourth column (Margin of tolerance)–

- (i) for 70 $\mu\text{g}/\text{m}^3$  on 19th July 2001, reducing on 1st January of each following year by 5 $\mu\text{g}/\text{m}^3$  to reach 50 $\mu\text{g}/\text{m}^3$  by 1st January 2005” there is substituted–

“10 $\mu\text{g}/\text{m}^3$  on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 $\mu\text{g}/\text{m}^3$  by 1st January 2005”, and

- (ii) for 46.4 $\mu\text{g}/\text{m}^3$  on 19th July 2001, reducing on 1st January of each following year by 1.6 $\mu\text{g}/\text{m}^3$  to reach 40 $\mu\text{g}/\text{m}^3$  by 1st January 2005” there is substituted –

“3.2 $\mu\text{g}/\text{m}^3$  on 1st January 2003, reducing on 1st January of each following year by equal amounts to reach 0 $\mu\text{g}/\text{m}^3$  by 1st January 2005”,

- (d) in part IV (LEAD) in the table in the fourth column (Margin of tolerance) for 0.9  $\mu\text{g}/\text{m}^3$  on 19th July 2001, reducing on 1st January of each following year by 0.1 $\mu\text{g}/\text{m}^3$  to reach 0.5 $\mu\text{g}/\text{m}^3$  by 1st January 2005” there is substituted–

“0.2 $\mu\text{g}/\text{m}^3$  on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 $\mu\text{g}/\text{m}^3$  by 1st January 2005.”,

- (e) after PART IV (LEAD) there is added–

“PART V

BENZENE

	<i>Averaging Period</i>	<i>Limit value</i>	<i>Margin of Tolerance</i>	<i>Date by which limit value is to be met</i>
Limit value for the protection of human health	Calendar year	5 µg/m <sup>3</sup>	5µg/m <sup>3</sup> from [date in force] reducing on 1st January 2006 and every 12 months thereafter by 1µg/m <sup>3</sup> to reach 0µg/m <sup>3</sup> by 1st January 2010	1st January 2010

PART VI

CARBON MONOXIDE

	<i>Averaging Period</i>	<i>Limit value</i>	<i>Margin of Tolerance</i>	<i>Date by which limit value is to be met</i>
Limit value for the protection of human health	Maximum daily 8-hour mean	10mg/m <sup>3</sup>	6mg/m <sup>3</sup> on [date in force] reducing on 1st January 2003 and every 12 months thereafter by 2mg/m <sup>3</sup> until to reach 0µg/m <sup>3</sup> by 1st January 2005	1st January 2005

The maximum daily 8-hour mean concentration shall be selected by examining 8-hour running averages, calculated from hourly data and updated each hour. Each 8-hour average so calculated shall be assigned to the day on which it ends, i.e. the first calculation period for any one day shall be the period from 17:00 on the previous day to 01:00 on that day; the last calculation period for any one day shall be the period from 16:00 to 24:00 on that day.”.

(9) In Part I of Schedule 2 (UPPER AND LOWER ASSESSMENT THRESHOLDS AND EXCEEDANCES) after paragraph (d) (LEAD) there is added–

“(e) BENZENE

	<i>Annual Average</i>
Upper assessment threshold	70% of limit value (3.5µg/m <sup>3</sup> )
Lower assessment threshold	40% of limit value (2µg/m <sup>3</sup> )

(f) CARBON MONOXIDE

	<i>Eight-hour Average</i>
Upper assessment threshold	70% of limit value (7mg/m <sup>3</sup> )
Lower assessment threshold	50% of limit value (5mg/m <sup>3</sup> )

(10) In the first paragraph of Part II of Schedule 2 for the words from “An assessment threshold” to the end of that paragraph there is substituted –

“An assessment threshold will be deemed to have been exceeded if it has been exceeded during at least three separate years out of the previous five years.”.

(11) In Schedule 3 in Part II (microscale siting) in the fifth indent (location of traffic-oriented samplers)–

- (a) after “for nitrogen dioxide” there is added “and carbon monoxide”, and
- (b) for “for particulate matter and lead” there is substituted “for particulate matter, lead and benzene”.

(12) In Schedule 4, in column 2 of the table in paragraph (a) of Part I (diffuse sources) after “traffic orientated station” there is added “this requirement shall also apply to benzene and carbon monoxide provided that it does not increase the number of sampling points.”.

(13) In Part I of Schedule 5–

- (a) after the final paragraph there is added–

“The following data quality objectives, for allowed uncertainty of assessment methods, and of minimum time coverage and of data capture of measurement are provided to guide quality assurance programmes.

	<i>Benzene</i>	<i>Carbon monoxide</i>
<i>Fixed measurements</i>		
Uncertainty	25%	15%
Minimum data capture	90%	90%
Minimum time coverage	35% urban background and traffic sites (distributed over the year to be representative of various conditions for climate and traffic) 90% industrial sites	
<i>Indicative Measurements</i>		
Uncertainty	30%	25%
Minimum data capture	90%	90%
Minimum time coverage	14% (one day’s measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)	14% (one measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)
<i>Modelling</i>		
Uncertainty:		
Eight-hour averages	-	50%

	<i>Benzene</i>	<i>Carbon monoxide</i>
Annual averages	50%	-
Objective estimation Uncertainty	100%	75%

The uncertainty (on a 95% confidence interval) of the assessment methods shall be evaluated in accordance with the “Guide to the Expression of Uncertainty of Measurements” (ISO 1993)<sup>(aa)</sup> or the methodology of ISO 5725:1994<sup>(a)</sup>. The percentages for uncertainty in the above table are given for individual measurements averaged over the period considered by the limit value, for a 95% confidence interval. The uncertainty for the fixed measurements should be interpreted as being applicable in the region of the appropriate limit value.

The uncertainty for modelling and objective estimation is defined as the maximum deviation of the measured and calculated concentration levels, over the period considered, by the limit value, without taking into account the timing of the events.

The requirements for minimum data capture and time coverage do not include losses of data due to the regular calibration of the normal maintenance of the instrumentation.

(b) at the end of that Part there is added–

“The Scottish Ministers may allow for random measurements to be made instead of continuous measurements for benzene if the uncertainty, including the uncertainty due to random sampling, meets the quality objective of 25%. Random sampling must be spread evenly over the year.”.

(14) In Schedule 6 after PART IV there is added–

#### “PART V

##### **Reference method for the sampling and analysis of benzene**

The reference method for the measurement of benzene will be the national standard based on the pumped sampling method on a sorbent cartridge followed by gas chromatographic determination.<sup>(a)</sup>

#### PART VI

##### **Reference method for the analysis of carbon monoxide**

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<sup>(a)</sup> Copies of these International Standards Organisation publications can be purchased from the British Standards Institution ‘BSI’ sales department either by telephone on 020-8996-9001 or by post from the BSI, Standards House, 389 Chiswick High Road, London W4 4AL

The reference method for the measurement of carbon monoxide will be the national standard methods based on the non-dispersive infra-red spectromic (NDIR) method.<sup>(a)</sup>

A member of the Scottish Executive

St Andrew's House,  
Edinburgh

2002

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<sup>(a)</sup> Copies of these International Standards Organisation publications can be purchased from the British Standards Institution 'BSI' sales department either by telephone on 020-8996-9001 or by post from the BSI, Standards House, 389 Chiswick High Road, London W4 4AL

## **EXPLANATORY NOTE**

*(This note is not part of the Regulations)*

These Regulations are made in implementation of Directive 2000/69/EC of the European Parliament and the Council of 16th November 2000 relating to limit values for benzene and carbon monoxide in ambient air.

Regulation 2 designates the Scottish Ministers as the competent authority for implementation of Article 3 (implementation and responsibilities) of Council Directive 96/62/EC on ambient air quality assessment and management ‘the Air Framework Directive’.

Regulation 3 amends the Air Quality Limit Values Regulations 2001 (S.I. 2001/23/2315) which in turn implement Council Directive 96/62/EC on ambient air quality assessment and management “the Air Framework Directive” and Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, “the First Air Daughter Directive”.

Regulation 3 amends the Air Quality Limit Values Regulations 2001 by adding benzene and carbon monoxide as “relevant pollutants”; by setting limit values and margins of tolerance for those substances; by determining criteria for location and numbers of sampling points and setting reference methods for the analysis and sampling of benzene and carbon monoxide; and by making consequential amendments.

Regulation 3 also makes some clarificatory amendments to the Air Quality Limit values Regulations 2001.

Regulation 2(10) amends Schedule 2 of the Air Quality Limit Values Regulations 2001 so as to give effect to the Commission Decision of 17.10.2001 amending Annex V to Council Directive 1999/30/EC relating to the limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air.



## **ANNEX B - CONSULTATION LIST**

Directors of Environmental Health, Scottish Local Authorities  
AA Scotland  
Action of Churches together in Scotland  
AEA Technology  
Air Quality Management  
Aspinwall and Co  
Association of UK Oil Independents  
BP Chemicals  
British Glass Manufacturers Confederation  
British Iron and Steel producers Association  
British Non-Ferrous Metals Federation  
British Medical Association  
Centre for Ecology and Hydrology - Edinburgh  
Chemical Industries Association  
Confederation of British Industry (Scotland)  
Convention of Scottish Local Authorities  
Cordah Ltd  
Department of Environment, Food and Rural Affairs  
Department of Environment, Northern Ireland  
Environmental Resources Management (Scotland)  
Entec UK  
Evangelical Alliance (Scotland)  
Faculty of Advocates  
Federation of Petroleum Suppliers  
Friends of the Earth, Scotland  
General Assembly  
Institute of European Environmental Policy  
Institute of Petroleum  
Law Society of Scotland  
National Society for Clean Air (Scotland)  
National Assembly for Wales  
Malt Distillers Association of Scotland  
Petrol Retailers Association  
RAC Scotland  
Royal Institute for Environmental Health  
Rural Forum  
Scottish Churches Parliamentary Offices  
Scottish Civic Forum  
Scottish Conservative and Unionist Party  
Scottish Environment Protection Agency  
Scottish Environment Link  
Scottish Federation of Small Businesses  
Scottish Green Party  
Scottish Inter Faith Council  
Scottish Labour Party  
Scottish Liberal Democrats  
Scottish Natural Heritage  
Scottish National Party

Scottish Pollution Control Co-ordinating Committee  
Scottish Power  
Scottish and Southern Energy  
Scottish Wildlife Trust  
Transform Scotland  
Transport Research Institute  
UKPIA  
UK Steel Association  
University of Edinburgh, Department of Public Health Studies  
University of Dundee, Department of Environmental Science  
University of St Andrews  
University of Stirling, Department of Environmental Science  
University of Strathclyde