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**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**

Rules made under s.337 of the Public Health Act.

# PUBLIC HEALTH (AIR QUALITY) (OZONE) RULES 2004

**Revoked by LN. 2010/126 as from 15.7.2010**

**(LN. 2004/025)**

**28.4.2005** *(LN. 2005/077)*

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## ARRANGEMENT OF RULES

SCHEDULE 3

CRITERIA FOR DETERMINING MINIMUM NUMBERS OF SAMPLING POINTS FOR FIXED MEASUREMENTS OF OZONE LEVELS

SCHEDULE 4

MEASUREMENTS OF OZONE PRECURSOR SUBSTANCES

SCHEDULE 5

DATA QUALITY OBJECTIVES AND COMPILATION OF RESULTS OF AIR QUALITY ASSESSMENT

SCHEDULE 6

REFERENCE METHODS FOR ANALYSIS OF OZONE AND CALIBRATION OF OZONE INSTRUMENTS

SCHEDULE 7

INFORMATION AND ALERT THRESHOLDS

SCHEDULE 8

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

SCHEDULE 9

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

# PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES

**Title and commencement.**

1. These rules may be cited as the Public Health (Air Quality) (Ozone) Rules 2004 and come into operation on such day as the Minister may specify by Notice in the Gazette.

**Definitions.**

2. In these Rules–

"alert threshold" means that level prescribed as such under rule 6;

"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 ozone or ozone precursor substances in the ambient air;

"fixed measurement" 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" means that level prescribed as such under rule 6;

"level" means the concentration of ozone or ozone precursor substances in ambient air;

"long-term objective" means that level prescribed as such under rule 3(2);

"ozone precursor substances" means substances which contribute to the formation of ground-level ozone, including those listed in Schedule 4;

"the Minister" means the Minister with responsibility for the environment;

"the public" means natural or legal persons, including health care bodies and other organizations having an interest in ambient air quality and representing the interests of sensitive populations, consumers and the environment;

"relevant averaging period" has the meaning prescribed in rule 7(5);

"volatile organic compounds" or "VOCs" 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.

**Target values and long-term objectives.**

3.(1) The target values for levels of ozone are set out in Part II of Schedule 1.

(2) The long-term objectives for levels of ozone are set out in Part III of Schedule 1.

(3) The definitions and provisions of Part I of Schedule 1 apply to Parts II and III of that Schedule.

**Assessment of levels of ozone and ozone precursor substances.**

4.(1) The Minister must ensure that levels of ozone and ozone precursor substances are assessed in accordance with this rule.

(2) Continuous fixed measurement must be used where in any of the previous five years, levels of ozone have exceeded a long-term objective.

(3) In order to determine whether, during any of the previous five years, levels of ozone have exceeded a long-term objective in relation to which data from continuous fixed measurement is not available for the whole of that period, measurement campaigns of short duration, at times and locations likely to be typical of the highest pollution levels, may be combined with results from emission inventories and modelling.

(4) Where levels of ozone have not, in any of the previous five years, exceeded the long-term objectives, a combination of continuous fixed measurement, modelling and indicative measurements may be used.

(5) The number of sampling points for fixed continuous measurement must be in accordance with Part I of Schedule 3 and be sufficient for the level of ozone to be established in accordance with the data quality objectives specified in Part I of Schedule 5 and lead to assessment results as specified in Part II of Schedule 5.

(6) Where paragraph (2) applies, measurements of nitrogen dioxide–

(a) must be made at the ozone sampling points required under Part I of Schedule 3; and

(b) must be continuous.

(7) Where paragraph (4) applies, the minimum number of sampling points for fixed measurements must be in accordance with Part II of Schedule 3.

(8) Schedule 2 has effect for the purpose of determining the location of sampling points for the measurement of ozone.

(9) The reference methods for the analysis of ozone and the calibration of ozone instruments set out in Schedule 6 must be used unless the Minister adopts other methods which he considers can be demonstrated to give equivalent results.

(10) For ozone precursor substances–

(a) the Minister must ensure that at least one measuring station to supply data on levels of the ozone precursor substances listed in Schedule 4 is installed and operated; and

(b) in choosing the number and siting of the stations at which levels of ozone precursor substances are to be measured, the Minister must take account of the objectives, methods and recommendations laid down in Schedule 4.

(11) For ozone and nitrogen oxides measurements of volume must be standardised at a temperature of 293 kelvin and a pressure of 101.3 kilopascals.

**Programmes and measures to address ozone levels.**

5.(1) Where the levels of ozone, as assessed in accordance with rule 4, are higher than the target values the Minister must prepare and implement a plan or programme for attaining the target values by the date specified in Part II of Schedule 1.

(2) Sub-rule (1) does not apply if the Minister considers that attaining the target values would not be achievable through proportionate measures.

(3) In preparing and implementing a plan or programme under sub-rule (1), the Minister must ensure that the plan or programme is integrated, where appropriate, with any plan or programme prepared under rules 8 and 9 of the Public Health (Air Quality Limit Values) Rules 2002.

(4) A plan or programme prepared under sub-rule (1) must include, as a minimum, information equivalent to that listed in Schedule 9 and must be made available to the public.

(5) Where the levels of ozone, as assessed in accordance with rule 4, are higher than the long-term objectives but equal to or below the target values

the Minister must prepare and implement measures which he considers to be cost-effective, with the aim of achieving the long-term objectives.

(6) The measures prepared and implemented under sub-rule (5) must, as a minimum, be consistent with any plans or programmes prepared and implemented under sub-rule (1).

(7) Where the levels of ozone meet the long-term objectives the Minister must–

(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 he considers to be compatible with sustainable development and a high level of protection for the environment and human health.

**Public Participation.**

5A.(1) Without prejudice to rule 5(5) where a plan or programme is required by rule 5(1) the Minister shall, in accordance with subrules (2) and (3), ensure that the public is given early and effective opportunities to participate in the preparation and modification or review of the plans or programmes required to be drawn up under rule 5(1).

(2) The Minister shall–

(a) ensure that the public is informed, whether by public notices or other appropriate means such as electronic media, about any proposals for such plans or programmes or for their modification or review;

(b) ensure that relevant information about the proposals referred to in paragraph (a) is made available to the public, including information about the right to participate in decision-making;

(c) ensure that the public is entitled to make comments before decisions on the plans and programmes are made;

(d) in making those decisions, take due account of the results of the public participation; and

(e) having examined the comments made by the public, make reasonable efforts to inform the public about–

(i) the decisions taken and the reasons and considerations on which those decisions are based; and

(ii) the public participation process.

(3) The Minister shall publish any information required to carry out his functions under subrules (1) and (2) in such manner as he considers appropriate for the purpose of bringing it to the attention of the public and shall–

(a) make copies of such information accessible to the public; and

(b) specify the detailed arrangements made to enable participation in the preparation, modification or review of the plans or programmes, including–

(i) the address to which comments may be submitted; and

(ii) the time-frame for any such comments allowing sufficient time for each of the different stages of public participation required by subrules (1) and (2).

**Information threshold and alert threshold.**

6. The information threshold and the alert threshold for ozone are set out in Part I of Schedule 7.

**Public information.**

7.(1) The Minister must ensure that up-to-date information on levels of ozone is routinely made available to the public in accordance with the provisions of this rule.

(2) The information on levels of ozone in sub-rule (1) must be updated–

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

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

(3) Information made available under sub-rule (1) must include–

(a) an indication of all incidents when the level of ozone, when assessed by reference to any relevant averaging period, exceeded–

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

(ii) the information threshold;

(iii) the alert threshold;

and a short evaluation of the effect of those exceedances on human health;

(b) comprehensive annual reports; and

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

(4) The annual reports referred to in paragraph (3)(b) must, as a minimum–

(a) indicate, for human health, any exceedances of the target value, the long-term objective, the information threshold or the alert threshold for the relevant averaging period;

(b) indicate, for vegetation, any exceedances of the target value or the long-term objective; and

(c) include, where appropriate, a short evaluation of the effect of those exceedances.

(5) For the purposes of this rule, the "relevant averaging period"–

(a) in relation to target values, is set out in Part II of Schedule 1;

(b) in relation to the long-term objective for the protection of health, is set out in Part III of Schedule 1; and

(c) in relation to the information threshold and the alert threshold, is set out in Part I of Schedule 7.

(6) Information made available under paragraph (3)(c) must, be provided to the Gibraltar Health Authority and to the public.

(7) Where an exceedance of the alert threshold or the information threshold is predicted, the Minister must, where practicable, supply to the public the information specified in Part II of Schedule 7.

(8) Where the alert threshold or information threshold is exceeded, the Minister must supply to the public the information specified in Part II of Schedule 7.

(9) The Minister may publish the information and reports referred to in this rule in such a manner as he considers appropriate, having regard to the nature of that information and those reports.

(10) Information made available to the public under this rule must be clear, comprehensible and accessible.

**Short term action plans.**

8.(1) Where there is any risk of the alert threshold for ozone being exceeded, the Minister must determine whether there is significant potential for reducing that risk or for reducing the duration or severity of any such exceedance if one should occur and, if so, must draw up an action plan, indicating the measures to be taken, in the short term, to eliminate or reduce that risk or to reduce the duration or severity of the exceedence, as the case may be.

(2) When making the determination referred to in sub-rule (1), the Minister must take account of geographical, meteorological and economic conditions.

(3) The Minister must make available to the public–

(a) the results of any determination referred to in sub-rule (1);

(b) any action plans which it draws up under sub-rule (1); and

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

**Transboundary pollution.**

9. Where the level of ozone exceeds a target value or long-term objective, and that exceedance appears to the Minister to be due largely to precursor emissions in another Member State of the European Union the Minister, through the Secretary of State with responsibility for the Environment, shall consult any other Member State directly concerned with a view to the drawing up of a joint plan or programme, or a joint short-term action plan with that Member State in order to attain the target values or long term, objectives.

**Information requirements.**

10.(1) The Minister must ensure that the information specified in Part I of Schedule 8 is obtained and collated.

(2) The criteria for aggregating data and calculating statistical parameters specified in Part II of Schedule 8 apply to the information specified in sub-rule (1).

**Designation of Competent Authority.**

11. The Minister is designated as the competent authority for the purposes of undertaking any act under these rules, or the sending or receiving of any communication by or under the provisions of these rules.

**Repeal.**

12. The Public Health (Air Quality Standards) Rules 1995 are repealed.

**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**
**SCHEDULE 9**

(rule 3)

## TARGET VALUES AND LONG-TERM OBJECTIVES FOR OZONE LEVELS

### PART I
Definitions and interpretation

When assessing compliance with the target values and long-term objectives set out in this Schedule–

(a) all values must be expressed in $\mu g/m^3$;

(b) the volume must be standardised at the following conditions of temperature and pressure: 293K and 101.3kPa;

(c) the time must be specified in Central European Time;

(d) "AOT40" (expressed in $(\mu g/m^3)\cdot$hours) means the sum of the difference between hourly concentrations greater than $80\mu g/m^3$ (which equals 40 parts per billion) and $80\mu g/m^3$ 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 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) | $120\mu g/m^3$ not to be exceeded on more than 25 days per calendar year averaged over three years (c) |
| 2. Target value for the protection of vegetation | AOT40, calculated from 1h values from May to July | $18{,}000\mu g/m^3\cdot h$ 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 is to be selected by examining 8-hour running averages, calculated from hourly

data and updated each hour. Each 8-hour average so calculated is to be assigned to the day on which it ends – that is, the first calculation period for any one day will 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 that 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 will 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 | 120μg/$m^3$ |
| 2. Long-term objective for the protection of vegetation | AOT40, calculated from 1h values from May to July | 6,000μg/$m^3$·h |

**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**
**SCHEDULE 10**

(rule 4(8))

## CLASSIFICATION AND LOCATION OF SAMPLING POINTS

The following considerations apply to fixed measurements:

### PART I
Macroscale siting

| *Type of station* | *Objective of measurement* | *Represent-ativeness* (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.;<br>vented locations where well-mixed levels can be measured;<br>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. |

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

### PART II
Microscale siting

The following guidelines should be followed, as far as practicable:

1. The flow around the inlet sampling probe should be unrestricted (free in an arc of at least 270°) without any obstructions affecting the air flow in the vicinity of the sampler, i.e. away from buildings, balconies, trees and other obstacles by more than twice the height the obstacle protrudes above the sampler.

2. In general, the inlet sampling point should be between 1.5m (the breathing zone) and 4m above the ground. Higher positions are possible for urban stations in some circumstances and in wooded areas.

3. 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.

4. The sampler's exhaust outlet should be positioned so as to avoid recirculation of exhaust to the sampler inlet.

The following factors may also be taken into account:

(a) interfering sources;

(b) security;

(c) access;

(d) availability of electrical power and telephone communications;

(e) visibility of the site in relation to its surroundings;

(f) safety of public and operators;

(g) the desirability of co-locating sampling points for different pollutants; and

(h) planning requirements.

**PART III**

Documentation and review of site selection

Site selection procedures should be fully documented at the classification stage by such means as compass point photographs of the surroundings and a detailed map. Sites should be reviewed at regular intervals with repeated documentation to ensure that selection criteria are still being met.

This requires proper screening and interpretation of the monitoring data in the context of the meteorological and photochemical processes affecting the ozone concentrations measured at the respective site.

**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**
**SCHEDULE 11**

(rule 4(5), (6) and (7))

## CRITERIA FOR DETERMINING MINIMUM NUMBERS OF SAMPLING POINTS FOR FIXED MEASUREMENTS OF OZONE LEVELS

### PART I

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 (x 1,000)* | *Agglomerations (urban and suburban)* (a) | *Other zones (suburban and rural)* (a) |
|---|---|---|
| 0 – 250 | | 1 |

(a) at least 1 station in suburban areas, where the highest exposure of the population is likely to occur.

### PART II

Minimum number of sampling points for fixed measurements where long-term objectives attained

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. Where information from fixed measurement stations is the sole source of information, at least one monitoring station should be kept.

## SCHEDULE 12

(rule 4(10))

## MEASUREMENTS OF OZONE PRECURSOR SUBSTANCES

**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 emissions 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 (VOCs). A list of VOCs 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 must be that specified in Part II of Schedule 6 to Public Health (Air Quality Limit Values) Rules 2002.

**Siting.**

Measurements should be taken in particular at any monitoring site set up in accordance with the requirements of the Public Health (Air Quality Limit Values) Rules 2002 and considered appropriate with regard to the monitoring objectives in this Schedule.

## SCHEDULE 13

(rule 4(5))

**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**

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

### PART I
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<br>75% during winter |
| **Indicative measurement** | |
| Uncertainty of individual measurements | 30% |
| Minimum data capture | 90% |
| Minimum time coverage | >10% during summer |
| **Modelling** | |
| Uncertainty | |
| 1 hour averages (daytime) | 50% |
| 8 hours daily maximum | 50% |
| **Objective estimation** | |
| Uncertainty | 75% |

The uncertainty (on a 95% confidence interval) of the measurement methods must be evaluated in accordance with the principles laid down in the 'Guide to the Expression of Uncertainty of Measurements' (ISO 1993) or the methodology in ISO 5725-1 'Accuracy (trueness and precision) of measurement methods and results' (ISO 1994) (**1**) 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

(**1**) Copies of these International Standards Organisation publications can be purchased from the British Standards Institution 'BSI' sales department either by telephone on 00 44 20 8996 9001 or by post from the BSI, Standards House, 389 Chiswick High Road, London, W4 4AL

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 II

Results of air quality assessment

The following information should be compiled where 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 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.

## SCHEDULE 14

(rule 4(9))

### REFERENCE METHODS FOR ANALYSIS OF OZONE AND CALIBRATION OF OZONE INSTRUMENTS

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

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

**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**
**SCHEDULE 15**

(rules 6, 7(5) (7) and (8))

## INFORMATION AND ALERT THRESHOLDS

### PART I

Information and alert thresholds for ozone

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

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

### PART II

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; and

(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.

**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**
**SCHEDULE 16**

(rule10(1) and (2))

## 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 must be obtained and collated:

| | *Type of station* | *Level* | *Averaging/ accumulation time* | *Provisional date 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.<br>– 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) =6,000 μg/m$^3$·h | 1 hour, accumulated from May to June | | Value |
| Forest protection | Suburban, rural, rural background | AOT40 (a) =20,000 μg/m$^3$·h | 1 hour, accumulated from April to September | | Value |
| Materials | Any | 40μg/m$^3$ | 1 year | | Value |

(a) in this Schedule, "AOT40" has the same meaning as in paragraph (d) of Part I to Schedule 1.

(b) maximum daily 8-hour mean.

**PART II**

Criteria for aggregating data and calculating statistical parameters

In this Part, percentiles are to be calculated using the method specified in Council Directive 97/101/EC.

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 (a) |

**PUBLIC HEALTH (AIR QUALITY STANDARDS) (OZONE) RULES**

| | |
|---|---|
| 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)<br>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 must 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).

## SCHEDULE 9

(rule 5 (4))

## 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

– estimate of the polluted area (km2) and of the population exposed to the pollution

– useful climatic data

– relevant data on topography

– sufficient information on the type of targets requiring protection.

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)

– details of possible measures for improvement of air quality.

7. Details of those measures or projects for improvement which existed prior to 9 March 2002

– 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 9 March 2002

– 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.