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WELSH STATUTORY INSTRUMENTS

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**2007 No. 717 (W.63)**

**ENVIRONMENTAL PROTECTION, WALES**

**The Air Quality Standards (Wales) Regulations 2007**

*Made* - - - - - *6 March 2007*

*Coming into force* - - - - - *15 March 2007*

The National Assembly for Wales (“the National Assembly”), being designated<sup>(1)</sup> to exercise powers under section 2(2) of the European Communities Act 1972<sup>(2)</sup> in relation to measures relating to the assessment and management of ambient air quality and compliance with air quality limit values, target values and objectives, makes the following Regulations:

**PART 1**

General

**Title, commencement and application**

- 1.—(1) The title of these Regulations is the Air Quality Standards (Wales) Regulations 2007.
- (2) These Regulations come into force on 15 March 2007.
- (3) These Regulations apply in relation to Wales.

**Definitions**

- 2.—(1) In these Regulations—

“action plan” (“*cynllun gweithredu*”) means an action plan required by regulation 11;

“agglomeration” (“*crynhoad*”) has the meaning given in regulation 5(2);

“air quality standards” (“*safonau ansawdd aer*”) means limit values, target values and long-term objectives;

“alert threshold” (“*trothwy rhybuddio*”) means an alert threshold set out in Schedule 3;

“ambient air” (“*aer amgylchynol*”) means outdoor air in the troposphere, excluding work places;

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(1) S.I. 2000/2812.

(2) 1972 c. 68.

“assessment” (“*asesu*”) means any method used to measure, calculate, predict or estimate the concentration of a pollutant;

“attainment date” (“*dyddiad cyrhaeddiad*”) means a date by which—

- (a) a limit value is required to be attained; or
- (b) a target value should be attained, insofar as this is possible;

“concentration” (“*crynodiad*”) means—

- (a) for pollutants other than Group B pollutants, the concentration of the relevant pollutant in ambient air; or
- (b) for Group B pollutants, the total content of the relevant pollutant in the PM<sub>10</sub> fraction in ambient air,

and, in both cases, a reference to a concentration is to a concentration assessed by the National Assembly in accordance with these Regulations;

“Group A pollutants” (“*llygryddion Grŵp A*”) means benzene, carbon monoxide, lead, nitrogen dioxide and oxides of nitrogen, PM<sub>10</sub> and sulphur dioxide;

“Group B pollutants” (“*llygryddion Grŵp B*”) means arsenic, benzo(a)pyrene, cadmium and nickel and their compounds;

“improvement plan” (“*cynllun gwella*”) means an improvement plan required by regulation 8;

“information threshold” (“*trothwy gwybodaeth*”) means the information threshold set out in Part 2 of Schedule 3;

“limit value” (“*gwerth terfyn*”) means a maximum permitted concentration of a Group A pollutant set out in Part 1 of Schedule 1;

“long-term objective” (“*amcan hirdymor*”) means a maximum concentration of ozone set out in Part 4 of Schedule 1;

“margin of tolerance” (“*ffin goddefaint*”) means an amount specified in Part 2 of Schedule 1 by which a limit value may be exceeded;

“oxides of nitrogen” (“*ocsidau 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” (“*rhagsylweddau osôn*”) means substances which contribute to the formation of ground level ozone, as referred to by regulation 18(1);

“PM<sub>2.5</sub>” means particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 2.5µm aerodynamic diameter;

“PM<sub>10</sub>” means particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 10µm aerodynamic diameter, in relation to which, in the case of assessments of Group B pollutants, the inlet is defined in EN 12341;

“pollutant” (“*llygrydd*”) means—

- (a) any Group A pollutant;
- (b) any Group B pollutant;
- (c) ozone; or
- (d) any pollutant to which Part 3 of these Regulations applies;

“polycyclic aromatic hydrocarbons” (“*hydrocarbonau aromatig polysyclig*”) means—

- (a) those compounds listed at regulation 19(2); and
- (b) any other polycyclic aromatic hydrocarbons the National Assembly chooses to monitor under regulation 19(1)(b);

“rural background station” (“*gorsaf cefndir gwledig*”) is to be interpreted in accordance with Part 3 of Schedule 5;

“target value” (“*gwerth targed*”) means a maximum concentration of a Group B pollutant as set out in Part 3 of Schedule 1 or ozone as set out in Part 4 of that Schedule; and

“zone” (“*parth*”) means one of the parts of the territory into which the National Assembly has divided Wales under regulation 5(1) for the purposes of Part 2 of these Regulations; and references to a zone, unless the context indicates otherwise, include an agglomeration.

(2) Other words and expressions used in these Regulations have the same meaning as in the following Directives—

- (a) Council Directive [96/62/EC](#) on ambient air quality assessment and management<sup>(3)</sup>;
- (b) Council Directive [1999/30/EC](#) relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air<sup>(4)</sup>;
- (c) Directive [2000/69/EC](#) of the European Parliament and of the Council relating to limit values for benzene and carbon monoxide in ambient air<sup>(5)</sup>;
- (d) Directive [2002/3/EC](#) of the European Parliament and of the Council relating to ozone in ambient air<sup>(6)</sup>; and
- (e) Directive [2004/107/EC](#) of the European Parliament and of the Council relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air<sup>(7)</sup>.

### **Designation of National Assembly for Wales**

3. The National Assembly is designated as the competent authority for the purposes of Article 3 (implementation and responsibilities) of Council Directive [96/62/EC](#).

## **PART 2**

### **Group A and Group B pollutants and ozone**

#### **CHAPTER 1**

#### **Air quality standards**

### **Preliminary and application**

- 4.—(1) This Part applies in respect of the following pollutants—
- (a) Group A pollutants;
  - (b) Group B pollutants; and
  - (c) ozone.
- (2) The National Assembly must ensure that all measures taken under Chapter 2 or 3 of this Part—
- (a) take into account an integrated approach to the protection of air, water and soil; and
  - (b) have no significant negative effects on—
    - (i) any other member State, or
    - (ii) any other part of the United Kingdom.

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(3) OJ No L 296, 21.11.96, p.55.

(4) OJ No L 163, 29.06.99, p.41.

(5) OJ No L 313, 13.12.00, p.12.

(6) OJ No L 67, 09.03.02, p.14.

(7) OJ No L 23, 26.01.05, p.3.

### Zones and agglomerations

5.—(1) The National Assembly must, for the purposes of this Part, divide the territory of Wales into zones.

- (2) A zone is to be classified as an agglomeration for the purposes of this Part where—
- it comprises a population in excess of 250,000 inhabitants; or
  - in any other case, it has a population density per km<sup>2</sup> for which the National Assembly considers that such a classification is justified.

(3) The National Assembly may establish different zones for different pollutants where it considers it appropriate.

### Air quality standards

6.—(1) Subject to paragraphs (2) to (4), the following air quality standards specified in Schedule 1 are required to be attained within each zone—

- for Group A pollutants, the limit values set out in Part 1 of that Schedule;
- for Group B pollutants, the target values set out in Part 3 of that Schedule; and
- for ozone, the target values and long-term objectives set out in Part 4 of that Schedule.

(2) The attainment date for a limit or target value is—

- the attainment date specified for the relevant pollutant in Schedule 1; or
- where no attainment date is specified, the date on which these Regulations come into force.

(3) The long-term objectives are to be attained in the long term, to the extent these objectives are achievable through the measures required by regulation 7(3)(b).

(4) In the case of benzene and nitrogen dioxide, the margins of tolerance set out in Part 2 of Schedule 1 apply within the periods specified.

## CHAPTER 2

### Attainment of air quality standards

#### General attainment measures

7.—(1) Subject to paragraphs (2) and (3), the National Assembly must take the necessary measures to ensure that, within each zone, concentrations of each pollutant attain the air quality standards required by regulation 6.

(2) The necessary measures in relation to Group B pollutants are—

- measures not entailing disproportionate costs; and
- insofar as concentrations of the relevant pollutants arise as a result of emissions from installations to which Council Directive 96/61/EC concerning integrated pollution prevention and control<sup>(8)</sup> applies, the application of best available techniques to prevent pollution from those installations in accordance with article 3(a) of that Directive<sup>(9)</sup>.

(3) The necessary measures in relation to ozone are measures the National Assembly considers to be—

- in the case of both the target values and long-term objectives, proportionate; and
- in the case of a long-term objectives, cost-effective.

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<sup>(8)</sup> OJ No L 257, 10.10.96, p.26.

<sup>(9)</sup> The Directive is implemented by the Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I. 2000/1973 as amended by S.I. 2001/503, 2002/275, 2002/1702, 2003/1699, 2003/3296, 2004/3276, 2005/1448 and 2006/2802 (W.241)).

### **Improvement plans**

8.—(1) This regulation applies in respect of each zone in which—

- (a) prior to the attainment date, concentrations of benzene or nitrogen dioxide exceed a limit value plus the applicable margin of tolerance; or
- (b) concentrations of ozone exceed a target value.

(2) Where paragraph (1)(a) applies, the National Assembly must prepare and implement an improvement plan in respect of the pollutant in question or, if the condition specified is met in relation to both pollutants, in respect of both those pollutants.

(3) Where paragraph (1)(b) applies, the National Assembly must prepare and implement an improvement plan in respect of ozone unless it considers that the target value would not be attainable through proportionate measures.

(4) An improvement plan must include the information specified in Schedule 2.

(5) Where an improvement plan is required to be prepared and implemented under both paragraphs (2) and (3), the National Assembly must, where it considers it appropriate, prepare and implement an integrated improvement plan covering all of the pollutants concerned.

(6) For the purposes of this regulation, an improvement plan may comprise either a plan or a programme which, in either case, must have the objective of attaining the limit or target value within the relevant zone by the attainment date for the pollutant in question.

### **Other improvement measures**

9.—(1) This regulation applies in respect of each zone in which concentrations of—

- (a) one or more Group B pollutants exceed the relevant target value; or
- (b) ozone are equal to or below the target values, but exceed a long-term objective.

(2) Where paragraph (1)(a) applies, the National Assembly must—

- (a) identify the cause of the pollution and the predominant sources of emissions; and
- (b) in relation to the pollutants concerned, ensure that the measures required by regulation 7(2) are directed in particular at the sources of emissions identified.

(3) Where paragraph (1)(b) applies, the National Assembly must prepare and implement measures which it considers to be cost-effective with the aim of attaining the long-term objective.

(4) The National Assembly must ensure that the measures required in paragraph (3) are consistent with any improvement plan prepared for ozone under regulation 8(3).

## **CHAPTER 3**

### **Maintenance of air quality standards and action plans**

#### **Maintenance of air quality standards**

10.—(1) This regulation applies in respect of each zone in which concentrations of—

- (a) one or more Group A pollutants are below the relevant limit values;
- (b) one or more Group B pollutants are below the relevant target values; or
- (c) ozone meet the long-term objectives.

(2) Where sub-paragraph (a) or (b) of paragraph (1) applies, the National Assembly must, in respect of each pollutant meeting the conditions set out in those sub-paragraphs, maintain compliance with the relevant limit or target values and endeavour to preserve the lowest concentration which it considers to be compatible with sustainable development.

- (3) Where paragraph (1)(c) applies, the National Assembly must—
- (a) ensure that concentrations are kept at or below the long-term objectives, insofar as the transboundary nature of ozone pollution, meteorological conditions and any other similar factors permit; and
  - (b) preserve through proportionate measures the lowest concentrations of ozone which it considers to be compatible with sustainable development and a high level of protection for the environment and human health.

### **Action plans**

- 11.—(1) The National Assembly must, in accordance with,—
- (a) paragraphs (2) to (4), prepare action plans; and
  - (b) paragraph (5), implement action plans.
- (2) The action plans must indicate the measures to be taken within any zone in the short term in order to achieve the objectives set out in paragraph (3) in the event of circumstances in which the National Assembly considers there is a risk that any one of the following will be exceeded—
- (a) a limit value;
  - (b) the alert threshold for nitrogen dioxide or sulphur dioxide; or
  - (c) subject to paragraph (4), the alert threshold for ozone.
- (3) The objectives of each action plan are to—
- (a) reduce the risk that the relevant limit value or alert threshold will be exceeded; or
  - (b) where it is not possible to prevent the occurrence, limit its duration or severity.
- (4) In relation to ozone, the obligation imposed by paragraph (1)(a) only applies insofar as, taking into account geographical, meteorological and economic conditions, the National Assembly considers there is significant potential for the objectives set out in paragraph (3) to be achieved.
- (5) The National Assembly must, when it considers that the risks referred to in paragraph (2) arise within any zone, implement the measures indicated in the relevant action plans within the zone concerned to the extent it considers necessary in the circumstances of the particular case.
- (6) Schedule 3 has effect in prescribing—
- (a) alert thresholds for nitrogen dioxide and sulphur dioxide, in Part 1 of that Schedule; and
  - (b) the alert threshold and information threshold for ozone, in Part 2 of that Schedule.

## **CHAPTER 4**

### **Assessment**

#### **Duty to assess air quality**

12. The National Assembly must assess the concentration of each pollutant within each zone in accordance with regulations 13 to 16.

#### **Assessment methods**

13.—(1) The National Assembly must assess concentrations of pollutants in accordance with the methods required or, in the case of Group A pollutants and Group B pollutants, permitted by this regulation.

- (2) In relation to Group A pollutants and Group B pollutants in cases where—
- (a) the assessment concerns a Group A pollutant within an agglomeration; or

(b) concentrations of a pollutant have exceeded the upper assessment threshold, assessment is required to be by means of fixed measurement.

(3) In cases where paragraph (2) does not apply and, in the case of nitrogen dioxide, subject to regulation 15(7), the National Assembly may use the following assessment methods in relation to Group A pollutants and Group B pollutants—

- (a) a combination of—
  - (i) fixed measurement, and
  - (ii) modelling techniques,provided that concentrations of the relevant pollutant have, over a representative period, been below the upper assessment threshold; or
- (b) the sole use of either modelling or objective estimation techniques, provided that—
  - (i) paragraph (4) does not apply, and
  - (ii) concentrations of the relevant pollutant have, over a representative period, been below the lower assessment threshold.

(4) The National Assembly must not use the methods referred to at paragraph (3)(b) to assess nitrogen dioxide or sulphur dioxide within an agglomeration.

(5) For the purposes of paragraphs (2) and (3)—

- (a) the upper and lower assessment thresholds are specified for Group A pollutants in Part 1 of Schedule 4 and for Group B pollutants in Part 2 of that Schedule; and
- (b) the representative period is to be interpreted in accordance with Part 3 of that Schedule.

(6) The National Assembly must review the method by which Group A pollutants and Group B pollutants are assessed within each zone—

- (a) in the event of significant changes in activities affecting concentrations of a pollutant within that zone; and
- (b) in any event, at least once in every five years.

(7) The National Assembly must assess concentrations of ozone by fixed continuous measurement if, within the zone concerned, concentrations have exceeded a long-term objective during any of the previous five years of measurement.

(8) In cases where fewer than five years' data is available, the National Assembly may assess concentrations of ozone by combining the following—

- (a) measurement campaigns of short duration at times and locations which it considers are likely to be typical of the highest pollution levels; and
- (b) results from emission inventories and modelling.

### **Fixed measurement**

**14.—**(1) This regulation applies in cases where, in relation to one or more pollutants, a zone is assessed in accordance with the methods referred to in regulation 13(2), (3)(a) or (7).

(2) Where a zone is assessed in accordance with regulation 13(2) or (3)(a), measurements of the relevant pollutant must, subject in the case of nitrogen dioxide to the requirements imposed by regulation 15(7) in respect of the assessments required by that regulation, be taken at fixed sites either continuously or by random sampling and the number of measurements must be sufficiently large to enable concentrations of the pollutant to be properly determined.

(3) Where a zone is assessed in accordance with regulation 13(2), the National Assembly may supplement information from sampling points for fixed measurement with information from

modelling techniques where it considers this will provide an adequate level of information on ambient air quality.

(4) Where a zone is assessed in accordance with regulation 13(7), the National Assembly may supplement information from sampling points with information from modelling or indicative measurements provided that the conditions set out in regulation 15(6) are complied with.

### **Sampling points**

**15.**—(1) Where the National Assembly assesses concentrations of a pollutant within a zone in accordance with the methods referred to at regulation 13(2), (3)(a) or (7) it must, in respect of each pollutant, ensure that—

- (a) a minimum number of sampling points are established within each zone, in accordance with paragraphs (2) to (6); and
- (b) each sampling point is located in accordance with the relevant Parts of Schedule 5.

(2) In cases where a zone is assessed in accordance with—

- (a) regulation 13(2), and paragraph (3)(a) of this regulation does not apply; or
- (b) regulation 13(7), and paragraph (4) of this regulation does not apply,

the minimum number of sampling points is specified in the relevant Parts of Schedule 6.

(3) Where a zone is assessed in accordance with—

- (a) regulation 13(2) and, within that zone, the National Assembly supplements fixed measurements with modelling techniques in accordance with regulation 14(3); or
- (b) regulation 13(3)(a),

the minimum number of sampling points required for each pollutant must be a number that the National Assembly determines is sufficient, taken together with the spatial resolution of the other techniques employed, for concentrations of the relevant pollutant to be established.

(4) Where a zone is assessed in accordance with regulation 13(7), the National Assembly may reduce the number of sampling points required under paragraph (2)(b) provided that the conditions set out in paragraphs (5) or (6) are met.

(5) In the case of zones where—

- (a) five years of measurement have been carried out; and
- (b) during each of those years, concentrations of ozone have been below the long-term objectives,

the National Assembly may determine the number of sampling points in accordance with Part 5 of Schedule 6.

(6) In the case of zones in which the National Assembly supplements the information obtained from sampling points for fixed measurement with information from modelling or indicative measurement in accordance with regulation 14(4), it may reduce the number of sampling points provided that—

- (a) the modelling techniques adopted provide an adequate level of information for the assessment of air quality with regard to the—
  - (i) target values,
  - (ii) information threshold, and
  - (iii) alert threshold;
- (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 and to enable the compilation of assessment results as specified in Part 3 of Schedule 7;

- (c) the number of sampling points in each zone amounts to—
    - (i) at least one sampling point per two million inhabitants, or
    - (ii) one sampling point per 50,000 km<sup>2</sup>,whichever produces the greater number of sampling points;
  - (d) each zone contains at least one sampling point; and
  - (e) concentrations of nitrogen dioxide are assessed at all remaining sampling points except rural background stations, in accordance with paragraph (7).
- (7) The National Assembly must ensure that—
- (a) concentrations of nitrogen dioxide are assessed—
    - (i) at least at 50 per cent of the sampling points established for ozone in accordance with Part 4 of Schedule 6, or
    - (ii) where paragraph (6) applies, in accordance with sub-paragraph (e) of that paragraph;and
  - (b) the measurement of nitrogen dioxide taken at these sampling points is continuous, except at rural background stations where other measurement methods may be used.

#### **Other assessment requirements**

- 16.—(1) When the National Assembly undertakes assessments as respects—
- (a) Group A pollutants or Group B pollutants, by the methods other than fixed measurement which are permitted by regulation 13(3) or 14(3); or
  - (b) ozone, by methods other than fixed continuous measurement which are permitted by regulations 13(7) and 14(4),

it must comply with the requirements of the relevant Part of Schedule 7 when using those other methods.

(2) When conducting any assessment under this Chapter, the National Assembly must have regard to the relevant data quality objectives set out in Schedule 8.

- (3) The National Assembly must undertake assessments in accordance with—
- (a) the relevant reference methods required by Schedule 9; or
  - (b) any alternative reference methods, where it considers that the method in question gives equivalent results to the relevant method required by Schedule 9.

(4) Measurements of volume of benzene, carbon monoxide, nitrogen dioxide, oxides of nitrogen, ozone and sulphur dioxide are to be standardised at a temperature of 293K and a pressure of 101.3 kPa.

## **PART 3**

### **Other pollutants and background monitoring**

#### **Measurement of PM<sub>2.5</sub>**

17.—(1) The National Assembly must, in accordance with paragraph (2), install and operate measuring stations to supply representative data on concentrations of PM<sub>2.5</sub>.

- (2) For the purpose of paragraph (1), the National Assembly must—
- (a) choose the number of measuring stations it considers necessary;

- (b) insofar as possible, co-locate the measuring stations with any sampling points established for PM<sub>10</sub> in accordance with regulation 15(1), or
  - (ii) in any other case, locate the measuring stations in accordance with the principles set out in Parts 1, 4 and 5 of Schedule 5 as they apply to PM<sub>10</sub>;
- (c) use reference methods for sampling and measurement that it considers suitable; and
- (d) have regard to the data quality objectives set out in Part 1 of Schedule 8.

#### **Measurement of ozone precursor substances**

**18.**—(1) The National Assembly must, in accordance with paragraph (2), install and operate one or, if it considers it necessary, more measuring stations to supply data on concentrations of those ozone precursor substances set out in Schedule 10.

(2) The National Assembly must have regard to Schedule 10 in choosing the number and sites of measuring stations and their operation.

#### **Monitoring of polycyclic aromatic hydrocarbons**

**19.**—(1) The National Assembly must, in accordance with paragraphs (3) to (6), monitor concentrations of—

- (a) those polycyclic aromatic hydrocarbons listed in paragraph (2); and
  - (b) any other polycyclic aromatic hydrocarbons, within the meaning of paragraph (7) that it may additionally choose to monitor.
- (2) The polycyclic aromatic hydrocarbons required to be assessed by paragraph (1) comprise—
- (a) benzo(a)anthracene;
  - (b) benzo(a)fluoranthene;
  - (c) benzo(b)fluoranthene;
  - (d) benzo(j)fluoranthene;
  - (e) benzo(k)fluoranthene;
  - (f) dibenz(a,h)anthracene; and
  - (g) indeno(1,2,3-cd)pyrene.

(3) The monitoring required by paragraph (1) must take place at monitoring sites designated for this purpose by the National Assembly in accordance with paragraphs (4) and (5).

(4) Each monitoring site must—

- (a) insofar as possible, be co-located with a sampling point established for benzo(a)pyrene under regulation 15(1); or
- (b) in any other case, be located in accordance with Parts 2, 4 and 5 of Schedule 5.

(5) The total number of monitoring sites and their overall selection is to be such as the National Assembly considers necessary to ensure that the monitoring carried-out provides sufficient information to identify long-term trends and geographical variation in concentrations.

(6) Regulation 16(2) and (3) applies to the monitoring required by this regulation.

(7) For the purpose of paragraph (1)(b), “polycyclic aromatic hydrocarbons” (“hydrocarbonau aromatig polysyclig”) means organic compounds, other than benzo(a)pyrene, which are composed of at least two fused aromatic rings made entirely from carbon and hydrogen.

## **Background monitoring**

**20.**—(1) The National Assembly must, in accordance with paragraphs (3) and (4), install and operate background sampling points to provide the measurements required by paragraph (2).

(2) The measurements required by this regulation are indicative measurements of—

(a) concentrations of—

- (i) Group B pollutants,
- (ii) polycyclic aromatic hydrocarbons, and
- (iii) total gaseous mercury as defined in paragraph (6);

and

(b) total deposition of—

- (i) Group B pollutants within the PM<sub>10</sub> fraction,
- (ii) polycyclic aromatic hydrocarbons, and
- (iii) mercury.

(3) For the purposes of paragraphs (1) and (2), the National Assembly must ensure that—

- (a) at least one sampling point is installed for every 100,000 km<sup>2</sup>; and
- (b) each sampling point is located in accordance with Parts 2, 4 and 5 of Schedule 5.

(4) Regulation 16(2) and (3) applies to the measurements required by this regulation.

(5) The National Assembly may—

- (a) in addition to the indicative measurements required by paragraph (2), take further indicative measurements relating specifically to particulate and gaseous divalent mercury from the sampling points required to be installed by paragraph (1); and
- (b) coordinate any measurements taken under this regulation with the European Monitoring and Evaluation of Pollutants monitoring strategy and measurement programme.

(6) For the purpose of paragraph (2)(a)(iii), “total gaseous mercury” (“mercwri nwyol llwyr”) means—

- (a) elemental mercury vapour (Hg<sup>0</sup>); and
- (b) reactive gaseous mercury.

## **PART 4**

### **Public information and participation**

#### **General requirements**

**21.**—(1) The National Assembly must ensure that—

- (a) up-to-date information is made available to the public in accordance with this Part; and
- (b) the public is given an opportunity to participate in the formulation of improvement plans in accordance with regulation 28.

(2) The National Assembly must ensure that the information to which this Part relates is—

- (a) made available in a form that is clear, comprehensible and accessible;
- (b) disseminated or published by the most appropriate means as it may determine, including (but not necessarily limited to) broadcast media, press, publications, information screens, the internet or other computer network sources; and

- (c) up-dated—
  - (i) in accordance with a minimum frequency specified in these Regulations, or
  - (ii) in other cases, as soon as practicable.

(3) For the purposes of this Part, “the public” means natural or legal persons, including health-care bodies and other organisations having an interest in ambient air quality and representing the interests of sensitive populations, consumers and the environment.

### **Information regarding zones**

- 22.** The National Assembly must make available—
- (a) information identifying each zone and specifying which zones have been classified as agglomerations;
  - (b) the following lists of zones—
    - (i) zones which have attained all air quality standards,
    - (ii) zones which have not attained one or more of the air quality standards, in respect of which the list must specify the pollutants and air quality standards concerned;
  - (c) until 1 January 2010, a list of zones in which concentrations of benzene or nitrogen dioxide either—
    - (i) exceed a limit value plus the relevant margin of tolerance, or
    - (ii) are between a limit value and the relevant margin of tolerance,
 specifying, in both cases, the pollutant and limit values for which this is the case; and
  - (d) a list classifying each zone in relation to the method by which concentrations of each pollutant are assessed within that zone in accordance with regulation 13.

### **Information on concentrations**

**23.—**(1) The National Assembly must, in accordance with paragraphs (2) and (3), make available information in respect of—

- (a) concentrations of Group A pollutants;
- (b) concentrations of Group B pollutants;
- (c) concentrations of ozone; and
- (d) insofar as assessed under Part 3 of these Regulations—
  - (i) concentrations of mercury, PM<sub>2.5</sub> and polycyclic aromatic hydrocarbons, and
  - (ii) deposition rates of Group B pollutants, mercury and polycyclic aromatic hydrocarbons.

(2) The information required to be made available by paragraph (1)(a) and, insofar as it relates to PM<sub>2.5</sub>, paragraph (1)(d)(i), must be updated as respects—

- (a) benzene, as an average value over the last 12 months—
  - (i) at least on a three-monthly basis, and
  - (ii) where practicable, on a monthly basis;
- (b) carbon monoxide, as a maximum running average over eight hours—
  - (i) at least on a daily basis, and
  - (ii) where practicable, on an hourly basis;
- (c) lead, on a three-monthly basis; and

- (d) nitrogen dioxide, sulphur dioxide, PM<sub>2.5</sub> and PM<sub>10</sub>—
  - (i) at least on a daily basis, and
  - (ii) in the case of hourly values for nitrogen dioxide and sulphur dioxide, where practicable, on an hourly basis.
- (3) The information required to be made available by paragraph (1)(c) must be updated—
  - (a) at least on a daily basis; and
  - (b) where appropriate and practicable, on an hourly basis.

#### **Information on breach of alert or information threshold**

**24.**—(1) The National Assembly must, as soon as possible in each case, provide the information required by paragraphs (2) to (4) where—

- (a) any of the following are exceeded—
  - (i) the alert threshold for nitrogen dioxide or sulphur dioxide, or
  - (ii) the alert threshold or information threshold for ozone;

or

- (b) it is predicted that the alert threshold or information threshold for ozone will be exceeded.

(2) Where paragraph (1)(a)(i) applies, the National Assembly must at least provide the information as set out at Part 1 of Schedule 11.

(3) Where paragraph (1)(a)(ii) applies, the National Assembly must at least provide the information as set out at Part 2 of Schedule 11.

(4) Where paragraph (1)(b) applies, the National Assembly must provide the information required by paragraph (3), insofar as it is practicable to do so.

(5) Where—

- (a) both sub-paragraphs (i) and (ii) of paragraph (1)(a) apply; or
- (b) both sub-paragraphs (a) and (b) of paragraph (1) apply,

the National Assembly must combine the information required to be provided in relation to those sub-paragraphs by paragraphs (2) to (4) in a comprehensive format.

(6) Without prejudice to the generality of the obligation imposed by this regulation to provide information to the public, in cases where the alert threshold for ozone is exceeded or is predicted to be exceeded, the National Assembly must ensure that timely information is provided to all relevant health-care bodies.

#### **Information on breach of air quality standards**

**25.**—(1) The National Assembly must provide the information required by paragraphs (2) to (5) in respect of each of the pollutants to which those paragraphs relate.

(2) For Group A pollutants, the National Assembly must—

- (a) indicate the extent to which—
  - (i) any limit value has, or
  - (ii) the alert thresholds for nitrogen dioxide or sulphur dioxide have, been exceeded over the relevant averaging periods set out in Part 1 of Schedule 1 and Part 1 of Schedule 3 respectively; and
- (b) provide a short assessment of these occurrences and their effects on health.

(3) For Group B pollutants, the National Assembly must—

- (a) indicate any occasion during which any target value has been exceeded; and
- (b) in relation to any such occurrences, provide at least the following information—
  - (i) the areas within each zone in which the target value was exceeded,
  - (ii) the cause of the occurrence and the predominant sources of emissions identified in accordance with regulation 9(2)(a),
  - (iii) a short assessment of the effect of the occurrence on overall compliance with the target value in the zone concerned,
  - (iv) the measures being taken counteract the excess concentration in accordance with regulation 9(2)(b), and
  - (v) the prospects for attainment of the target value in the area affected.
- (4) For ozone, the National Assembly must—
  - (a) indicate any occasion during which concentrations have exceeded—
    - (i) the long-term objectives for the protection of human health,
    - (ii) the information threshold, or
    - (iii) the alert threshold;
 and
  - (b) provide a short assessment of each occurrence, including its extent and its effects on health.
- (5) The information required to be made available in paragraphs (2) and (4) must be updated in accordance with the timescales specified for those pollutants by regulation 23(2) and (3).

### **Ozone annual report**

- 26.**—(1) The National Assembly must produce an annual report in relation to ozone in accordance with paragraphs (2) and (3).
- (2) The annual report must at least contain the following information—
    - (a) for human health, an indication of all occasions during which—
      - (i) the target value,
      - (ii) the long-term objective, or
      - (iii) the alert threshold,
 has been exceeded;
    - (b) for vegetation, an indication of all occasions during which—
      - (i) the target value, or
      - (ii) the long-term objective,
 has been exceeded; and
    - (c) in relation to both sub-paragraphs (a) and (b), a short assessment of the effects of each such occurrence.
  - (3) The information referred to in paragraph (2)(b) may include, where appropriate,—
    - (a) further information and assessments on forest protection, in accordance with Part 1 of Schedule 12; and
    - (b) information on ozone precursor substances.

### **Information on action and improvement plans**

27.—(1) The National Assembly must make available, and provide information on the implementation of, each action plan and improvement plan.

(2) Where regulation 11(4) applies, the National Assembly must make available the results of the investigations undertaken in the context of its considerations under that regulation, irrespective of whether it has prepared an action plan under regulation 11(1)(a).

### **Public participation in improvement plans**

28.—(1) The National Assembly must consult the public where it proposes to prepare, modify or review an improvement plan.

(2) Where paragraph (1) applies, the National Assembly must—

- (a) inform the public as to its proposal and any relevant background information; and
- (b) specify the means by which the public can participate in the consultation process, including an address for responses and a reasonable timescale for the consultation.

(3) Where, following a consultation, the National Assembly takes a decision in relation to its proposal, it must inform the public and provide information as to the reasons and considerations on which its decision is based.

## **PART 5**

### **Final and miscellaneous provisions**

#### **Collation of information etc.**

29.—(1) The National Assembly must ensure that the information specified in Part 1 of Schedule 12 is obtained and collated.

(2) The criteria for aggregating data and calculating statistical parameters specified in Part 2 of Schedule 12 applies as respects ozone.

#### **Revocations**

30. The Regulations set out in Schedule 13 are revoked in accordance with that Schedule.

Signed on behalf of the National Assembly for Wales under section 66(1) of the Government of Wales Act 1998(10)

6 March 2007

*D. Elis-Thomas*  
The Presiding Officer of the National Assembly

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## SCHEDULE 1

Regulation 6

## Air quality standards

**PART 1**

## Limit values for Group A pollutants

**Benzene**

	<i>Averaging period</i>	<i>Limit value</i>	<i>Attainment date</i>
Limit value for the protection of human health	Calendar year	5 µg/m <sup>3</sup>	1 January 2010

**Carbon monoxide**

For the purposes of this table, the maximum daily 8-hour mean concentration will be selected by examining 8-hour running averages, calculated from hourly data and updated each hour. Each 8-hour average so calculated will be assigned to the day on which it ends, i.e. 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.

	<i>Averaging period</i>	<i>Limit value</i>
Limit value for the protection of human health	Maximum daily 8-hour mean	10 mg/m <sup>3</sup>

**Lead**

	<i>Averaging period</i>	<i>Limit value</i>
Annual limit value for the protection of human health	Calendar year	0.5 µg/m <sup>3</sup>

**Nitrogen dioxide (NO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>)**

	<i>Averaging period</i>	<i>Limit value</i>	<i>Attainment date</i>
Hourly limit value for the protection of human health	1 hour	200 µg/m <sup>3</sup> NO <sub>2</sub> , not to be exceeded more than 18 times a calendar year	1 January 2010
Annual limit value for the protection of human health	Calendar year	40 µg/m <sup>3</sup> NO <sub>2</sub>	1 January 2010
Annual limit value for the protection of vegetation	Calendar year	30 µg/m <sup>3</sup> NO <sub>x</sub>	

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## PM<sub>10</sub>

	<i>Averaging period</i>	<i>Limit value</i>
24-hour limit value for the protection of human health	24 hours	50 µg/m <sup>3</sup> PM <sub>10</sub> , not to be exceeded more than 35 times a calendar year
Annual limit value for the protection of human health	Calendar year	40 µg/m <sup>3</sup> PM <sub>10</sub>

## Sulphur dioxide

	<i>Averaging period</i>	<i>Limit value</i>
Hourly limit value for the protection of human health	1 hour	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a calendar year
Daily limit value for the protection of human health	24 hours	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a calendar year
Limit value for the protection of ecosystems	Calendar year and winter (1 October to 31 March)	20 µg/m <sup>3</sup>

## PART 2

### Margins of tolerance for benzene and nitrogen dioxide

<i>Start of period during which the margin applies</i>	<i>End of period during which the margin applies</i>	<i>Benzene</i>	<i>Nitrogen dioxide (hourly limit value for the protection of human health)</i>	<i>Nitrogen dioxide (annual limit value for the protection of human health)</i>
Coming into force of these Regulations	31 December 2007	3 µg/m <sup>3</sup>	30 µg/m <sup>3</sup>	6 µg/m <sup>3</sup>
1 January 2008	31 December 2008	2 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>	4 µg/m <sup>3</sup>
1 January 2009	31 December 2009	1 µg/m <sup>3</sup>	10 µg/m <sup>3</sup>	2 µg/m <sup>3</sup>

## PART 3

### Target values for Group B pollutants

1. The target values in the table below in each case relate to the total content of the relevant pollutant in the PM<sub>10</sub> fraction averaged over one calendar year.
2. The attainment date for each of these target values is 31 December 2012.

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Pollutant	Target value
Arsenic	6 ng/m <sup>3</sup>
Benzo(a)pyrene	1 ng/m <sup>3</sup>
Cadmium	5 ng/m <sup>3</sup>
Nickel	20 ng/m <sup>3</sup>

## PART 4

### Target values and long-term objectives for ozone

#### 3. In this Part—

- (a) all values must be expressed in µg/m<sup>3</sup>;
- (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 (µg/m<sup>3</sup>) hours) means the sum of the difference between hourly concentrations greater than 80 µg/m<sup>3</sup> (which equals 40 parts per billion) and 80 µg/m<sup>3</sup> over a given period using only the 1 hour values measured between 8:00 and 20:00 Central European Time each day; and
- (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 2 of Schedule 12.

#### Target values

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

- (1) 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.
- (2) The maximum daily 8-hour mean concentration will be selected by examining 8-hour running averages, calculated from hourly data and updated each hour. Each 8-hour average so calculated will 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 the day.
- (3) 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.

## Long-term objectives

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

## SCHEDULE 2

Regulation 8(4)

### Information to be included in an Improvement Plan

1. Localisation of excess pollution—
  - (a) region;
  - (b) city (map); and
  - (c) measuring station (map, geographical coordinates).
2. General information—
  - (a) type of zone (city, industrial or rural area);
  - (b) estimate of the polluted area (km<sup>2</sup>) and of the population exposed to the pollution;
  - (c) useful climatic data;
  - (d) relevant data on topography; and
  - (e) 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—
  - (a) concentrations observed over previous years (before the implementation of the improvement measures);
  - (b) concentrations measured since the beginning of the project; and
  - (c) techniques used for the assessment.
5. Origin of pollution—
  - (a) list of the main emission sources responsible for pollution (map);
  - (b) total quantity of emissions from these sources (tonnes/year); and
  - (c) information on pollution imported from other regions.
6. Analysis of the situation—
  - (a) details of those factors responsible for the excess (transport, including cross-border transport, formation); and
  - (b) details of possible measures for improvement of air quality.
7. Details of those measures or projects for improvements which existed prior to 21 November 1996—
  - (a) local, regional, national and international measures; and
  - (b) observed effects of these measures.

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8. Details of those measures or projects adopted with a view to reducing pollution following 21 November 1996—
- listing and description of all the measures set out in the project;
  - timetable for implementation; and
  - 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 and work used to supplement information required by this Schedule.

### SCHEDULE 3

Regulation 11(6)

#### Alert and information thresholds

### PART 1

#### Alert thresholds for nitrogen dioxide and sulphur dioxide

Nitrogen dioxide	400 $\mu\text{g}/\text{m}^3$ measured over three consecutive hours at locations representative of air quality over at least 100 $\text{km}^2$ or an entire zone or agglomeration, whichever is the smaller
Sulphur dioxide	500 $\mu\text{g}/\text{m}^3$ measured over three consecutive hours at locations representative of air quality over at least 100 $\text{km}^2$ or an entire zone or agglomeration, whichever is the smaller

### PART 2

#### Alert and information thresholds for ozone

	<i>Parameter</i>	<i>Threshold</i>
Alert threshold	1-hour average <sup>(1)</sup>	240 $\mu\text{g}/\text{m}^3$
Information threshold	1-hour average	180 $\mu\text{g}/\text{m}^3$

(1) For the purposes of regulation 11 (action plans), exceedance of the 1-hour average in respect of the alert threshold is to be measured or predicted for three consecutive hours.

## SCHEDULE 4

Regulation 13(5)

## Assessment thresholds

**PART 1**

## Assessment thresholds for Group A pollutants

**Benzene**

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

**Carbon monoxide**

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

**Lead**

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

**Nitrogen dioxide (NO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>)**

	<i>Hourly limit value for the protection of human health (NO<sub>2</sub>)</i>	<i>Annual limit value for the protection of human health (NO<sub>2</sub>)</i>	<i>Annual limit value for the protection of vegetation (NO<sub>x</sub>)</i>
Upper assessment threshold	70% of limit value (140 µg/m <sup>3</sup> ), not to be exceeded more than 18 times in any calendar year	80% of limit value (32 µg/m <sup>3</sup> )	80% of limit value (24 µg/m <sup>3</sup> )
Lower assessment threshold	50% of limit value (100 µg/m <sup>3</sup> ), not to be exceeded more than 18 times in any calendar year	65% of limit value (26 µg/m <sup>3</sup> )	65% of limit value (19.5 µg/m <sup>3</sup> )

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### PM<sub>10</sub>

	<i>24-hour average</i>	<i>Annual average</i>
Upper assessment threshold	60% of limit value (30 µg/m <sup>3</sup> ), not to be exceeded more than 7 times in any calendar year	70% of limit value (14 µg/m <sup>3</sup> )
Lower assessment threshold	40% of limit value (20 µg/m <sup>3</sup> ), not to be exceeded more than 7 times in any calendar year	50% of limit value (10 µg/m <sup>3</sup> )

### Sulphur dioxide

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

## PART 2

### Assessment thresholds for Group B pollutants

#### Arsenic

Upper assessment threshold	60% of target value (3.6 ng/m <sup>3</sup> )
Lower assessment threshold	40% of target value (2.4 ng/m <sup>3</sup> )

#### Benzo(a)pyrene

Upper assessment threshold	60% of target value (0.6 ng/m <sup>3</sup> )
Lower assessment threshold	40% of target value (0.4 ng/m <sup>3</sup> )

#### Cadmium

Upper assessment threshold	60% of target value (3 ng/m <sup>3</sup> )
Lower assessment threshold	40% of target value (2 ng/m <sup>3</sup> )

## Nickel

Upper assessment threshold	70% of target value (14 ng/m <sup>3</sup> )
Lower assessment threshold	50% of target value (10 ng/m <sup>3</sup> )

## PART 3

### Determination of when assessment thresholds are exceeded

1. 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. 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 concentrations may be combined with results obtained from emission inventories and modelling to determine exceedances of the upper and lower assessment thresholds.

### SCHEDULE 5

Regulation 15(1)(b) Regulation 19(4)(b)  
Regulation 20(3)(b)

### Location of sampling points

## PART 1

### Macroscale siting for Group A pollutants

#### Sampling points for the protection of human health

1. Sampling points directed at the protection of human health should be sited to provide data on—
  - (a) 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; and
  - (b) concentrations in other areas within the zones which are representative of the exposure of the general population.
2. 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<sup>2</sup> at traffic-orientated sites and of several square kilometres at urban-background sites.
3. Sampling points should also, where possible, be representative of similar locations not in their immediate vicinity.
4. Account should be taken of the need to locate sampling points on islands, where that is necessary for the protection of human health.

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### Protection of ecosystems and vegetation

5. 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<sup>2</sup>. 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.

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

## PART 2

### Macroscale siting for Group B pollutants

7. The sites of sampling points should be selected in such a way as to provide data on—
- the areas within zones where the population is likely to be directly or indirectly exposed to the highest concentrations averaged over a calendar year;
  - concentrations in other areas within zones which are representative of the exposure of the general population;
  - deposition rates representing the indirect exposure of the population through the food chain.

8. Sampling points should in general be sited so as to avoid measuring very small micro-environments in their immediate vicinity. As a guideline, a sampling point should be representative of air quality in surrounding areas of no less than 200 m<sup>2</sup> at traffic-orientated sites, at least 250 m × 250 m at industrial sites, where feasible, and several square kilometres at urban-background sites.

9. Where the objective is to assess background levels the sampling site should not be influenced by agglomerations or industrial sites in its vicinity, i.e. sites closer than a few kilometres.

10. Where contributions from industrial sources are to be assessed, at least one sampling point must be installed downwind of the source in the nearest residential area. Where the background concentration is not known, an additional sampling point must be situated within the main wind direction. In particular, where regulation 9(1)(a) applies, the sampling points should be sited such that the application of the measures referred to at regulation 7(2)(b) can be monitored.

11. Sampling points should also, where possible, be representative of similar locations not in their immediate vicinity. Where appropriate, they should be co-located with sampling points for PM<sub>10</sub>.

## PART 3

### Macroscale siting for ozone

12. Sampling points for ozone must be located in accordance with the considerations set out in the following table—

<i>Type of station</i>	<i>Objective of measurement</i>	<i>Representativeness<sup>(1)</sup></i>	<i>Macroscale siting criteria</i>
Urban	<i>Protection of human health: to assess the exposure of the</i>	A few km <sup>2</sup>	Away from the influence of local emissions such as

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

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<i>Type of station</i>	<i>Objective of measurement</i>	<i>Representativeness<sup>(1)</sup></i>	<i>Macroscale siting criteria</i>
	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		traffic, petrol stations etc.; vented locations where the urban population to 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
Suburban	<i>Protection of human health and vegetation:</i> 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 <sup>2</sup>	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 sub urban stations also upwind of the area of maximum emissions, in order to determine the regional background levels of ozone
Rural	<i>Protection of human health and vegetation:</i> to assess the exposure of population, crops and natural ecosystems to sub-regional scale ozone concentrations	Sub-regional levels (a few km <sup>2</sup> )	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

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

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<i>Type of station</i>	<i>Objective of measurement</i>	<i>Representativeness<sup>(1)</sup></i>	<i>Macroscale siting criteria</i>
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 <sup>2</sup> )	local emissions such as industrial installations and roads; at open area sites, but not on higher mountain-tops  Stations 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

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

13. For rural and background stations, consideration should be given, where appropriate, to co-ordination with the monitoring requirements of Commission Regulation 1091/94(11) concerning protection of the Community’s forests against atmospheric pollution.

## PART 4

### Microscale siting

14. The following guidelines should be met as far as practicable—

- (a) 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);
- (b) 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;

(11) OJ No L 125, 18.05.94, p.1.

- (c) 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;
  - (d) the sampler's exhaust outlet should be positioned so that recirculation of exhaust air to the sampler inlet is avoided;
  - (e) in relation to the location of traffic orientated samplers—
    - (i) 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,
    - (ii) for nitrogen dioxide and carbon monoxide, inlets should be no more than 5 m from the kerbside, and
    - (iii) for PM<sub>10</sub>, lead, benzene and Group B pollutants, inlets should be sited so as to be representative of air quality near to the building line;
  - (f) for ozone, the inlet probe should be positioned well away from such sources as furnaces and incineration flues and more than 10 m from the nearest road, with distance increasing as a function of traffic intensity;
  - (g) for deposition measurements in rural background areas as respects Group B pollutants and other pollutants falling within regulations 19 and 20, the European Monitoring and Evaluation of Pollutants guidelines and criteria should be applied as far as practicable.
- 15.** 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;
  - (h) planning requirements.

## PART 5

### **Documentation and review of site selection**

**16.** 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.

**17.** For ozone, this requires 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.

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## SCHEDULE 6

Regulation 15(2)

## Minimum number of sampling points

**PART 1**

## Group A pollutants: human health-based limit values and alert thresholds

1. This Part sets out the minimum number of sampling points for fixed measurement of Group A pollutants 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.

**Diffuse sources**

<i>Population of zone (thousands)</i>	<i>If concentrations exceed the upper assessment threshold<sup>(1)</sup></i>	<i>If maximum concentrations are between the upper and lower assessment thresholds</i>	<i>For nitrogen dioxide and sulphur dioxide in agglomerations where maximum concentrations are below the lower assessment thresholds</i>
0—249	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 or more	10	5	3

(1) For NO<sub>2</sub> and PM<sub>10</sub> to include at least one urban-background station and one traffic-orientated station; this requirement also applies to benzene and carbon monoxide provided that it does not increase the number of sampling points.

**Point sources**

2. 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.

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## PART 2

Group A pollutants: limit values for the protection of ecosystems or vegetation

3. The Table below sets out the 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.

<i>If maximum concentrations exceed the upper assessment threshold</i>	<i>If maximum concentrations are between the upper and lower assessment thresholds</i>
1 station every 20,000 km <sup>2</sup>	1 station every 40,000 km <sup>2</sup>

4. 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 3

Group B pollutants

5. This Part sets out the minimum number of sampling points for fixed measurement of Group B pollutants to assess compliance with target values for the protection of human health in zones where fixed measurement is the sole source of information.

### Diffuse sources

<i>Population of zone (thousands)</i>	<i>If maximum concentrations exceed the upper assessment threshold<sup>(1)</sup></i>		<i>If maximum concentrations are between the upper and lower assessment thresholds</i>	
	<i>Arsenic, Cadmium, Nickel</i>	<i>Benzo(a) pyrene</i>	<i>Arsenic, Cadmium, Nickel</i>	<i>Benzo(a)pyrene</i>
0—749	1	1	1	1
750—1,999	2	2	1	1
2,000—3,749	2	3	1	1
3,750—4,749	3	4	2	2
4,750—5,999	4	5	2	2
=<6,000	5	5	2	2

(1) To include at least one urban-background station and for benzo(a)pyrene also one traffic-oriented station provided this does not increase the number of sampling points.

### Point sources

6. For the assessment of pollution in the vicinity of point sources, the number of sampling points for fixed measurement should be determined taking into account emission densities, the likely distribution patterns of ambient air pollution and potential exposure of the population. The sampling points should be sited such that the application of the measures referred to at regulation 7(2)(b) can be monitored.

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## PART 4

### Ozone

7. Except insofar as otherwise provided by regulation 15(5) or (6), the 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 is set out in the table below.

<i>Population of zone (thousands)</i>	<i>Agglomerations (urban and suburban)<sup>(1)</sup></i>	<i>Other zones (suburban and rural)<sup>(1)</sup></i>	<i>Rural background</i>
0—249		1	1 station/50,000 km <sup>2</sup> as an average density over all zones in Wales <sup>(2)</sup>
250—499	1	2	1 station/50,000 km <sup>2</sup> as an average density over all zones in Wales <sup>(2)</sup>
500—999	2	2	1 station/50,000 km <sup>2</sup> as an average density over all zones in Wales <sup>(2)</sup>
1,000—1,499	3	3	1 station/50,000 km <sup>2</sup> as an average density over all zones in Wales <sup>(2)</sup>
1,500—1,999	3	4	1 station/50,000 km <sup>2</sup> as an average density over all zones in Wales <sup>(2)</sup>
2,000—2,749	4	5	1 station/50,000 km <sup>2</sup> as an average density over all zones in Wales <sup>(2)</sup>
2,750—3,749	5	6	1 station/50,000 km <sup>2</sup> as an average density over all zones in Wales <sup>(2)</sup>
3,750 or more	1 additional station per 2 million inhabitants	1 additional station per 2 million inhabitants	1 station/50,000 km <sup>2</sup> as an average density

(1) 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.

(2) 1 station per 25,000 km<sup>2</sup> for complex terrain is recommended.

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<i>Population of zone (thousands)</i>	<i>Agglomerations (urban and suburban)<sup>(1)</sup></i>	<i>Other zones (suburban and rural)<sup>(1)</sup></i>	<i>Rural background  over all zones in Wales<sup>(2)</sup></i>
(1)	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.		
(2)	1 station per 25,000 km <sup>2</sup> for complex terrain is recommended.		

## PART 5

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

8. In cases where zones attain 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.

9. The number of stations located in agglomerations and other zones may be reduced to one-third of the number specified in the Table in Part 4. 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.

10. The number of rural background stations should be 1 per 100,000 km<sup>2</sup>.

## SCHEDULE 7

Regulation 15(6)(b) Regulation 16(1)

### Requirements for assessment methods other than fixed measurement

## PART 1

### Group A pollutants

1. The following information must be compiled for zones within which sources other than fixed measurement are employed to supplement information from fixed measurement or as the sole means of air quality assessment—

- (a) a description of assessment activities carried out;
- (b) the specific methods used, with references to descriptions of the method;
- (c) the sources of data and information;
- (d) a description of results, including uncertainties 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 the case 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;

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- (e) 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.
- 2. Where possible, maps must be compiled showing concentration distributions within each zone.

## **PART 2**

### **Group B pollutants**

#### **Requirements for air quality models**

3. Where an air quality model is used for assessment, references to descriptions of the model and information on the uncertainty must be compiled. The uncertainty for modelling is defined as the maximum deviation of the measured and calculated concentration levels, over a full year, without taking into account the timing of the events.

#### **Requirements for objective estimation techniques**

- 4. Where objective estimation techniques are used, the uncertainty must not exceed 100%.

#### **Standardisation**

5. For substances to be analysed in the PM<sub>10</sub> fraction, the sampling volume refers to ambient conditions.

## **PART 3**

### **Ozone and ozone precursor substances**

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

- (a) a description of the assessment activities carried out;
- (b) specific methods used, with references to descriptions of the method;
- (c) sources of data and information;
- (d) 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;
- (e) 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.

7. The National Assembly must ensure that maps are compiled showing concentration distributions within each zone.

## SCHEDULE 8

Regulation 16(2) Regulation 17(2)(d)  
Regulation 19(6) Regulation 20(4)

## Data quality objectives

**PART 1**Group A pollutants and PM<sub>2.5</sub>**Group A pollutants (other than benzene and carbon monoxide) and PM<sub>2.5</sub>**

1. Data-quality objectives are set out in the table and paragraphs below 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—

	<i>Sulphur dioxide, nitrogen dioxide and oxides of nitrogen</i>	<i>Lead, PM<sub>2.5</sub> and PM<sub>10</sub></i>
<i>Continuous measurement</i>		
Accuracy	15%	25%
Minimum data capture	90%	90%
<i>Indicative measurement</i>		
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)
<i>Modelling</i>		
Accuracy		
Hourly averages	50%-60%	
Daily averages	50%	
Annual averages	30%	50%
<i>Objective estimation</i>		
Accuracy	75%	100%

2. The accuracy of the measurement is defined as laid down in the “Guide to the Expression of Uncertainty of Measurements” (ISO 1993)(12) or in ISO 5725-1 “Accuracy (trueness and precision) of measurement methods and results” (ISO 1994). The percentages in the table are given for individual measurements averaged, over the period considered, by the limit value, for a

(12) Copies of International Standards Organisation publications may be purchased from the British Standards Institution ('BSI') Sales Department either by telephone (0208 996 9001) or by post from the BSI, Standards House, 389 Chiswick High Road, London W4 4AL, <http://www.bsi-global.com>

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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.

3. 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

4. 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.

5. The National Assembly may allow for random measurements to be made instead of continuous measurements for lead, PM<sub>2.5</sub> and PM<sub>10</sub> 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.

### **Benzene and carbon monoxide**

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

	<i>Benzene</i>	<i>Carbon monoxide</i>
<i>Fixed measurements</i>		
Uncertainty	25%	15%
Minimum data capture	90%	90%
Minimum time coverage	35% at urban background and traffic sites (distributed over the year to be representative of various conditions for climate and traffic); 90% at industrial sites	
<i>Indicative measurements</i>		
Uncertainty	30%	25%
Minimum data capture	90%	90%
Minimum time coverage	14% (one day's measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)	14% (one measurement a week at random, evenly distributed over the year, or 8 weeks evenly distributed over the year)
<i>Modelling</i>		
Uncertainty:		
Eight-hour averages		50%
Annual averages	50%	
<i>Objective estimation</i>		
Uncertainty	100%	75%

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7. The uncertainty (on a 95% confidence interval) of the assessment methods must be evaluated in accordance with the “Guide to the Expression of Uncertainty of Measurements” (ISO 1993) or the methodology of ISO 5725:1994. 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.

8. 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.

9. 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.

10. 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 over the year.

## PART 2

### Group B pollutants, polycyclic aromatic hydrocarbons and total gaseous mercury

11. The data quality objectives set out in the table and paragraphs below are provided to guide quality assurance programmes—

	<i>Benzo(a) pyrene</i>	<i>Arsenic, cadmium and nickel</i>	<i>Polycyclic aromatic hydrocarbons and total gaseous mercury</i>	<i>Total deposition</i>
<i>Uncertainty</i>				
Fixed and indicative measurements	50%	40%	50%	70%
Modelling	60%	60%	60%	60%
<i>Minimum data capture</i>	90%	90%	90%	90%
<i>Minimum time coverage</i>				
Fixed measurements	33%	50%		
Indicative measurements <sup>(1)</sup>	14%	14%	14%	33%
<b>(1)</b> Indicative measurement being measurements which are performed at reduced regularity but fulfil the other data quality objectives.				

12. The uncertainty (expressed at a 95 % confidence level) of the methods used for the assessment of ambient air concentrations must be evaluated in accordance with the CEN Guide to the Expression

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of Uncertainty in Measurement (ENV 13005-1999)(13), the methodology of ISO 5725:1994, and the guidance provided in the CEN Report, “Air quality — Approach to uncertainty estimation for ambient air reference measurement methods” (CR 14377:2002E). The percentages for uncertainty in the above table are given for individual measurements, which are averaged over typical sampling times, for a 95 % confidence interval. The uncertainty of the measurements should be interpreted as being applicable in the region of the appropriate target value. Fixed and indicative measurements must be evenly distributed over the year in order to avoid skewing of results.

**13.** The requirements for minimum data capture and time coverage do not include losses of data due to regular calibration or normal maintenance of the instrumentation. Twenty-four-hour sampling is required for the measurement of benzo(a)pyrene and other polycyclic aromatic hydrocarbons. With care, individual samples taken over a period of up to one month may be combined and analysed as a composite sample, provided the method ensures that the samples are stable for that period. The three congeners benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene where they are difficult to resolve analytically. In such cases they can be reported as sum. Twenty-four hour sampling is also recommended as advisable for the measurement of arsenic, cadmium and nickel concentrations. Sampling must be spread evenly over the weekdays and the year. For the measurement of deposition rates monthly, or weekly, samples throughout the year are recommended.

**14.** The National Assembly may allow for use of wet only instead of bulk sampling if it can be demonstrated to its satisfaction that the difference between them is within 10 %. Deposition rates should generally be given as  $\mu\text{g}/\text{m}^2$  per day.

**15.** The National Assembly may apply a minimum time coverage lower than indicated in the table, but not lower than 14 % for fixed measurements and 6 % for indicative measurements provided that it is satisfied that it can be demonstrated that the 95 % expanded uncertainty for the annual mean, calculated from the data quality objectives in the table according to ISO 11222:2002 — “Determination of the uncertainty of the time average of air quality measurements” will be met.

## PART 3

### Ozone and nitrogen dioxide assessed at ozone sampling points

**16.** The data quality objectives set out in the table and paragraphs below, for allowed uncertainty of assessment methods, and of minimum time coverage and of data capture of measurement, are provided to guide quality-assurance programmes—

<i>For ozone, NO and NO2 assessed at ozone sampling points</i>	
<i>Continuous fixed measurement</i>	
Uncertainty of individual measurements	15%
Minimum data capture	90% during summer; 75% during winter
<i>Indicative measurement</i>	
Uncertainty of individual measurements	30%
Minimum data capture	90%
Minimum time coverage	>10% during summer
<i>Modelling</i>	

(13) European Committee for Standardisation (“CEN”) publication; the address of CEN is 36, Rue de Stassart, B-1050, Brussels, Belgium <http://www.cenorm.be>

<i>For ozone, NO and NO2 assessed at ozone sampling points</i>	
Uncertainty	
1 hour averages (daytime)	50%
8 hours daily maximum	50%
<i>Objective estimation</i>	
Uncertainty	75%

17. 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) 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.

18. 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.

19. “Time coverage” (“*yr amser a gwmpesir*”) means the percentage of time considered for settling the threshold value during which the pollutant is measured.

20. “Data capture” (“*y data a gipir*”) 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.

SCHEDULE 9

Regulation 16(3)(a) Regulation 19(6)  
Regulation 20(4)

Reference methods

**PART 1**

Group A pollutants

	<i>Reference method</i>
Sampling and analysis of benzene	A pumped sampling method on a sorbent cartridge followed by gas chromatographic determination
Analysis of carbon monoxide	A non-dispersive infra-red spectrometric (NDIR) method
Sampling of lead	The same reference method as for PM <sub>10</sub>
Analysis of lead	ISO 9855: 1993 Ambient air — Determination of the particulate lead content of aerosols

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	<i>Reference method</i>
	collected in filters. Atomic absorption spectroscopy method
Analysis of nitrogen dioxide and oxides of nitrogen	ISO 7996: 1985 Ambient air — determination of the mass concentrations of nitrogen oxides — chemiluminescence method
Sampling and measurement of PM <sub>10</sub>	The reference method for the sampling and measurement of PM <sub>10</sub> is that described in EN 12341 “Air Quality — Field Test Procedure to Demonstrate Reference Equivalence of Sampling Methods for the PM <sub>10</sub> fraction of particulate matter”. The measurement principle is based on the collection on a filter of the PM <sub>10</sub> fraction of ambient particulate matter and the gravimetric mass determination
Analysis of sulphur dioxide	ISO/FDIS 10498 (Standard in draft) Ambient air — determination of sulphur dioxide — ultraviolet fluorescence method

## PART 2

### Group B pollutants in ambient air

	<i>Reference method</i>
Sampling and analysis of Group B pollutants other than benzo(a)pyrene in ambient air	A method based on manual PM <sub>10</sub> sampling equivalent to EN 12341, followed by digestion of the samples and analysis by Atomic Absorption Spectrometry or ICP Mass Spectrometry
Benzo(a)pyrene concentrations in ambient air	A method based on manual PM <sub>10</sub> sampling equivalent to EN 12341

## PART 3

### Ozone

	<i>Reference method</i>
Analysis of ozone	UV photometric method (ISO FDIS 13964 or equivalent)
Calibration of ozone instruments	The Reference UV photometer method (ISO FDIS 13964, VDI 2468, B1.6 or equivalent)

## PART 4

### Other reference methods

	<i>Reference method</i>
Sampling and analysis of polycyclic aromatic hydrocarbons in ambient air	A method based on manual PM <sub>10</sub> sampling equivalent to EN 12341
Sampling and analysis of mercury in ambient air	An automated method based on Atomic Absorption Spectrometry or Atomic Fluorescence Spectrometry
Sampling and analysis of the deposition of Group B pollutants, mercury, and polycyclic aromatic hydrocarbons	A method based on the exposition of cylindrical deposit gauges with standardised dimensions

### SCHEDULE 10

Regulation 18

### Ozone precursor substances

#### Objectives

1. 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.

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

#### Substances

3. Measurements of ozone precursor substances must include at least nitrogen oxides, and appropriate volatile organic compounds. For the purposes of this Schedule, “volatile organic compounds” 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.

4. A list of volatile organic compounds recommended for measurement by Directive [2002/3/EC\(14\)](#) is given in the table 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

(14) A full reference for this Directive is given at regulation 2(2)(d).

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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

5. The reference method for the analysis of oxides of nitrogen is ISO 7996:1985, Ambient air — determination of the mass concentrations of nitrogen oxides — chemiluminescence method.

### Monitoring sites

6. Measurements should be taken in particular in urban and suburban areas at any monitoring site considered appropriate with regard to the monitoring objectives in this Schedule.

## SCHEDULE 11

Regulation 24(2) and (3)

Public information where alert or information thresholds are exceeded

### PART 1

#### Alert thresholds for nitrogen dioxide and sulphur dioxide

1. In cases where the alert thresholds for nitrogen dioxide or sulphur dioxide are exceeded, the information to be made available to the public should include at least—

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

### PART 2

#### Alert and information thresholds for ozone

2. In cases where either the information threshold or the alert threshold for ozone—

- (a) is exceeded; or
- (b) is predicted to be exceeded,

the details set out in paragraphs 3 to 6 must, as a minimum, be made available to the public on a sufficiently large scale.

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3. 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.
4. 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.
5. 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.
6. Information provided under this Schedule must 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 12

Regulation 29

Collation of information and criteria for aggregating data and calculating statistical parameters

### PART 1

#### Information to be submitted to the Commission

1. The following information on ozone concentrations must be obtained and collated—

	<i>Type of station</i>	<i>Level</i>	<i>Averaging / accumulation time</i>	<i>Provisional data for each month from April to September</i>	<i>Report for each year</i>
Information threshold	Any	180µg/m <sup>3</sup>	1 hour	For each day with any exceedance: date, total hours of, exceedance,	For each day with any exceedance: date, total hours of, exceedance,

(1) Maximum daily 8-hour mean.

(2) In this table, “AOT40” has the same meaning as in paragraph 3(d) of Part 4 of Schedule 1.

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	<i>Type of station</i>	<i>Level</i>	<i>Averaging / accumulation time</i>	<i>Provisional data for each month from April to September</i>	<i>Report for each year</i>
				maximum 1-hour ozone and related NO2 values, when required	maximum 1-hour ozone and related NO2 values, when required
				Monthly 1-hour maximum ozone	
Alert threshold	Any	240µg/m <sup>3</sup>	1 hour	For each day with any exceedance: date, total hours of exceedance, maximum 1-hour ozone and related NO2 values, when required	For each day with any exceedance: date, total hours of exceedance, maximum 1-hour ozone and related NO2 values, when required
Health protection	Any	120µg/m <sup>3</sup>	8 hours	For each day with any exceedance: date, 8 hours maximum <sup>(1)</sup>	For each day with any exceedance: date, 8 hours maximum <sup>(1)</sup>
Vegetation protection	Suburban, rural, rural background	AOT40 <sup>(2)</sup> = 6,000 µg/m <sup>3</sup> .h	1 hour, accumulated from May to June		Value
Forest protection	Suburban, rural, rural background	AOT40 <sup>(2)</sup> = 20,000 µg/m <sup>3</sup> .h	1 hour, accumulated from April to September		Value
Materials	Any	40 µg/m <sup>3</sup>	1 year		Value

(1) Maximum daily 8-hour mean.

(2) In this table, “AOT40” has the same meaning as in paragraph 3(d) of Part 4 of Schedule 1.

2. The National Assembly must also ensure that the following information is collated—
- (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<sup>3</sup> 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.

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3. Data compiled in monthly reports will be considered provisional and must be updated where necessary in subsequent submissions.

## PART 2

### Criteria for aggregating data and calculating statistical parameters

4. In this Part, percentiles are to be calculated using the method specified in Council Decision 97/101/EC(15) establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within member States.

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

<i>Parameter</i>	<i>Required proportion of valid data</i>
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 (18 8 hours per day)
AOT40	90% of the 1-hour values over the time period defined for calculating the AOT40 value <sup>(1)</sup>
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)

(1) In cases where all possible measured data are not available, the following factor must be used to calculate AOT40 values:  $AOT40 \text{ (estimate)} = AOT40 \text{ measured} \times (\text{total possible number of hours} \div \text{number of measured hourly values})$ . The reference in this formula to the total possible number of hours is to the 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).

(15) OJ L 35, 05.02.97, p.14.

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## SCHEDULE 13

Regulation 30

## Revocations

<i>Regulations revoked</i>	<i>Reference</i>	<i>With effect from</i>
The Air Quality Limit Values (Wales) (Amendment) Regulations 2005	<a href="#">S.I. 2005/1157 (W.74)</a>	15 March 2007
The Air Quality (Ozone) (Wales) Regulations 2003	<a href="#">S.I. 2003/1848 (W.198)</a>	15 March 2007
The Air Quality Limit Values (Wales) Regulations 2002	<a href="#">S.I. 2002/3183 (W.299)<sup>(1)</sup></a>	15 March 2007
Regulation 6 of the Air Quality Standards Regulations 1989 <sup>(2)</sup> , insofar as it applies in relation to Wales	<a href="#">S.I. 1989/317<sup>(3)</sup></a>	1 January 2010

(1) as amended by [S.I. 2005/1157 \(W.74\)](#).

(2) Regulation 6 of [S.I. 1989/317](#) has been revoked, insofar as it applies in relation to Wales, by regulation 13(2) of [S.I. 2002/3183 \(W.299\)](#) from the date specified in the third column of the above table, with the effect that the revocation will not have taken effect by the time [S.I. 2002/3183 \(W.299\)](#) is itself revoked.

(3) as amended by [S.I. 1995/3146](#) in relation to regulation 6.

## EXPLANATORY NOTE

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

These Regulations apply in relation to Wales.

These Regulations—

- (a) implement Council Directive [96/62/EC](#) on ambient air quality assessment and management (OJ No. L 296, 21.11.96, p.55);
- (b) implement Council Directive [1999/30/EC](#) relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air (OJ No. L 163, 29.06.99, p.41);
- (c) implement Directive [2000/69/EC](#) of the European Parliament and of the Council relating to limit values for benzene and carbon monoxide in ambient air (OJ No. L 313, 13.12.00, p.12);
- (d) implement Directive [2002/3/EC](#) of the European Parliament and of the Council relating to ozone in ambient air (OJ No. L 67, 09.03.02, p.14);
- (e) implement Directive [2004/107/EC](#) of the European Parliament and of the Council relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (OJ No. L 23, 26.01.05, p.3);

- (f) incorporate requirements imposed by Commission Decision [2001/744/EC](#) amending Annex V to Council Directive [1999/30/EC](#) (OJ No. L 278, 23.10.01, p.35) and Directive [2003/35/EC](#) of the European Parliament and of the Council providing for public participation in respect of the drawing-up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives [85/337/EEC](#) and [96/61/EC](#) (OJ No. L 156, 25.06.03, p.17); and
- (g) replace regulation 6 of the Air Quality Standards Regulations 1989 ([S.I. 1989/317](#)), the Air Quality Limit Values (Wales) Regulations 2002 ([S.I. 2002/3183](#)) ([W.299](#)), the Air Quality (Ozone) (Wales) Regulations 2003 ([S.I. 2003/1848](#)) ([W.198](#)) and the Air Quality Limit Values (Wales) (Amendment) Regulations 2005 ([S.I. 2005/1157](#)) ([W.74](#)), all of which are revoked by regulation 30 of, and Schedule 13 to, these Regulations.

Part 1 of these Regulations includes regulation 3, which designates the National Assembly for Wales (“the National Assembly”) as the competent authority for the purposes of article 3 (implementation and responsibilities) of Council Directive [96/62/EC](#).

Part 2 of these Regulations requires the attainment of air quality standards in respect of the concentration of various pollutants in ambient air.

For the purposes of Part 2, the National Assembly is required to divide Wales into zones within which the necessary air quality management and assessment takes place (regulation 5).

In accordance with regulation 6, limit values are imposed for “Group A” pollutants (benzene, carbon monoxide, lead, nitrogen dioxide and oxides of nitrogen, particulate matter (PM<sub>10</sub>) and sulphur dioxide); target values are imposed for “Group B” pollutants (the content of arsenic, benzo(a)pyrene, cadmium and nickel, or their compounds, within the PM<sub>10</sub> fraction); and target values and long-term objectives are imposed for ozone.

Chapter 2 of Part 2 sets out the measures the National Assembly is required to take in order to ensure attainment of the relevant standards. The measures ordinarily required are those set out in regulation 7. In relation to benzene or nitrogen dioxide, where concentrations exceed the limit value plus the margin of tolerance specified, the National Assembly is required by regulation 8(2) to prepare and implement an improvement plan. The National Assembly is also required to prepare and implement an improvement plan by regulation 8(3) in cases where concentrations of ozone exceed the target value unless the National Assembly considers that the target value would not be attainable through proportionate measures. Finally, regulation 9 requires the National Assembly to take the measures specified in that regulation in cases where concentrations of Group B pollutants exceed the relevant target value or in cases where concentrations of ozone comply with the target value but exceed a long-term objective.

Regulation 10 requires the National Assembly to maintain compliance with the limit values and target values and, as far as the factors specified in that regulation permit, the long-term objective for ozone.

Regulation 11 requires the National Assembly to prepare and, to the extent it considers necessary, implement action plans which indicate the measures to be taken in cases where there is a risk that any limit value or the alert thresholds for nitrogen dioxide and sulphur dioxide will be exceeded. The National Assembly is also required to consider the preparation of action plans where there is a risk that the alert threshold for ozone will be exceeded.

Regulation 12 requires the National Assembly to assess the concentration of Group A pollutants, Group B pollutants and ozone within each zone.

Regulations 13 to 16 prescribe the assessment methods which are required or permitted (as the case may be) and the detailed requirements in relation to each method (for instance, requirements as to sampling points for fixed measurement).

In Part 3 of these Regulations, regulations 17 to 19 require the National Assembly to monitor or measure, respectively, PM<sub>2.5</sub>, ozone precursor substances and certain polycyclic aromatic

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hydrocarbons. Regulation 20 requires the taking of indicative measurements of the concentration and deposition of Group B pollutants, polycyclic aromatic hydrocarbons and mercury.

In Part 4 of these Regulations, regulations 21 to 25 require the National Assembly to disseminate up-to-date information to the public, including organisations representing relevant public interests. Regulation 26 requires the production of an annual report for ozone and regulation 27 requires action and improvement plans, and information as to their implementation, to be made available. Regulation 28 requires the National Assembly to ensure that the public can contribute to the development, modification and review of improvement plans.

In Part 5 of these Regulations, regulation 29 requires the National Assembly to obtain and collate data and regulation 30 provides for the repeal of Regulations that are superseded by these Regulations.