SCHEDULE 1 Regulations 4(1), 9(2), 10 (1) and (4), 12(6) and (7)

LIMIT VALUES, MARGINS OF TOLERANCE ETC.

PART I

SULPHUR DIOXIDE

Limit values for sulphur dioxide

1.1

	Averaging period	*Limit value*	*Margin of tolerance(**1**)*	*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 on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 µg/m^3 by 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	

Alert threshold for sulphur dioxide

1.2 500 µg/m3 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.

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

1.3 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:

(**1**) The figures for Margins of Tolerance for each of the relevant pollutants given in this Schedule are calculated from those given in Annex I of Directive 99/30/EC and Annexes I and II of Directive 2000/69/EC.

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

— the geographical area concerned,

— 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 II

NITROGEN DIOXIDE (NO_2) AND OXIDES OF NITROGEN (NO_x)

Limit values for nitrogen dioxide and oxides of nitrogen

2.1

	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 on 1st January 2003, reducing 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 on 1st January 2003, reducing 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	

Alert threshold for nitrogen dioxide

2.2 400 μg/m3 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.

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

2.3 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,

— 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 on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 μg/m^3 by 1st January 2005	1st January 2005
2. Annual limit value for the protection of human health	Calendar year	40 μ g/m^3 PM_{10}	3.2 μg/m^3 on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 μg/m^3 by 1st January 2005	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 on 1st January 2003, reducing on 1st January of each following year by equal annual amounts to reach 0 μg/m^3 by 1st January 2005	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	5μg/m^3	5μg/m^3 on 1st January 2003, 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 on 1st January 2003, reducing every 12	1 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.				

	Averaging period	*Limit value*	*Margin of tolerance*	*Date by which limit value is to be met*
			months thereafter by 2 mg/m^3 to reach 0 mg/m^3 by 1 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.

SCHEDULE 2 Regulations 6(5) and 7(1)

UPPER AND LOWER ASSESSMENT THRESHOLDS AND EXCEEDANCES

PART I

Upper and lower assessment thresholds

The following upper and lower assessment thresholds will apply:

SULPHUR DIOXIDE

(a)

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

NITROGEN DIOXIDE AND OXIDES OF NITROGEN

(b)

	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 value	70% of limit value (140 $\mu g/m^3$, not to be exceeded more than 18 times in any calendar year)	80% of limit value (32 $\mu g/m^3$)	80% of limit value (24 $\mu g/m^3$)
Lower assessment value	50% of limit value (100 $\mu g/m^3$, not to be exceeded more	65% of limit value (26 $\mu g/m^3$)	65% of limit value (19.5 $\mu g/m^3$)

	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)*
	than 18 times in any calendar year).		

*PARTICULATE MATTER(**2**)*

(c)

	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)

LEAD

(d)

	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)

BENZENE

(e)

	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)

CARBON monoxide

(f)

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

(**2**) The upper and lower assessment thresholds for PM_{10} are based on the indicative limit values for 1 January 2010, which will be reviewed in the light of further information on health and environmental effects, technical feasibility and experience in the application of the existing "Stage 1" limit values. *See* Article 10 of Directive 99/30/EC.

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 3 Regulations 8(3) and 8(5)

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

The following considerations will apply to fixed measurement.

PART I

Macroscale siting

Protection of human health

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

(i) to provide data on the areas within zones and agglomerations 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(s);

(ii) to provide data on levels in other areas within the zones and agglomerations 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.

Protection of ecosystems and vegetation

(b) 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

Microscale siting

The following guidelines should be met as far as practicable:

- the flow around the inlet sampling probe should be unrestricted without any obstructions affecting the airflow in the vicinity of the sampler (normally some metres away from buildings, balconies, trees and other obstacles 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. Higher siting may also be appropriate if the station is representative of a large area;
- 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.

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 III

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.

SCHEDULE 4 Regulation 8(4)

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

PART I

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 and agglomerations where fixed measurement is the sole source of information

Diffuse sources

(a)

Population of zone (thousands)	*If concentrations exceed the upper assessment thresholds*	*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 threshold*
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
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		

Population of zone (thousands)	*If concentrations exceed the upper assessment thresholds*	*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 threshold*
	increase the number of sampling points.		

Point sources

(b) 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

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 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.	

SCHEDULE 5 Regulation 8(5) and (8)

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

PART I

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%

	Sulphur dioxide, nitrogen dioxide and oxides of nitrogen	*Particulate matter and lead*
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)(**3**) or in ISO 5725-1 "Accuracy (trueness and precision) of measurement methods and results " (ISO 1994)(**4**). 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 National Assembly 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.

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.

	Benzene	*Carbon monoxide*
Fixed measurements		
Uncertainty	25%	15%
Minimum data capture	90%	90%

(**3**) Copies of this International Standards Organisation publication 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.

(**4**) Copies of this International Standards Organisation publication can be purchased from the British Standards Institution "BSI" as for footnote (a) above.

	Benzene	*Carbon monoxide*
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	
Indicative measurements		
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)
Modelling		
Uncertainty:		
Eight-hour averages	—	50%
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)(**5**) or the methodology of ISO 5725:1994(**6**). 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.

The National Assembly 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 across the year.

PART II

Results of air quality assessment

The following information should be compiled for zones and agglomerations 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;

(**5**) Copies of this International Standards Organisation publication 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.

(**6**) Copies of this International Standards Organisation publication can be purchased from the British Standards Institution "BSI" as for footnote (a) above.

— 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 limit value(s) or, as may be, limit value(s) plus applicable margin(s) 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 and agglomeration.

SCHEDULE 6 Regulation 8(6)

REFERENCE METHODS FOR ASSESSMENT OF CONCENTRATIONS OF RELEVANT POLLUTANTS

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(**7**).

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(**8**).

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(**9**) 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.

(**7**) Copies of this International Standards Organisation publication 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.

(**8**) Copies of this International Standards Organisation publication can be purchased from the British Standards Institution "BSI" as for footnote (a) above.

(**9**) OJ L378, 31.12.1982, p.15.

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(**10**).

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" (**11**). 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 pumped sampling 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 method based on the non-dispersive infra-red spectrometric (NDIR) method.

SCHEDULE 7 Regulation 10(6)

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

Localisation of excess pollution

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

(**10**) Copies of this International Standards Organisation publication 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.

(**11**) European Standards Institute "CEN" publication reference BSEN 12341, obtainable from the British Standards Institution "BSI" as for footnote (a) above.

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.

Responsible authorities

N— ames and addresses of persons responsible for the development and implementation of improvement plans.

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.

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.

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.

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.

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.

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

9

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

10