STATUTORY INSTRUMENTS

2003 No. 2121

ENVIRONMENTAL PROTECTION

The Air Quality Limit Values Regulations 2003

Made - - - - -	*13th August 2003*
Laid before Parliament	*14th August 2003*
Coming into force - -	*9th September 2003*

The Secretary of State, in exercise of the powers conferred upon her by subsection (2) of section 2 of the European Communities Act 1972(**a**), being a Minister designated(**b**) for the purpose of that subsection in relation to the control of air pollution, hereby makes the following Regulations:

Citation, commencement and extent

1.—(1) These Regulations may be cited as the Air Quality Limit Values Regulations 2003 and shall come into force on 9th September 2003.

(2) Subject to paragraph (3), these Regulations shall apply to England.

(3) Regulation 13, and the remainder of these Regulations in so far as they relate to regulation 13, shall apply to the United Kingdom.

Definitions

2. In these Regulations—

"agglomeration" means a zone with a population concentration in excess of 250,000 inhabitants, or, where the population concentration is 250,000 inhabitants or less, a population density per km^2 for which the Secretary of State considers that the need for ambient air to be assessed or managed is justified;

"alert threshold" has the meaning given in regulations 10(2) and (3);

"ambient air" means outdoor air in the troposphere, excluding work places;

"assessment" means any method used to measure, calculate, predict or estimate the level of a relevant pollutant, ozone or ozone precursor substances in the ambient air;

"fixed measurements" means measurements taken at fixed sites either continuously or by random sampling, the number of measurements being sufficiently large to enable the levels observed to be determined;

"information threshold" has the meaning given in regulation 10(3);

"level" means the concentration of a relevant pollutant, ozone or ozone precursor substances in ambient air;

"limit value" has the meaning given in regulation 4(1);

"long-term objective" has the meaning given in regulation 5(3);

"lower assessment threshold" has the meaning given in regulation 7(8);

(**a**) 1972, c. 68.
(**b**) S.I. 1988/785.

"natural events" means volcanic eruptions, seismic activities, geothermal activities, wild-land fires, high-wind events or the atmospheric resuspension or transport of natural particles from dry regions;

"oxides of nitrogen" means the sum of nitric oxide and nitrogen dioxide added as parts per billion and expressed as nitrogen dioxide in microgrammes per cubic metre;

"ozone precursor substances" means substances which contribute to the formation of ground level ozone, including those listed in Schedule 6;

"$PM_{2.5}$" means particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 2.5 μm aerodynamic diameter;

"PM_{10}" means particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 10 μm aerodynamic diameter;

"public" has the meaning given in regulation 16(15);

"relevant pollutants" means sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, lead, benzene and carbon monoxide;

"rural background station" shall be interpreted in accordance with Part II of Schedule 4;

"target value" has the meaning given in regulation 5(2);

"upper assessment threshold" has the meaning given in regulation 7(8);

"volatile organic compounds" or "VOC" means all organic compounds from anthropogenic and biogenic sources, other than methane, that are capable of producing photochemical oxidants by reaction with nitrogen oxides in the presence of sunlight; and

"zone" means a part of the territory of England shown on a map published by the Secretary of State on 19th January 2001, deposited at the offices of the Department for Environment, Food and Rural Affairs, Ashdown House, 123 Victoria Street, London SW1E 6DE and displayed on the Department's website at *http://www.defra.gov.uk/environment*.

Designation of competent authority

3. The Secretary of State is designated as the competent authority for the purposes of article 3 (implementation and responsibilities) of Council Directive 96/62/EC on ambient air quality assessment and management(**a**).

Duty to ensure compliance with limit values

4.—(1) The Secretary of State shall take the measures necessary to ensure that throughout England, in each zone, concentrations of relevant pollutants in ambient air, as assessed in accordance with regulations 6 to 9, do not exceed the limit values set out in Schedule 1 from the dates specified in that Schedule.

(2) The measures taken shall—

(a) take into account an integrated approach to the protection of air, water and soil;

(b) not contravene Community legislation on the protection of safety and health of workers at work; and

(c) have no significant negative effects on the environment in the other Member States.

Target values and long-term objectives for ozone

5.—(1) The definitions and provisions on interpretation in Part I of Schedule 2 shall apply in the interpretation of the other parts of that Schedule.

(2) The target values for ozone concentrations in ambient air are set out in Part II of Schedule 2.

(3) The long-term objectives for ozone concentrations in ambient air are set out in Part III of Schedule 2.

(**a**) OJ No. L 296, 21.11.1996, p. 55.

Assessment of ambient air quality

6. The Secretary of State shall ensure that ambient air quality is assessed in each zone in relation to each of the relevant pollutants, ozone and ozone precursor substances in accordance with regulations 7 to 9.

Classification of zones

7.—(1) The Secretary of State shall, in accordance with paragraphs (3), (4) and (7), classify each zone in relation to each of the relevant pollutants according to whether ambient air quality in that zone for that pollutant is required to be assessed by—

(a) measurements;

(b) a combination of measurements and modelling techniques; or

(c) by the sole use of modelling or objective estimation techniques.

(2) The Secretary of State shall, in accordance with paragraphs (5) and (6), classify each zone in relation to ozone according to whether ambient air quality for ozone is required to be assessed by—

(a) fixed continuous measurement; or

(b) a combination of measurement campaigns of short duration and results from emission inventories and modelling.

(3) Measurements must be used to assess ambient air quality in relation to a relevant pollutant in a zone if—

(a) the zone is an agglomeration;

(b) the levels of that pollutant in the zone are between the relevant limit value and upper assessment threshold; or

(c) the levels of that pollutant in the zone exceed the limit value for that pollutant.

(4) A combination of measurements and modelling techniques may be used to assess ambient air quality in any zone in relation to a relevant pollutant where the levels of that pollutant over a representative period are below the relevant upper assessment threshold.

(5) Fixed continuous measurement must be used to assess ambient air quality in relation to ozone if within the last five years concentrations of ozone in that zone have exceeded a long-term objective.

(6) A combination of measurement campaigns of short duration and results from emissions inventories and modelling may be used to assess ambient air quality in relation to ozone in a zone if fewer than five years' data are available to determine exceedances.

(7) Where the levels of a relevant pollutant in any zone over a representative period are below the relevant lower assessment threshold, the sole use of modelling or objective estimation techniques for assessing levels of that pollutant is permissible unless—

(a) the zone is an agglomeration; and

(b) the pollutant is sulphur dioxide or nitrogen dioxide.

(8) The upper and lower assessment thresholds for the relevant pollutants are set out in Part I of Schedule 3.

(9) Where a zone is classified in relation to a pollutant under paragraph (1)(a), modelling techniques may be used for supplementing the measurements taken in order to provide an adequate level of information on ambient air quality in relation to a relevant pollutant in the zone.

(10) The Secretary of State may also designate a zone classified under this regulation in relation to a relevant pollutant as follows.

(11) Where the relevant pollutant is sulphur dioxide, the zone may be designated under this paragraph if the limit value is exceeded in the zone owing to concentrations of sulphur dioxide in ambient air due to natural sources.

(12) Where the relevant pollutant is PM_{10}, the zone may be designated—

(a) under this sub-paragraph if, due to natural events, concentrations of PM_{10} in the ambient air are significantly in excess of normal background levels from natural sources;

(b) under this sub-paragraph if, due to the resuspension of particulates following the winter sanding of roads, concentrations of PM_{10} in the ambient air are significantly in excess of normal background levels from natural sources.

Review of classifications

8.—(1) The Secretary of State shall review the classification of each zone under regulation 7 at least once in every five years in accordance with Part II of Schedule 3.

(2) The Secretary of State shall also review the classification of any zone under regulation 7 in the event of significant changes in activities affecting ambient concentrations in that zone of any of the relevant pollutants.

Method of assessment of ambient air quality

9.—(1) The Secretary of State shall ensure that ambient air quality is assessed in each zone by following the appropriate method for each relevant pollutant and for ozone in accordance with its current classification.

(2) Where a zone is classified under regulation 7(1)(a) or (b) in relation to a relevant pollutant—

(a) measurements of that pollutant must be taken at fixed sites either continuously or by random sampling; and

(b) the number of measurements must be sufficiently large to enable the levels of that pollutant to be properly determined.

(3) Schedule 4 shall have effect for the purposes of determining the location of sampling points for the relevant pollutants.

(4) For each zone classified under regulation 7(1)(a) in relation to a relevant pollutant, the Secretary of State shall ensure that the minimum number of fixed sampling points determined in accordance with Schedule 5 is used for sampling the concentrations of that pollutant in that zone.

(5) For each zone classified under regulation 7(1)(b) in relation to a relevant pollutant, the Secretary of State shall ensure that the number of fixed sampling points used for sampling that pollutant in that zone, and the spatial resolution of other techniques, shall be sufficient for the concentrations of that pollutant to be established in accordance with Part I of Schedule 4 and Part I of Schedule 7.

(6) For each zone classified under regulation 7(2)(a) in relation to ozone, the Secretary of State shall ensure that the minimum number of fixed sampling points determined in accordance with Part III of Schedule 5 is used for sampling the concentrations of ozone in that zone.

(7) For zones to which paragraph (6) applies, the Secretary of State shall ensure that measurements of nitrogen dioxide are made at a minimum of 50 per cent. of the ozone sampling points required by Part III of Schedule 5.

(8) The measurements of nitrogen dioxide required by paragraph (7) shall be continuous, except at rural background stations, where other measurement methods may be used.

(9) For zones within which information from sampling points for fixed measurement is supplemented by information from modelling or indicative measurement, the number of fixed sampling points required by Part III of Schedule 5 may be reduced, provided that—

(a) the modelling techniques adopted pursuant to regulation 7(9) provide an adequate level of information for the assessment of air quality with regard to target values, information and alert thresholds;

(b) the number of sampling points to be installed and the spatial resolution of other techniques are sufficient for the concentration of ozone to be established in accordance with the data quality objectives specified in Part III of Schedule 7 and lead to assessment results as specified in Part IV of Schedule 7;

(c) the number of sampling points in each zone amounts to at least one sampling point per two million inhabitants, or one sampling point per 50,000 km^2, whichever produces the greater number of sampling points;

(d) each zone contains at least one sampling point; and

(e) nitrogen dioxide is measured at all remaining sampling points except rural background stations.

(10) The results of modelling and indicative measurements carried out in zones to which paragraph (9) applies shall be taken into account for the assessment of air quality with respect to target values.

(11) For zones where five years of measurement have been carried out and, during each of the previous five years of measurement, concentrations are below the long-term objectives, the number of continuous measurement stations shall be determined in accordance with Part IV of Schedule 5.

(12) Part II of Schedule 4 shall have effect for determining the classification and location of sampling points for the measurement of ozone.

(13) Reference methods for—

(a) the analysis of sulphur dioxide, nitrogen dioxide and oxides of nitrogen;

(b) the sampling and analysis of lead;

(c) the sampling and measurement of PM_{10};

(d) the sampling and analysis of benzene;

(e) the analysis of carbon monoxide; and

(f) the analysis of ozone and the calibration of ozone instruments

are set out in Schedule 8 and these methods must be used unless other methods are used which the Secretary of State considers can be demonstrated to give equivalent results.

(14) The Secretary of State shall ensure that—

(a) measuring stations to supply representative data on concentrations of $PM_{2.5}$ are installed and operated using methods for the sampling and measurement of $PM_{2.5}$ that she considers suitable; and

(b) sampling points for $PM_{2.5}$ are, where possible, co-located with sampling points for PM_{10}.

(15) For ozone precursor substances, the Secretary of State shall ensure that—

(a) at least one measuring station to supply data on concentrations of the ozone precursor substances listed in Schedule 6 is installed and operated within England; and

(b) in choosing the number and siting of measuring stations for ozone precursor substances, account is taken of the provisions of Schedule 6.

(16) For zones which are classified under regulation 7(1)(b) or (c), the Secretary of State shall ensure that the information set out in Part II of Schedule 7 is compiled.

(17) For sulphur dioxide, nitrogen dioxide, oxides of nitrogen, benzene, carbon monoxide and ozone measurements of volume must be standardised at a temperature of 293K and a pressure of 101,3 kPa.

Action plans

10.—(1) The Secretary of State shall draw up action plans indicating the measures to be taken in the short term where there is any risk of the limit values for any of the relevant pollutants, or the alert thresholds for sulphur dioxide or nitrogen dioxide, being exceeded, in order to reduce that risk and to limit the duration of such an occurrence.

(2) The alert threshold for sulphur dioxide is set out in paragraph 1.2 of Part I of Schedule 1 and the alert threshold for nitrogen dioxide is set out in paragraph 1.2 of Part II of Schedule 1.

(3) The information threshold and alert threshold for ozone are set out in paragraph 1.1 of Part VII of Schedule 1.

(4) The Secretary of State shall draw up action plans indicating the measures to be taken in the short term where there is any risk of the alert threshold for ozone being exceeded if there is in her opinion significant potential to—

(a) reduce such a risk; or

(b) reduce the duration or severity of such an occurrence.

(5) In making the assessment required by paragraph (4), the Secretary of State shall take account of national geographical, meteorological and economic conditions.

(6) The Secretary of State shall make available to the public—

(a) the results of investigations undertaken in the preparation of action plans under paragraph (4);

(b) the action plans; and

(c) information on the implementation of the action plans.

Action to be taken where limit values are exceeded

11.—(1) The Secretary of State shall draw up a list of zones in which the levels of one or more of the relevant pollutants are higher than—

(a) in a case where there is no margin of tolerance shown in Schedule 1 in relation to a limit value, the limit value;

(b) in any other case, the limit value plus the margin of tolerance shown in Schedule 1.

(2) The Secretary of State shall draw up a list of zones in which the levels of one or more of the relevant pollutants are between the limit value and the limit value plus any margin of tolerance.

(3) Subject to paragraphs (6), (8) and (9), the Secretary of State shall draw up for each zone listed under paragraph (1) a plan or programme for attaining the limit values for the pollutants in question within the time limits specified in Schedule 1 and shall ensure that the plan or programme is implemented.

(4) The plan or programme shall at least include the information listed in Schedule 9.

(5) Where in any zone the level of more than one pollutant is higher than the limit value, an integrated plan covering all the pollutants in question shall be prepared.

(6) For any zone designated under regulation 7(11), the Secretary of State may determine that plans or programmes shall be required under this regulation only where the limit values are exceeded owing to man-made emissions.

(7) Plans or programmes for PM_{10} which are prepared in accordance with this regulation shall also have the aim of reducing concentrations of $PM_{2.5}$.

(8) For any zone designated under regulation 7(12)(a), the Secretary of State may determine that plans or programmes shall be required only where the limit values are exceeded owing to causes other than natural events.

(9) For any zone designated under regulation 7(12)(b), the Secretary of State may determine that plans or programmes shall be required only where the limit values are exceeded owing to PM_{10} levels other than those caused by winter road sanding.

Programmes and measures to address ozone levels

12.—(1) The Secretary of State shall draw up three lists of zones, namely zones in which—

(a) levels of ozone in ambient air, as assessed in accordance with regulations 7 and 9, are higher than target values;

(b) levels of ozone in ambient air, as assessed in accordance with regulations 7 and 9, are higher than the long-term objectives, but equal to or below the target levels;

(c) ozone levels meet the long-term objectives.

(2) The Secretary of State shall draw up and implement for each zone listed under paragraph (1)(a) a plan or programme for attaining the target values from the date specified in Part II of Schedule 2.

(3) The obligation in paragraph (2) will not apply if the Secretary of State considers that attaining the target values would not be achievable through proportionate measures.

(4) The Secretary of State shall, in drawing up and implementing plans or programmes under paragraph (2) ensure that, where appropriate, these are integrated with plans drawn up under regulation 10.

(5) Plans or programmes drawn up under paragraph (2) shall contain at least the information specified in Schedule 9, and shall be made available to the public.

(6) The Secretary of State shall prepare and implement for each zone listed under paragraph (1)(b) measures which she considers to be cost-effective with the aim of achieving the long-term objectives.

(7) The Secretary of State shall ensure that the measures described in paragraph (6) are, at least, consistent with the plans or programmes drawn up under paragraph (2).

(8) The Secretary of State shall, for zones to which paragraph (1)(c) applies—

(a) as far as factors including the transboundary nature of ozone pollution and meteorological conditions permit, ensure that ozone levels are kept below long-term objectives; and

(b) preserve through proportionate measures the best ambient air quality which she considers to be compatible with sustainable development and a high level of protection for the environment and human health.

Consultations with other Member States of the European Union

13.—(1) For the purpose of this regulation, a transboundary pollution issue arises when—

(a) in any part of the United Kingdom the level of a relevant pollutant exceeds, or is likely to exceed, the limit value plus the margin of tolerance or, as the case may be, the alert threshold following significant pollution in another Member State of the European Union;

(b) ozone concentrations in any part of the United Kingdom exceed target values or long-term objectives and a significant part of the cause of such exceedance is the emission of ozone precursor substances in another Member State of the European Union; or

(c) ozone concentrations in another Member State of the European Union exceed target values or long-term objectives and a significant part of the cause of such exceedances is the emission of ozone precursor substances in the United Kingdom.

(2) It shall be the duty of the relevant administration to notify the Secretary of State of any transboundary pollution issue affecting Wales, Scotland or Northern Ireland as applicable.

(3) The Secretary of State shall consult any other Member State directly concerned with a view to finding a solution—

(a) when she considers that a transboundary pollution issue has arisen affecting England;

(b) on receiving a notification under paragraph (2); or

(c) on being notified by any other Member State that the limit value or alert threshold for any relevant pollutant may be exceeded in that Member State as a result of pollution originating in any part of the United Kingdom.

(4) In the case of a transboundary pollution issue to which paragraph (1)(b) or (c) applies, where the Secretary of State considers that attaining the target values or long-term objectives in the United Kingdom or the Member State concerned, as the case may be, is reasonably achievable through proportionate measures, she shall take the action prescribed in paragraph (5).

(5) Where paragraph (4) applies, the Secretary of State shall, in consultation with any relevant administration directly concerned, ensure co-operation with the Member State concerned in drawing up joint plans or programmes in order to attain the target values or long-term objectives in the United Kingdom or the other Member State as the case may be.

(6) The Secretary of State shall ensure that where paragraph (4) applies, action plans prepared under regulation 10(4) for England cover neighbouring zones affected in both the United Kingdom and any other Member State concerned, and shall take such steps as she considers appropriate to ensure that action plans prepared by any relevant administration under any equivalent provision cover such neighbouring zones.

(7) The Secretary of State shall ensure that where paragraph (6) applies, any other Member State concerned is provided with the information specified in regulation 10(6).

(8) The Secretary of State shall ensure that where ozone concentrations exceed the information threshold or alert threshold in any zone close to the borders with another Member State, full information of this occurrence is provided promptly to the competent authorities of the other Member State concerned, in order to facilitate the provision of information to the public in that Member State.

(9) In discharging her obligations under this regulation, the Secretary of State shall, where appropriate, seek to ensure full co-operation with any other countries concerned, not being Member States.

(10) In any case which appears to her to affect Wales, Scotland or Northern Ireland, the Secretary of State shall—

(a) inform the relevant administration of any notification made under paragraph (3)(c); and

(b) consult the relevant administration about any action which she proposes to take.

(11) The European Commission may be present at any consultations conducted under paragraph (3) which concern relevant pollutants.

(12) In this regulation, "relevant administration" means—

(a) the National Assembly for Wales for matters affecting Wales;

(b) Scottish Ministers for matters affecting Scotland; and

(c) Northern Ireland Ministers for matters affecting Northern Ireland.

Extension of power to give directions relating to air quality

14.—(1) For the purposes of the implementation of any obligations of the United Kingdom under Council Directive 96/62/EC on ambient air quality assessment and management(**a**), Council Directive 99/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air(**b**) and of European Parliament and Council Directive 2000/69/EC relating to the limit values for benzene and carbon monoxide in ambient air(**c**)—

(a) the Secretary of State shall have the same power to give directions to local authorities in Greater London and to the Mayor of London; and

(b) the Mayor of London shall have the same power to give directions to local authorities in Greater London,

as the Secretary of State has under section 85(5) of the Environment Act 1995(**d**) in relation to local authorities in England outside Greater London.

(2) The provisions of subsections (6), (6A) and (7) of section 85 of the Environment Act 1995 shall apply to directions given under this regulation as they apply to directions given under that section, and in the case of subsections (6) and (7) as if the Mayor of London were a local authority.

Zones where the levels are lower than the limit value

15.—(1) The Secretary of State shall draw up a list of zones in which the levels of the relevant pollutants are below the limit values.

(2) The Secretary of State shall ensure that the levels of the relevant pollutants in these zones are maintained below the limit values and shall endeavour to preserve the best ambient air quality compatible with sustainable development.

Public information

16.—(1) The Secretary of State shall ensure that up-to-date information on ambient concentrations of each of the relevant pollutants and of ozone is routinely made available to the public in accordance with the following paragraphs.

(**a**) *See* footnote (a) to regulation 3.
(**b**) OJ No. L163, 29.6.1999, p. 41.
(**c**) OJ No. L313, 13.12.2000, p. 12.
(**d**) 1995 c. 25; section 85 was amended by the Greater London Authority Act 1999 (c. 29), section 367.

(2) Information on ambient concentrations of sulphur dioxide, nitrogen dioxide and particulate matter shall be updated—

(a) in the case of hourly values for sulphur dioxide and nitrogen dioxide, where practicable on an hourly basis;

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

(3) Information on ambient concentrations of lead shall be updated on a three-monthly basis.

(4) 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.

(5) 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.

(6) The information on concentrations of ozone shall be updated—

(a) where appropriate and practicable, on an hourly basis; and

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

(7) Information made available with respect to each of the relevant pollutants shall include—

(a) an indication of the extent to which limit values and alert thresholds for relevant pollutants have been exceeded over the averaging periods specified in Schedule 1; and

(b) a short assessment of those exceedances and their effects on health.

(8) Information with respect to ozone made available shall include—

(a) an indication of each time and the extent to which ozone concentrations exceeded—

(i) the long-term objectives for the protection of human health;

(ii) the information threshold; or

(iii) the alert threshold

for the relevant averaging period; and

(b) a short assessment of those exceedances and their effects on health;

(c) comprehensive annual reports; and

(d) timely information about actual or predicted exceedances of the alert threshold.

(9) The annual reports referred to in paragraph (8)(c) shall, at least, contain—

(a) for human health, an indication of all exceedances of the target value, long-term objective or alert threshold for the relevant averaging period; and

(b) for vegetation—

(i) an indication of any exceedance of the target value or long-term objective; and

(ii) where appropriate, a short assessment of the effects of any such exceedance.

(10) The information referred to in paragraph (9)(b) may include, where appropriate—

(a) further information and assessments on forest protection, which set out for suburban, rural and rural background stations, based on one hour averaging, accumulated from May to July for a report of value for each year, whether levels of ozone concentrations in ambient air exceed 6,000$\mu g/m^3$ per hour; and

(b) information on ozone precursor substances insofar as these are not covered by existing European Community legislation.

(11) Information and reports required to be made available by this regulation shall be published by appropriate means including, as appropriate, broadcast media, press, publications, information screens, the internet or other computer network services.

(12) The Secretary of State shall ensure that where information is provided to the public under paragraphs (7) and (13)—

(a) where there has been an exceedance of the information and alert threshold for ozone it includes the information specified in paragraph 1.2 of Part VII of Schedule 1; and

(b) where practicable, the information specified in paragraph 1.2 of Part VII of Schedule 1 is provided where an exceedance of the information threshold or alert threshold for ozone is predicted.

(13) When an alert threshold for sulphur dioxide or nitrogen dioxide is exceeded, the Secretary of State shall ensure that the necessary steps are taken to inform the public, and the information made available shall as a minimum include the information specified in paragraphs 1.3 of Part I and 1.3 of Part II, as applicable, of Schedule 1.

(14) Information to be made available to the public under this regulation shall include the map mentioned in the definition of "zone" in regulation 2 and action plans, plans and programmes prepared under regulations 10 and 11 respectively.

(15) For the purposes of this regulation, the public includes, but is not limited to, health care bodies and organisations having an interest in ambient air quality and representing the interests of sensitive populations, consumers and the environment.

(16) Information made available under this regulation shall be clear, comprehensible and accessible.

Revocations and transitional provisions

17.—(1) The instruments referred to in Schedule 10 are revoked in accordance with that schedule.

(2) Until 1st January 2005, if the methods prescribed by these regulations for the assessment of suspended particulate matter are used for the purpose of demonstrating compliance with Annex IV of Directive 80/779/EEC of 15th July 1980 on air quality limit values and guide values for suspended particulates(**a**), the data so collected shall be multiplied by a factor of 1.2.

Information requirements

18.—(1) The Secretary of State shall ensure that the information specified in Part I of Schedule 11 is obtained and collated.

(2) The criteria for aggregating data and calculating statistical parameters specified in Part II of Schedule 11 shall apply.

Elliot Morley
Minister of State,
13th August 2003 Department for Environment, Food and Rural Affairs

(**a**) OJ No. L 229, 30.8.1980, p. 30.

SCHEDULE 1

Regulations 4(1), 10(2), (3), 11(1), (3), 16(7), (12), (13)

LIMIT VALUES, MARGINS OF TOLERANCE, INFORMATION AND ALERT THRESHOLDS

PART I

Sulphur Dioxide

1.1 Limit values for sulphur dioxide

	Averaging period	*Limit value*	*Margin of tolerance(***a***)*	*Date by which limit value is to be met*
1. Hourly limit value for the protection of human health	1 hour	350 µg/m^3, not to be exceeded more than 24 times a calendar year	60 µg/m^3, reducing to 30 µg/m^3 on 1st January 2004 and to 0 µg/m^3 on 1st January 2005	1st January 2005
2. Daily limit value for the protection of human health	24 hours	125 µg/m^3, not to be exceeded more than 3 times a calendar year	None	1st January 2005
3. Limit value for the protection of ecosystems	Calendar year and winter (1st October to 31st March)	20 µg/m^3	None	19th July 2001

1.2 Alert threshold for sulphur dioxide

500 µg/m^3 measured over three consecutive hours at locations representative of air quality over at least 100 km^2 or an entire zone, whichever is the smaller.

1.3 Minimum details to be made available to the public when the alert threshold for sulphur dioxide is exceeded

Details to be made available to the public should include at least:

- the date, hour and place of the occurrence and the reasons for the occurrence, where known;
- any forecasts of:
  - changes in concentration (improvement, stabilisation, or deterioration), together with the reasons for those changes,
  - the geographical area concerned, and
  - the duration of the occurrence;
- the type of population potentially sensitive to the occurrence;
- the precautions to be taken by the sensitive population concerned.

(**a**) The figures for margins of tolerance for each of the relevant pollutants given in this Schedule are calculated from those given in Annexes I to IV of Directive 99/30/EC.

PART II

Nitrogen Dioxide (NO_2) and Oxides of Nitrogen (NO_x)

1.1 Limit values for nitrogen dioxide and oxides of nitrogen

	Averaging period	*Limit value*	*Margin of tolerance*	*Date by which limit value is to be met*
1. Hourly limit value for the protection of human health	1 hour	200 µg/m^3 NO_2, not to be exceeded more than 18 times a calendar year	70 µg/m^3, reducing on 1st January 2004 and on 1st January of each following year by equal annual amounts to reach 0 µg/m^{3}by 1st January 2010	1st January 2010
2. Annual limit value for the protection of human health	Calendar year	40 µg/m^3 NO_2	14 µg/m^3, reducing on 1st January 2004 and on 1st January of each following year by equal annual amounts to reach 0 µg/m^3 by 1st January 2010	1st January 2010
3. Annual limit value for the protection of vegetation	Calendar year	30 µg/m^3 NO_x	None	19th July 2001

1.2 Alert threshold for nitrogen dioxide

400 µg/m^3 measured over three consecutive hours at locations representative of air quality over at least 100 km^2 or an entire zone or agglomeration, whichever is the smaller.

1.3 Minimum details to be made available to the public when the alert threshold for nitrogen dioxide is exceeded

Details to be made available to the public should include at least:

— the date, hour and place of the occurrence and the reasons for the occurrence, where known;

— any forecasts of:

  — changes in concentration (improvement, stabilisation, or deterioration), together with the reasons for those changes,

  — the geographical area concerned, and

  — the duration of the occurrence;

—the type of population potentially sensitive to the occurrence;

—the precautions to be taken by the sensitive population concerned.

PART III

Particulate Matter (PM_{10})

	Averaging period	*Limit value*	*Margin of tolerance*	*Date by which limit value is to be met*
1. 24-hour limit value for the protection of human health	24 hours	50 µg/m^3 PM_{10}, not to be exceeded more than 35 times a calendar year	10 µg/m^3, reducing on 1st January 2004 and on 1st January of each following year by equal annual amounts to reach 0 µg/m^3 by 1st January 2005	1st January 2005

	Averaging period	*Limit value*	*Margin of tolerance*	*Date by which limit value is to be met*
2. Annual limit value for the protection of human health	Calendar year	40 µg/m^3 PM_{10}	3.2 µg/m^3, reducing on 1st January 2004 to 1.6 µg/m^3 and on 1st January 2005 to 0 µg/m^3	1st January 2005

PART IV

Lead

	Averaging period	*Limit value*	*Margin of tolerance*	*Date by which limit value is to be met*
Annual limit value for the protection of human health	Calendar year	0.5 µg/m^3	0.2 µg/m^3, reducing on 1st January 2004 to 0.1 µg/m^3 and on 1st January 2005 to 0 µg/m^3	1st January 2005

PART V

Benzene

	Averaging period	*Limit value*	*Margin of tolerance*	*Date by which limit value is to be met*
Limit value for the protection of human health	Calendar year	5 µg/m^3	5 µg/m^3 reducing on 1st January 2006 and every 12 months thereafter by 1 µg/m^3 to reach 0 µg/m^3 by 1st January 2010	1st January 2010

PART VI

Carbon Monoxide

	Averaging period	*Limit value*	*Margin of Tolerance*	*Date by which limit value is to be met*
Limit value for the protection of human health	Maximum daily 8-hour mean	10mg/m^3	4 mg/m^3 reducing on 1st January 2004 to 2 mg/m^3, and to 0 mg/m^3 on 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.

PART VII

Ozone

1.1 Information and alert thresholds for ozone

	Parameter	*Threshold*
Information threshold	1 hour average	180 µg/m^3
Alert threshold	1 hour average **(a)**	240 µg/m^3

(a) The exceedance of the threshold is to be measured or predicted for three consecutive hours.

1.2 Minimum details to be supplied to the public when the information or alert threshold is exceeded or exceedance is predicted

Details to be supplied to the public on a sufficiently large scale as soon as possible should include—

1. Information on any observed exceedance:
(a) the location or area of the exceedance;
(b) the type of threshold exceeded (information threshold or alert threshold);
(c) the time at which the exceedance began and its duration; and
(d) the highest 1-hour and 8-hour mean concentration.

2. Forecast for the following afternoon, day or days—
(a) the geographical area of expected exceedances of an information threshold or alert threshold;
(b) the expected change in pollution, that is, improvement, stabilisation or deterioration.

3. Information on the type of population concerned, possible health effects and recommended conduct—
(a) information on population groups at risk;
(b) description of likely symptoms;
(c) recommended precautions to be taken by the population concerned; and
(d) where to find further information.

4. Information provided under this Schedule shall also include—
(a) information on preventive action to reduce pollution or exposure to it;
(b) an indication of main source sectors; and
(c) recommendations for action to reduce emissions.

SCHEDULE 2

Regulations 5, 12(2)

TARGET VALUES AND LONG-TERM OBJECTIVES FOR OZONE CONCENTRATIONS IN AMBIENT AIR

PART I

Definitions and interpretation

In this Schedule—
(a) all values shall be expressed in µg/m^3;
(b) the volume shall be standardised at the following conditions of temperature and pressure: 293K and 101,3kPa;
(c) the time shall be specified in Central European Time;
(d) "AOT40" (expressed in (µg/m^3) hours) means the sum of the difference between hourly concentrations greater than 80 µg/m^3 (which equals 40 parts per billion) and 80 µg/m^3 over a given period using only the 1 hour values measured between 8:00 and 20:00 Central European Time each day;
(e) in order to be valid, the annual data on exceedances used to check compliance with the target values and long-term objectives below must meet the criteria set out in Part II of Schedule 8.

PART II

Target values for ozone

	Parameter	*Target value for 2010***(a)**
1. Target value for the protection of human health	Maximum daily 8-hour mean**(b)**	120 µg/m^3 not to be exceeded on more than 25 days per calendar year averaged over three years**(c)**
2. Target value for the protection of human health	AOT 40, calculated from 1 h values from May to July	18,000 µg/m^3.h averaged over five years**(c)**

(a) *Compliance with target values will be assessed as of this value. That is, 2010 will be the first year the data for which is used in calculating compliance over three or five years, as appropriate.*

(b) *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, that is, 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 will be the period from 16:00 to 24:00 on the day.*

(c) *If the three or five year averages cannot be determined on the basis of a full and consecutive set of annual data, the minimum annual data required for checking compliance with the target values shall be as follows—*

(i) for the target value for the protection of human health, valid data for one year; and

(ii) for the target value for the protection of vegetation, valid data for three years.

PART III

Long-term objectives for ozone

	Parameter	*Long-term objective*
1. Long-term objective for the protection of human health	Maximum daily 8-hour mean within a calendar year	120 µg/m^3
2. Long-term objective for the protection of vegetation	AOT40, calculated from 1 h values from May to July	6,000 µg/m^3.h

SCHEDULE 3

Regulations 7(8), 8(1)

UPPER AND LOWER ASSESSMENT THRESHOLDS AND EXCEEDANCES

PART I

Upper and lower assessment thresholds

The following upper and lower assessment thresholds will apply:

(a) SULPHUR DIOXIDE

	Health protection	*Ecosystem protection*
Upper assessment threshold	60% of 24-hour limit value (75 µg/m^3), not to be exceeded more than 3 times in any calendar year	60% of winter limit value (12 µg/m^3)
Lower assessment threshold	40% of 24-hour limit value (50 µg/m^3), not to be exceeded more than 3 times in any calendar year	40% of winter limit value (8 µg/m^3)

(b) NITROGEN DIOXIDE AND OXIDES OF NITROGEN

	Hourly limit value for the protection of human health (NO_2)	*Annual limit value for the protection of human health (NO_2)*	*Annual limit value for the protection of vegetation (NO_x)*
Upper assessment threshold	70% of limit value (140 µg/m^3), not to be exceeded more than 18 times in any calendar year	80% of limit value (32 µg/m^3)	80% of limit value (24 µg/m^3)

	Hourly limit value for the protection of human health (NO_2)	*Annual limit value for the protection of human health (NO_2)*	*Annual limit value for the protection of vegetation (NO_x)*
Lower assessment threshold	50% of limit value (100 µg/m^3), not to be exceeded more than 18 times in any calendar year	65% of limit value (26 µg/m^3)	65% of limit value (19.5 µg/m^3)

(c) PARTICULATE MATTER

	24-hour average	*Annual average*
Upper assessment threshold	60% of limit value (30 µg/m^3), not to be exceeded more than seven times in any calendar year	70% of limit value (14 µg/m^3)
Lower assessment threshold	40% of limit value (20 µg/m^3), not to be exceeded more than seven times in any calendar year	50% of limit value (10 µg/m^3)

(d) LEAD

	Annual average
Upper assessment threshold	70% of limit value (0.35 µg/m^3)
Lower assessment threshold	50% of limit value (0.25 µg/m^3)

(e) BENZENE

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

(f) CARBON MONOXIDE

	Eight-hour average
Upper assessment threshold	70% of limit value (7mg/m^3)
Lower assessment threshold	50% of limit value (5mg/m^3)

PART II

Determination of exceedances of upper and lower assessment thresholds

Exceedances of upper and lower assessment thresholds must be determined on the basis of concentrations during the previous five years where sufficient data are available. 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.

Where fewer than five years' data are available, measurement campaigns of short duration during the period of the year and at locations likely to be typical of the highest pollution levels may be combined with results obtained from emission inventories and modelling to determine exceedances of the upper and lower assessment thresholds.

SCHEDULE 4 Regulations 9(3), (5), (12)

LOCATION OF SAMPLING POINTS FOR THE MEASUREMENT OF RELEVANT POLLUTANTS AND OZONE IN AMBIENT AIR

The following considerations will apply to fixed measurement.

PART I

Macroscale Siting

(a) Protection of human health

Sampling points directed at the protection of human health should be sited:

(i) to provide data on the areas within zones where the highest concentrations occur to which the population is likely to be directly or indirectly exposed for a period which is significant in relation to the averaging period of the limit value;

(ii) to provide data on levels in other areas within the zones which are representative of the exposure of the general population.

Sampling points should in general be sited to avoid measuring very small micro-environments in their immediate vicinity. As a guideline, a sampling point should be sited to be representative of air quality in a surrounding area of no less than 200 m^2 at traffic-orientated sites and of several square kilometres at urban-background sites.

Sampling points should also, where possible, be representative of similar locations not in their immediate vicinity.

Account should be taken of the need to locate sampling points on islands, where that is necessary for the protection of human health.

(b) Protection of ecosystems and vegetation

Sampling points targeted at the protection of ecosystems or vegetation should be sited more than 20 km from agglomerations or more than 5 km from other built-up areas, industrial installations or motorways. As a guideline, a sampling point should be sited to be representative of air quality in a surrounding area of at least 1000 km^2. A sampling point may be sited at a lesser distance or to be representative of air quality in a less extended area, taking account of geographical conditions.

Account should be taken of the need to assess air quality on islands.

PART II

Macroscale Siting: Ozone

Type of station	*Objective of measurement*	*Representativeness* **(a)**	*Macroscale siting criteria*
Urban	Protection of human health: To assess the exposure of the urban population to ozone, i.e. where the population density and ozone concentration are relatively high and representative of the exposure of the general population	A few km^2	Away from the influence of local emissions such as traffic, petrol stations etc.; Vented locations where well mixed levels can be measured; Locations such as residential and commercial areas of cities, parks (away from the trees), big streets or squares with very little or no traffic, open areas characteristic of education, sports or recreation facilities

Type of station	*Objective of measurement*	*Representativeness* **(a)**	*Macroscale siting criteria*
Suburban	Protection of human health and vegetation: To assess the exposure of the population and vegetation located in the outskirts of the agglomeration, where the highest ozone levels, to which the population and vegetation is likely to be directly or indirectly exposed, occur	Some tens of km^2	At a certain distance from the area of maximum emissions, downwind following the main wind direction during conditions favourable to ozone formation; Where population, sensitive crops or natural ecosystems located in the outer fringe of an agglomeration are exposed to high ozone levels; Where appropriate, some suburban stations also upwind of the area of maximum emissions, in order to determine the regional background levels of ozone.
Rural	Protection of human health and vegetation: To assess the exposure of population, crops and natural ecosystems to sub-regional scale ozone concentrations	Sub-regional levels (a few km^2)	Stations can be located in small settlements and/or areas with natural ecosystems, forests or crops; Representative for ozone away from the influence of immediate local emissions such as industrial installations and roads; At open area sites, but not on higher mountain-tops.
Rural background	Protection of vegetation and human health: To assess the exposure of crops and natural ecosystems to regional-scale ozone concentrations as well as exposure of the populations	Regional/national/ continental levels (1,000 to 10,000 km^2)	Station located in areas with lower population density, e.g. with natural ecosystems, forests, far removed from urban and industrial areas and away from local emissions; Avoid locations which are subject to locally enhanced formation of near-ground inversion conditions, also summits of higher mountains; Coastal sites with pronounced diurnal wind cycles of local character are not recommended.

(a) Sampling points should also, where possible, be representative of similar locations not in their immediate vicinity.

For rural and background stations, consideration should be given, where appropriate, to co-ordination with the monitoring requirements of Commission Regulation 1091/94(**a**) concerning protection of the Community's forests against atmospheric pollution.

PART III

Microscale siting

The following guidelines should be met as far as practicable:

— the flow around the inlet sampling probe should be unrestricted, (and, for ozone sampling, free in an arc of at least 270°) without any obstructions affecting the airflow in the vicinity of the sampler (normally some metres away from buildings, balconies, trees and other obstacles by more than twice the height the obstacle protrudes above the sampler and at least 0.5 m from the nearest building in the case of sampling points representing air quality at the building line);

— in general, the inlet sampling point should be between 1.5 m (the breathing zone) and 4 m above the ground. Higher positions (up to 8 m) may be necessary in some circumstances and in wooded areas. Higher siting may also be appropriate if the station is representative of a large area;

(**a**) OJ No. L 125, 18.5.1994, p. 1.

— the inlet probe should not be positioned in the immediate vicinity of sources in order to avoid the direct intake of emissions unmixed with ambient air;
— the sampler's exhaust outlet should be positioned so that recirculation of exhaust air to the sampler inlet is avoided;
— location of traffic-orientated samplers;
  — for all pollutants, such sampling points should be at least 25 m from the edge of major junctions and at least 4 m from the centre of the nearest traffic lane;
  — for nitrogen dioxide and carbon monoxide, inlets should be no more than 5 m from the kerbside;
  — for particulate matter, lead and benzene, inlets should be sited so as to be representative of air quality near to the building line;
— for ozone, the inlet probe should be positioned well away from such sources as furnaces and incineration flues and more than 10m from the nearest road, with distance increasing as a function of traffic intensity.

The following factors may also be taken into account:
— interfering sources;
— security;
— access;
— availability of electrical power and telephone communications;
— visibility of the site in relation to its surroundings;
— safety of public and operators;
— the desirability of co-locating sampling points for different pollutants;
— planning requirements.

PART IV

Documentation and review of site selection

The site-selection procedures should be fully documented at the classification stage by such means as compass-point photographs of the surrounding area and a detailed map. Sites should be reviewed at regular intervals with repeated documentation to ensure that selection criteria remain valid over time.

For ozone, this requires screening and monitoring of the monitoring data in the context of the meteorological and photochemical processes affecting the ozone concentrations measured at the respective site.

SCHEDULE 5 Regulation 9(4), (6), (7), (9), (11)

CRITERIA FOR DETERMINING MINIMUM NUMBERS OF SAMPLING POINTS FOR FIXED MEASUREMENT OF CONCENTRATIONS OF RELEVANT POLLUTANTS AND OZONE IN AMBIENT AIR

PART I

Relevant pollutants: minimum number of sampling points for fixed measurement to assess compliance with limit values for the protection of human health and alert thresholds in zones where fixed measurement is the sole source of information

(a) Diffuse sources

Population of zone (thousands)	*If concentrations exceed the upper assessment threshold*	*If maximum concentrations are between the upper and lower assessment thresholds*	*For SO_2 and NO_2 in agglomerations where maximum concentrations are below the lower assessment thresholds*
0-250	1	1	not applicable
250-499	2	1	1
500-749	2	1	1
750-999	3	1	1
1,000-1,499	4	2	1

Population of zone (thousands)	*If concentrations exceed the upper assessment threshold*	*If maximum concentrations are between the upper and lower assessment thresholds*	*For SO_2 and NO_2 in agglomerations where maximum concentrations are below the lower assessment thresholds*
1,500-1,999	5	2	1
2,000-2,749	6	3	2
2,750-3,749	7	3	2
3,750-4,749	8	4	2
4,750-5,999	9	4	2
> 6,000	10	5	3
	For NO_2 and particulate matter: to include at least one urban- background station and one traffic-orientated station—this requirement shall also apply to benzene and carbon monoxide provided that it does not increase the number of sampling points		

(b) Point sources

For the assessment of pollution in the vicinity of point sources, the number of sampling points for fixed measurement should be calculated taking into account emission densities, the likely distribution patterns of ambient-air pollution and the potential exposure of the population.

PART II

Relevant pollutants: minimum number of sampling points for fixed measurements to assess compliance with limit values for the protection of ecosystems or vegetation in zones other than agglomerations

If maximum concentrations exceed the upper assessment threshold	*If maximum concentrations are between the upper and lower assessment thresholds*
1 station every 20,000 km^2	1 station every 40,000 km^2

In island zones the number of sampling points for fixed measurement should be calculated taking into account the likely distribution patterns of ambient-air pollution and the potential exposure of ecosystems or vegetation.

PART III

Ozone: minimum number of sampling points for fixed continuous measurement to assess air quality in view of compliance with the target values, long-term objectives and information and alert thresholds where continuous measurement is the sole source of information

Population (× 1,000)	*Agglomerations (urban and suburban)* **(a)**	*Other zones (suburban and rural)* **(a)**	*Rural background*
0-250		1	1 station/50,000 km^2 as an average density over all zones in England **(b)**
251-500	1	2	"
501-1,000	2	2	"
1,001-1,500	3	3	"
1,501-2,000	3	4	"

Population (× 1,000)	*Agglomerations (urban and suburban)* **(a)**	*Other zones (suburban and rural)* **(a)**	*Rural background*
2,001-2,750	4	5	"
2,751-3,750	5	6	"
>3,750	1 additional station per 2 million inhabitants	1 additional station per 2 million inhabitants	

(a) At least 1 station in suburban areas, where the highest exposure of the population is likely to occur. In agglomerations at least 50% of the stations should be located in suburban areas.

(b) 1 station per 25,000 km^2 for complex terrain is recommended.

PART IV

Ozone: minimum number of sampling points for fixed measurements for zones attaining the long-term objectives

The number of sampling points for ozone must, in combination with other means of supplementary assessment such as air quality modelling and co-located nitrogen dioxide measurements, be sufficient to examine the trend of ozone pollution and check compliance with the long-term objectives. The number of stations located in agglomerations and other zones may be reduced to one-third of the number specified in Part III. Where information from fixed measurement stations is the sole source of information, at least one monitoring station should be kept. If, in zones where there is supplementary assessment, the result of this is that a zone has no remaining station, co-ordination with the number of stations in neighbouring zones must ensure adequate assessment of ozone concentrations against long-term objectives. The number of rural background stations should be 1 per 100,000 km^2.

SCHEDULE 6

Regulation 9(15)

MEASUREMENTS OF OZONE PRECURSOR SUBSTANCES

(a) Objectives

The main objectives of measurements of ozone precursor substances are to analyse any trend in ozone precursors, to check the efficiency of emission reduction strategies, to check the consistency of emission inventories and to help attribute emission sources to pollution concentration.

An additional aim is to support the understanding of ozone formation and precursor dispersion processes, as well as the application of photochemical models.

Substances

Measurements of ozone precursor substances must include at least nitrogen oxides, and appropriate volatile organic compounds (VOC). A list of volatile organic compounds recommended for measurement is given below.

Ethane	1-Butene	Isoprene	Ethyl benzene
Ethylene	trans-2-Butene	n-Hexane	m + p-Xylene
Acetylene	cis-2-Butene	i-Hexane	o-Xylene
Propane	1.3-Butadiene	n-Heptane	1,2,4-Trimeth. benzene
Propene	n-Pentane	n-Octane	1,2,3-Trimeth. benzene
n-Butane	i-Pentane	i-Octane	1,3,5-Trimeth. benzene
i-Butane	1-Pentene	Benzene	Formaldehyde
	2-Pentene	Toluene	Total non-methane hydrocarbons

Reference methods

The reference method for the analysis of oxides of nitrogen shall be ISO 7996:1985, Ambient air—determination of the mass concentrations of nitrogen oxides—chemiluminescence method: *see* footnote (a) to Part I of Schedule 7.

(b) Siting

Measurements should be taken in particular in urban and suburban areas at any monitoring site set up in accordance with the requirements of the Air Quality Limit Values Regulations 2001 and considered appropriate with regard to the monitoring objectives in this Schedule.

SCHEDULE 7 Regulation 9(5), (6), (9), (15), (16)

DATA-QUALITY OBJECTIVES AND COMPILATION OF RESULTS OF AIR-QUALITY ASSESSMENT

PART I

Relevant pollutants: data-quality objectives

The following data-quality objectives for the required accuracy of assessment methods, of minimum time coverage and of data capture of measurement are laid down to guide quality- assurance programmes.

	Sulphur dioxide, nitrogen dioxide and oxides of nitrogen	*Particulate matter and lead*
Continuous measurement		
Accuracy	15%	25%
Minimum data capture	90%	90%
Indicative measurement		
Accuracy	25%	50%
Minimum data capture	90%	90%
Minimum time coverage	14% (One measurement a week at random, evenly distributed over the year, or eight weeks evenly distributed over the year.)	14% (One measurement a week at random, evenly distributed over the year, or eight weeks evenly distributed over the year.)
Modelling		
Accuracy:		
Hourly averages	50%-60%	
Daily averages	50%	
Annual averages	30%	50%
Objective estimation		
Accuracy:	75%	100%

The accuracy of the measurement is defined as laid down in the 'Guide to the Expression of Uncertainty of Measurements' (ISO 1993)(**a**) or in ISO 5725-1 'Accuracy (trueness and precision) of measurement methods and results' (ISO 1994)(**a**). The percentages in the table are given for individual measurements averaged, over the period considered, by the limit value, for a 95% confidence interval (bias + two times the standard deviation). The accuracy for continuous measurements should be interpreted as being applicable in the region of the appropriate limit value.

The accuracy 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 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 or the normal maintenance of the instrumentation.

The Secretary of State may allow for random measurements to be made instead of continuous measurements for particulate matter and lead by methods for which accuracy within the 95% confidence interval with respect to continuous monitoring has been demonstrated to be within 10%. Random sampling must be spread evenly over the year.

* * * *

(**a**) Copies of these International Standards Organisation publications can be purchased from the British Standards Institution 'BSI' sales department either by telephone on 0208-996-9001 or by post from the BSI, Standards House, 389 Chiswick High Road, London W4 4AL.

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

	Benzene	*Carbon monoxide*
Fixed measurements Uncertainty Minimum data capture Minimum time coverage	 25% 90% 35% urban background and traffic sites (distributed over the year to be representative of various conditions for climate and traffic) 90% industrial sites	 15% 90%
Indicative measurements Uncertainty Minimum data capture Minimum time coverage	 30% 90% 14% (one day's measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)	 25% 90% 14% (one measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)
Modelling Uncertainty: Eight-hour averages Annual averages	 — 50%	 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)(**a**) or the methodology of ISO 5725:1994(**a**). 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 or the normal maintenance of the instrumentation.

The Secretary of State 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.

PART II

Relevant pollutants: results of air quality assessment

The following information should be compiled for zones within which sources other than measurement are employed to supplement information from measurement or as the sole means of air quality assessment:

— a description of assessment activities carried out;

— the specific methods used, with references to descriptions of the method;

— the sources of data and information;

— a description of results, including accuracies and, in particular, the extent of any area or, if relevant, the length of road within the zone over which concentrations exceed the limit value or, as may be, the limit value plus applicable margin of tolerance and of any area within which concentrations exceed the upper assessment threshold or the lower assessment threshold;

— for limit values the object of which is the protection of human health, the population potentially exposed to concentrations in excess of the limit value.

Where possible maps shall be compiled showing concentration distributions within each zone.

(**a**) *See footnote* (a) to Part I of Schedule 7 above for location of ISO publications.

PART III

Ozone and ozone precursors: data quality objectives

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.

	For ozone, NO and NO_2
Continuous fixed measurement	
Uncertainty of individual measurements	15%
Minimum data capture	90% during summer 75% during winter
Indicative measurement	
Uncertainty of individual measurements	30%
Minimum data capture	90%
Minimum time coverage	$>10\%$ during summer
Modelling	
Uncertainty	50%
1 hour averages (daytime)	50%
8 hours daily maximum	
Objective estimation	
Uncertainty	75%

The uncertainty (on a 95% confidence interval) of the measurement methods shall be evaluated in accordance with the principles laid down in the 'Guide to the Expression of Uncertainty of Measurements' (ISO 1993)(**a**) of the methodology in ISO 5725-1 'Accuracy (trueness and precision) of measurement methods and results' (ISO 1994)(**a**) or equivalent. The percentages for uncertainty in the table are given for individual measurements, averaged over the period for calculating target values and long-term objectives, for a 95% confidence interval. The uncertainty for continuous fixed measurements should be interpreted as being applicable in the region of the concentration used for the appropriate threshold.

The uncertainty for modelling and objective estimation means the maximum deviation of the measured and calculated concentration levels, over the period for calculating the appropriate threshold, without taking into account the timing of events.

'Time coverage' means the percentage of time considered for settling the threshold value during which the pollutant is measured.

'Data capture' means the ratio of the time for which the instrument produces valid data, to the time for which the statistical parameter or aggregated value is to be calculated.

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

PART IV

Ozone and ozone precursors: results of air quality assessment

The following information should be compiled for zones within which sources other than measurements are employed to supplement information from measurement:

- a description of the assessment activities carried out;
- specific methods used, with references to descriptions of the method;
- sources of data and information;
- a description of results, including uncertainties and, in particular, the extent of any area within the zone over which concentrations exceed long-term objectives or target values;
- for long-term objectives or target values whose object is the protection of human health, the population potentially exposed to concentrations in excess of the threshold.

The Secretary of State shall ensure that maps are compiled showing concentration distributions within each zone.

(**a**) 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.

SCHEDULE 8

Regulation 9(13)

REFERENCE METHODS FOR ASSESSMENT OF CONCENTRATIONS OF RELEVANT POLLUTANTS AND OZONE

PART I

Reference method for the analysis of sulphur dioxide

ISO/FDIS 10498 (Standard in draft) Ambient air—determination of sulphur dioxide—ultraviolet fluorescence method(**a**).

PART II

Reference method for the analysis of nitrogen dioxide and oxides of nitrogen

ISO 7996: 1985 Ambient air—determination of the mass concentrations of nitrogen oxides—chemiluminescence method(**a**).

PART IIIA

Reference method for the sampling of lead

The reference method for the sampling of lead will be that described in the Annex to Directive 82/884/EEC(**b**) until such time as the limit value in Schedule 1 to these Regulations is to be met, when the reference method will be that for PM_{10} specified in Part IV of this Schedule.

PART IIIB

Reference method for the analysis of lead

ISO 9855: 1993 Ambient air—Determination of the particulate lead content of aerosols collected in filters. Atomic absorption spectroscopy method(**a**).

PART IV

Reference method for the sampling and measurement of PM_{10}

The reference method for the sampling and measurement of PM_{10} will be that described in EN 12341 'Air Quality—Field Test Procedure to Demonstrate Reference Equivalence of Sampling Methods for the PM_{10} fraction of particulate matter'(**c**). The measurement principle is based on the collection on a filter of the PM_{10} fraction of ambient particulate matter and the gravimetric mass determination.

PART V

Reference method for the sampling and analysis of benzene

The reference method for the measurement of benzene will be a pumped sampling method on a sorbent cartridge followed by gas chromatographic determination.

PART VI

Reference method for the analysis of carbon monoxide

The reference method for the measurement of carbon monoxide will be a non-dispersive infra-red spectrometric (NDIR) method.

PART VII

Reference methods for the analysis of ozone and calibration of ozone instruments

The reference method for analysis of ozone shall be the UV photometric method (ISO FDIS 13964 or equivalent).

The reference method for calibration of ozone instruments shall be the Reference UV photometer method (ISO FDIS 13964, VDI 2468, B1.6 or equivalent).

(**a**) *See* footnote (a) to Part I of Schedule 7 above for location of ISO documents.
(**b**) OJ No. L 378, 31.12.1982, p. 15.
(**c**) European Standards Institute 'CEN' publication reference BSEN 12341, obtainable from the British Standards Institution: *see* footnote (a) to Part I of Schedule 7 above.

SCHEDULE 9

Regulations 11(4), 12(5)

INFORMATION TO BE INCLUDED IN THE PLAN OR PROGRAMME FOR IMPROVEMENT OF AIR QUALITY

1. *Localisation of excess pollution*

— region
— city (map)
— measuring station (map, geographical coordinates).

2. *General information*

— type of zone (city, industrial or rural area)
— estimate of the polluted area (km^2) and of the population exposed to the pollution
— useful climatic data
— relevant data on topography
— sufficient information on the type of targets requiring protection in the zone.

3. *Responsible authorities*

Names and addresses of persons responsible for the development and implementation of improvement plans.

4. *Nature and assessment of pollution*

— concentrations observed over previous years (before the implementation of the improvement measures)
— concentrations measured since the beginning of the project
— techniques used for the assessment.

5. *Origin of pollution*

— list of the main emission sources responsible for pollution (map)
— total quantity of emissions from these sources (tonnes/year)
— information on pollution imported from other regions.

6. *Analysis of the situation*

— details of those factors responsible for the excess (transport, including cross-border transport, formation)
— details of possible measures for improvement of air quality.

7. *Details of those measures or projects for improvement which existed prior to 21st November 1996*

— local, regional, national, international measures
— observed effects of these measures.

8. *Details of those measures or projects adopted with a view to reducing pollution following 21st November 1996*

— listing and description of all the measures set out in the project
— timetable for implementation
— estimate of the improvement of air quality planned and of the expected time required to attain these objectives.

9. *Details of the measures or projects planned or being researched for the long term.*

10. *List of the publications, documents, work etc used to supplement information requested in this Schedule.*

SCHEDULE 10

Regulation 17

REVOCATIONS

Regulations revoked	**Reference**	**With effect from**
The Air Quality Standards Regulations 1989, insofar as they apply to England:	S.I. 1989/317	
Regulation 2(1) (limit values for sulphur dioxide and suspended particulates in the atmosphere)		1st January 2005
Regulation 4(1) (limit value for lead in air)		1st January 2005
Regulation 6 (limit value for nitrogen dioxide in the atmosphere)		1st January 2010
The Ozone Monitoring and Information Regulations	S.I. 1994/440	9th September 2003

Regulations revoked	Reference	With effect from
The Air Quality Limit Values Regulations 2001	S.I. 2001/2315	9th September 2003
The Air Quality Limit Values (Amendment) Regulations 2002	S.I. 2002/3117	9th September 2003

SCHEDULE 11

Regulation 18

INFORMATION TO BE OBTAINED AND COLLATED ON OZONE CONCENTRATIONS, AND CRITERIA FOR AGGREGATING DATA AND CALCULATING STATISTICAL PARAMETERS

PART I

Information on ozone concentrations

The following information on ozone concentrations shall be obtained and collated—

	Type of station	*Level*	*Averaging/ accumulation time*	*Provisional data for each month from April to September*	*Report for each year*
Information threshold	Any	180µg/m^3	1 hour	—for each day with any exceedance: date, total hours of exceedance, maximum 1 hour ozone and related NO_2 values when required—monthly 1 hour maximum ozone	—for each day with any exceedance: date, total hours of exceedance, maximum 1 hour ozone and related NO_2 values, when required
Alert threshold	Any	240µg/m^3	1 hour	—for each day with any exceedance: date, total hours of exceedance, maximum 1 hour ozone and related NO_2 values, when required	—for each day with any exceedance: date, total hours of exceedance, maximum 1 hour ozone and related NO_2 values, when required
Health protection	Any	120µg/m^3	8 hours	—for each day with any exceedance: date, 8 hours maximum **(b)**	—for each day with any exceedance: date, 8 hours maximum **(b)**
Vegetation protection	Suburban, rural, rural background	AOT40 **(a)** = 6,000µg/m^3.h	1 hour, accumulated from May to June		Value
Forest protection	Suburban, rural, rural background	AOT40 **(a)** = 20,000µg/ m^3.h	1 hour, accumulated from April to September		Value
Materials	Any	40 µg/m^3	1 year		Value

(a) In this Schedule, "AOT40" has the same meaning as in paragraph (d) of Part I to Schedule 2.

(b) Maximum daily 8-hour mean.

Where they do not do so already, annual reports must also contain—

(a) for ozone, nitrogen dioxide, oxides of nitrogen and the sums of ozone and nitrogen dioxide (added as parts per billion and expressed in µg/m^3 ozone) the maximum, 99.9th, 98th and 50th percentiles and annual average and number of valid data from hourly series; and

(b) the maximum, 98th and 50th percentile and annual average from a series of daily 8-hour ozone maxima.

Data submitted in monthly reports are considered provisional and shall be updated where necessary in subsequent submissions.

PART II

Criteria for aggregating data and calculating statistical parameters

In this Part, percentiles are to be calculated using the method specified in Council Decision 97/101/EC establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within Member States(**a**).

The following criteria are to be used for checking validity when aggregating data and calculating statistical parameters—

Parameter	*Required proportion of valid data*
1 hour values	75% (45 minutes)
8 hour values	75% of values (6 hours)
Maximum daily 8 hours mean from hourly running 8 hours averages	75% of the hourly running 8 hour averages (8 hours per day)
AOT40	90% of the 1 hour values over the time period defined for calculating the AOT40 value (**a**)
Annual mean	75% of the 1 hour values over summer (April to September) and winter (January to March, October to December) seasons separately
Number of exceedances and maximum values per month	90% of the daily maximum 8 hours mean value (27 available daily values per month) 90% of the 1 hour values between 8:00 and 20:00 Central European Time
Number of exceedances and maximum values per year	Five out of six summer months over the summer season (April to September)

(a) In cases where all possible measured data are not available, the following factor shall be used to calculate AOT40 values:

$$\text{AOT40(estimate)} = \text{AOT40 measured} \times \frac{\text{total possible number of hours*}}{\text{number of measured hourly values}}$$

* being the number of hours within the time period of AOT40 definition (that is, 8:00 to 20:00 Central European Time from 1 May to 31 July each year, for vegetation protection and from 1 April to 30 September each year for forest protection).

(**a**) OJ No. L035, 5.2.1997, p. 14.

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations implement Council Directive 96/62/EC on ambient air quality assessment and management(**a**), and Council Directive 99/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead ("the relevant pollutants") in ambient air(**b**). They also implement European Parliament and Council Directives 2000/69/EC relating to limit values for benzene and carbon monoxide in ambient air(**c**), and 2002/3/EC relating to ozone in ambient air(**d**).

Regulation 13, and the remainder of the Regulations so far as they relate to regulation 13, apply to the United Kingdom. Otherwise, the Regulations apply to England.

They replace the Air Quality Limit Values Regulations 2001(**e**) which previously implemented Council Directives 96/62/EC and 99/30/EC.

Regulation 3 designates the Secretary of State as competent authority for the purposes of Council Directive 96/62/EC.

Regulation 14 extends powers, under section 85(5) of the Environment Act 1995, for the Secretary of State to give directions to local authorities for the implementation of any obligations of the United Kingdom under the Community Treaties. Regulation 14 would allow such directions to be given by the Secretary of State to the Mayor of London and local authorities within Greater London for the purposes of the implementation of the Directives transposed by these Regulations.

Regulation 17 and Schedule 10 revoke for England and at different dates parts of the Air Quality Standards Regulations 1989 giving effect to limit values for the relevant pollutants in earlier Directives: Council Directive 80/779/EEC on air quality limit values and guide values for sulphur dioxide and suspended particulates; Council Directive 82/884/EEC on a limit value for lead in the air; and Council Directive 85/203/EEC on air quality standards for nitrogen dioxide. The Directives are repealed, with transitional provisions lasting up to 2010, by Council Directive 99/30/EC.

The Regulations also give effect to Commission Decision 2001/744/EC amending Annex V to Council Directive 99/30/EC relating to the limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air(**f**).

A Transposition Note setting out the way in which the main provisions of the above Directives have been implemented in the Regulations is available from the Air and Environmental Quality Division, DEFRA, 4/G15 Ashdown House, 123 Victoria Street, London SW1E 6DE.

(**a**) OJ No. L296, 21.11.1996, p. 55.
(**b**) OJ No. L163, 29.6.1999, p. 41, amended by Commission Decision 2001/744/EC, OJ No. L278, 23.10.2001, p. 35.
(**c**) OJ No. L313, 13.12.2000, p. 12.
(**d**) OJ No. L67, 9.3.2002, p. 14.
(**e**) S.I. 2001/2315.
(**f**) OJ No. L278, 23.10.2001, p. 35.