

**L.N. 415 of 2016**

**ENVIRONMENT PROTECTION ACT  
(CAP. 549)**

**Ambient Air Quality (Amendment) Regulations, 2016**

BY VIRTUE of the powers conferred by articles 54 and 55 of the Environment Protection Act, the Minister for Sustainable Development, the Environment and Climate Change, after consultation with the Environment and Resources Authority, has made the following regulations:-

**1.** (1) The title of these regulations is the Ambient Air Quality (Amendment) Regulations, 2016, and these regulations shall be read and construed as one with the Ambient Air Quality Regulations, hereinafter referred to as "the principal regulations".

Citation and scope.

(2) These regulations, jointly with the principal regulations, transpose Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury and nickel and polycyclic aromatic hydrocarbons in ambient air; Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe; and Commission Directive (EU) 2015/1480 of 28 August 2015 amending several annexes to Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council laying down the rules concerning reference methods, data validation and location of sampling points for the assessment of ambient air quality.

**2.** Schedules 1 to 13 to the principal regulations shall be respectively substituted by the following new Schedules:

Substitutes Schedules 1 to 13 to the principal regulations.

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## Schedule 1

## Data quality objectives

## A. Data quality objectives for group A pollutants and for ozone.

## I. Data quality objectives for ambient air quality assessment

	Sulphur dioxide, nitrogen dioxide and oxides of nitrogen and carbon monoxide	Benzene	Particulate matter (PM <sub>10</sub> /PM <sub>2.5</sub> ) and lead	Ozone and related NO and NO <sub>2</sub>
Fixed measurements <sup>(1)</sup>	15%	25%	25%	15%
Uncertainty				
Minimum data capture	90%	90%	90%	90% during summer, 75% during winter
Minimum time coverage:				
Urban background and traffic	-	35% <sup>(2)</sup>	-	-
Industrial sites	-	90%	-	-
Indicative measurements				
Uncertainty	25%	30%	50%	30%
Minimum data capture	90%	90%	90%	90%
Minimum time coverage	14% <sup>(4)</sup>	14% <sup>(3)</sup>	14% <sup>(4)</sup>	> 10% during summer
Modelling uncertainty				
Hourly	50%	-	-	50%
Eight-hour averages	50%	-	-	50%
Daily averages	50%	-	Not yet defined	-
Annual averages	30%	50%	50%	-
Objective estimation				
Uncertainty	75%	100%	100%	75%

(1). Random measurements instead of continuous measurements for benzene, lead and particulate matter if it can be demonstrated that the uncertainty, including the uncertainty due to random sampling, meets the quality objective of 25% and the time coverage is still larger than the minimum time coverage for indicative measurements. Random sampling must be evenly distributed over the year in order to avoid skewing of results. The uncertainty due to random sampling may be determined by the procedure laid down in ISO 11222 (2002) 'Air Quality - Determination of the Uncertainty of the Time Average of Air Quality Measurements'. If random measurements are used to assess the requirements of the PM<sub>10</sub> limit value the 90.4 percentile (to be lower than or equal to 50 µg/m<sup>3</sup>) should be evaluated instead of the number of exceedances, which is highly influenced by data coverage.

(2). Distributed over the year to be representative of various conditions for climate and traffic.

(3). One day's measurement a week at random, evenly distributed over the year, or eight weeks evenly distributed over the year.

(4). One measurement a week at random, evenly distributed over the year, or eight weeks evenly distributed over the year.

The uncertainty (expressed at a 95% confidence level) of the assessment

methods will be evaluated in accordance with the principles of the CEN Guide to the Expression of Uncertainty in Measurement (ENV 13005-1999), the methodology of ISO 5725:2004 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 averaged over the period considered by the limit value (or target value in the case of ozone), for a 95% confidence interval. The uncertainty for the fixed measurements shall be interpreted as being applicable in the region of the appropriate limit value (or target value for ozone).

The uncertainty for modelling is defined as the maximum deviation of the measured and calculated concentration levels for the 90% individual monitoring points, over the period considered, by the limit value (or target value in the case of ozone), without taking into account the timing of the events. The uncertainty for modelling shall be interpreted as being applicable in the region of the appropriate limit value (or target value in the case of ozone). The fixed measurements that have to be selected for comparison with modelling results shall be representative of the scale covered by the model.

The uncertainty for objective estimation is defined as the maximum deviation of the measured and calculated concentration levels, over the period considered, by the limit value (or target value in the case of ozone), without taking into account the timing of the events.

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

## II. Results of air quality assessment

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

- a description of the assessment activities carried out,
- the specific methods used, with reference to descriptions of the method,
- the sources of data and information,
- a description of results, including uncertainties and, in particular, the extent of any area or, if relevant, the length of road within the zone or agglomeration over which concentrations exceed any limit value, target value or long term objective plus margin of tolerance, if applicable, and of any area within which concentrations exceed the upper assessment threshold or the

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lower assessment threshold,

- the population potentially exposed to levels in excess of any limit value for protection of human health.

### III. Quality assurance for ambient air quality assessment: data validation

1. To ensure accuracy of measurements and compliance with data quality objectives laid down in Section I, the appropriate competent authorities and bodies designated pursuant to regulation 3 shall ensure the following:

- that all measurements undertaken in relation to the assessment of ambient air quality pursuant to regulations 9, 10, 11, 12, 13 and 14 and are traceable in accordance with the requirements set out in harmonised standard for testing and calibration laboratories,

- those institutions operating networks and individual stations have an established quality assurance and quality control system which provides for regular maintenance to assure continued accuracy of measuring devices. The quality system shall be reviewed as necessary and at least every five years by the relevant National Reference Laboratory,

- that a quality assurance/quality control process is established for the process of data collection and reporting and that institutions appointed for this task actively participate in the related Union-wide quality assurance programmes,

- that the National Reference Laboratory, is appointed by the competent authority or body designated pursuant to regulation 3 and is accredited for the reference methods referred to in Schedule 10, at least for those pollutants for which concentrations are above the lower assessment threshold, according to the relevant harmonised standard for testing and calibration laboratories, the reference to which has been published in the Official Journal of the European Union pursuant to Article 2(9) of Regulation (EC) No 765/2008 setting out requirements for accreditation and market surveillance. This laboratory shall also be responsible for the coordination in the Maltese territory of the Union-wide quality assurance programmes to be organised by the Commission's Joint Research Centre and shall also be responsible for coordinating, on the national level, the appropriate use of reference methods, and the demonstration of equivalence of non-reference methods. The National Reference Laboratory nominated by the competent authority pursuant to regulation 3 should also be accredited for inter-comparisons according to the relevant harmonised standard for proficiency testing,

- that the National Reference Laboratory, takes part at least every three years in Union-wide quality assurance programmes organised by the

Commission’s Joint Research Centre, If this participation produces unsatisfactory results then the national laboratory should demonstrate at the next participation in the intercomparison satisfactory remediation measures, and provide a report to the Joint Research Centre on these,

- that the National Reference Laboratory supports the work done by the European network of National Reference Laboratories set up by the Commission.

2. All reported data under Article 27 of Directive 2008/50/EC shall be deemed to be valid except data flagged as provisional.

**B. Data quality objectives for group B pollutants.**

**I. Data quality objectives**

The following data quality objectives are provided as a guide to quality assurance.

	Benzo(a)pyrene	Arsenic, cadmium and Nickel	Polycyclic aromatic hydrocarbons other than benzo(a) pyrene, total gaseous mercury	Total deposition
- Uncertainty				
Fixed and indicative measurements	50%	40%	50%	70%
Modelling	60%	60%	60%	60%
- Minimum data capture	90%	90%	90%	90%
- Minimum time coverage				
Fixed measurements <sup>(1)</sup>	33%	50%		
Indicative measurements <sup>(1)(2)</sup>	14%	14%	14%	33%
(1) Distributed over the year to be representative of various conditions for climate and anthropogenic activities.				
(2) Indicative measurement being measurements which are performed at reduced regularity but fulfil other data quality objectives.				

The uncertainty (expressed at a 95% confidence interval) of the methods used for the assessment of ambient air concentrations will be evaluated in accordance with the principles of the CEN Guide to the expression of uncertainty in measurement (ENV 13005-1999), 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 are given for individual 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

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avoid skewing of results.

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 can 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 can be difficult to resolve analytically. In such cases they can be reported as sum. 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.

The provisions on individual samples in the previous paragraph apply also to arsenic, cadmium, nickel and total gaseous mercury. Moreover, sub-sampling of PM10 filters for metals and subsequent analysis is allowed, providing there is evidence that the sub-sample is representative of the whole and that the detection sensitivity is not compromised when compared with the relevant data quality objectives. As an alternative to daily sampling, weekly sampling for metals in PM10 is allowed provided that the collection characteristics are not compromised.

Wet-only sampling can be used instead of bulk sampling if it can be demonstrated that the difference between them is within 10%. Deposition rates should be given as  $\mu\text{g}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$ .

A minimum time coverage lower than that indicated in the table above may be applied as long as it is not lower than 14% for fixed measurements and 6% for indicative measurements and provided that it can be demonstrated that the 95% expanded uncertainty for the annual mean, calculated from the data quality objectives in the table above according to ISO 11222:2002 - 'Determination of uncertainty of the time average of air quality measurements' will be met.

## II. Requirements for air quality models

Where an air quality model is used for assessment, references to descriptions of the model and information on the uncertainty shall 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 events.

## III. Requirements for objective estimation techniques

Where objective estimation techniques are used, the uncertainty shall not exceed 100%.

## IV. Standardisation

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

## Schedule 2

Determination of requirements for assessment of concentrations of group A and group B pollutants in ambient air within a zone or agglomeration

### A. Upper and lower assessment thresholds

The following upper and lower assessment thresholds apply:

#### 1. Sulphur dioxide

	Health protection	Vegetation protection
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 critical level (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 critical level (8 µg/m <sup>3</sup> )

#### 2. Nitrogen dioxide and oxides of nitrogen

	Hourly limit value for the protection of human health (NO <sub>2</sub> )	Annual limit value for the protection of human health (NO <sub>2</sub> )	Annual limit value for the protection of vegetation and natural ecosystems (NO <sub>x</sub> )
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 critical level (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 critical level (19.5 µg/m <sup>3</sup> )

#### 3. Particulate matter (PM<sub>10</sub>/PM<sub>2.5</sub>)

	24-hour average PM <sub>10</sub>	Annual average PM <sub>10</sub>	Annual average PM <sub>2.5</sub> <sup>(1)</sup>
Upper assessment threshold	70% of limit value (35 µg/m <sup>3</sup> , not to be exceeded more than 35 times in any calendar year)	70% of limit value (28 µg/m <sup>3</sup> )	70% of limit value (17 µg/m <sup>3</sup> )

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	24-hour average PM <sub>10</sub>	Annual average PM <sub>10</sub>	Annual average PM <sub>2.5</sub> <sup>(1)</sup>
Lower assessment threshold	50% of limit value (25 µg/m <sup>3</sup> , not to be exceeded more than 35 times in any calendar year)	50% of limit value (20 µg/m <sup>3</sup> )	50% of limit value (12 µg/m <sup>3</sup> )
(1) The upper assessment threshold and the lower assessment threshold for PM <sub>2.5</sub> , do not apply to measurements to assess compliance with the PM <sub>2.5</sub> exposure reduction target for the protection of human health.			

4. *Lead*

	Annual average
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> )

5. *Benzene*

	Annual average
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> )

6. *Carbon monoxide*

	Annual average
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> )

7. *Group B pollutants*

	Arsenic	Cadmium	Nickel	B(a)P
Upper assessment threshold in percent of the target value.	60% (3.6 ng/m <sup>3</sup> )	60% (3 ng/m <sup>3</sup> )	70% (14 ng/m <sup>3</sup> )	60% (0.6 ng/m <sup>3</sup> )
Lower assessment threshold in percent of the target value.	40% (2.4 ng/m <sup>3</sup> )	40% (2 ng/m <sup>3</sup> )	50% (10 ng/m <sup>3</sup> )	40% (0.4 ng/m <sup>3</sup> )

B. Determination of exceedances of upper and lower assessment thresholds

Exceedances of upper and lower assessment thresholds must be determined on the basis on 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:

- (a) at least three separate years (for group A pollutants); or
- (b) during at least three calendar years (for group B pollutants)

out of those previous five years.

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

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### Schedule 3

Location of sampling points for group A and group B pollutants and for ozone

A. General requirements for the assessment of ambient air quality for group A pollutants.

Ambient air quality shall be assessed in all zones and agglomerations with the following criteria:

Ambient air quality shall be assessed at all locations except those listed in paragraph 2, in accordance with the criteria established by Sections B and C for the location of sampling points for fixed measurement. The principles established by Sections B and C shall also apply in so far as they are relevant in identifying the specific locations in which concentration of the relevant pollutants are established where ambient air quality is assessed by indicative measurement and modelling.

Compliance with the limit values directed at the protection of human health shall not be assessed at the following locations:

- (a) any locations situated within areas where members of the public do not have access and there is no fixed habitation;
- (b) in accordance with the appropriate definition in regulation 2, on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply;
- (c) on the carriageway of roads; and on the central reservations of roads except where there is normally pedestrian access to the central reservation.

B. Macroscale siting.

Sampling points for the measurement of concentrations in ambient air of group A pollutants

1. Protection of human health

- (a) Sampling points directed at the protection of human health shall

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be sited in such a way as to provide data on the following:

- the areas within zones and agglomerations where the highest concentrations occur to which the population is likely to be directly or indirectly exposed for a period which is significant in relation to the averaging period of the limit value(s),
- levels in other areas within the zones and agglomeration which are representative of the exposure of the general population.

(b) Sampling points shall in general be sited in such a way as to avoid measuring very small micro-environments in their immediate vicinity, which means that the sampling point must be sited in such a way that the air sampled is representative of air quality for a street segment no less than 100m length at traffic-orientated sites and at least 250 m × 250 m at industrial sites where feasible;

(c) Urban background locations shall be located so that their pollution level is influenced by the integrated contribution from all sources upwind of the station. Their pollution level should not be dominated by a single source unless such a situation is typical for a large urban area. Those sampling points shall, as a general rule, be representative for several square kilometres;

(d) Where the objective is to assess rural background levels, the sampling point shall not be influenced by agglomerations or industrial sites in its vicinity. i.e. sites closer than five kilometres;

(e) Where contributions from industrial sources are to be assessed, at least one sampling point shall be installed down-wind of the source in the nearest residential area. Where background concentration is not known, an additional sampling point shall be situated within the main wind direction;

(f) Sampling points shall, where possible, also be representative of similar locations not in their immediate vicinity;

(g) Account shall be taken of the need to locate sampling points on islands where it is necessary for the protection of human health.

## 2. Protection of vegetation and natural ecosystems

Sampling points targeted at the protection of vegetation and natural ecosystems shall be sited more than 20 km away from agglomerations or more than 5 km away from other built-up areas, industrial installations or motorways or major roads with traffic counts of more than 50,000 vehicles per day, which means that a sampling point must be sited in such a way that the air sampled must 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 be representative of air quality in a less

extended area, taking account of geographical conditions or of the opportunities to protect particularly vulnerable areas.

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

II. Sampling points for the measurements of concentrations in ambient air and deposition rates of group B pollutants.

The sites of sampling points should be selected in such a way as to:

- Provide data on the areas within zones and agglomerations where the population is likely to be directly or indirectly exposed to the highest concentrations averaged over a calendar year;
- Provide data on levels in other areas within zones and agglomerations which are representative of the exposure or the general population;
- Provide data on deposition rates representing the indirect exposure of the population through the food chain.

Sampling points shall in general be sited in such a way 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 and at least 250 m × 250 m at industrial sites, where feasible and several square kilometres at urban background sites.

Where contributions from industrial sources are to be assessed, at least one sampling point shall be installed downwind of the source in the nearest residential area. Where the background concentration is not known an additional sampling point shall be situated within the main wind direction. In particular where regulation 21 applies, the sampling points should be sited such that the application of BAT can be monitored.

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>.

III. Sampling points for the assessments of ozone concentrations

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The following apply to fixed measurements:

Type of station	Objectives of measurement	Representativeness	Macroscale siting criteria
Urban	<p>Protection of human health:</p> <p>To assess the exposure of the urban population to ozone, i.e. where population density and ozone concentration are relatively high and representative of the exposure of the general population</p>	A few km <sup>2</sup>	<p>Away from the influence of local emissions such as traffic, petrol stations, etc.;</p> <p>Vented locations where well mixed levels can be measured;</p> <p>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 educational, sports or recreation facilities</p>
Suburban	<p>Protection of human health and vegetation:</p> <p>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 the vegetation are likely to be directly or indirectly exposed occur</p>	Some tens of km <sup>2</sup>	<p>At a certain distance from the area of maximum emissions, downwind following the main wind direction/directions during conditions favourable to ozone formation;</p> <p>Where population, sensitive crops or natural ecosystems located in the outer fringe of an agglomeration are exposed to high ozone levels;</p> <p>Where appropriate, some suburban stations also upwind of the area of maximum emissions such as industrial installations and roads;</p> <p>At open area sites</p>
Rural	<p>Protection of human health and vegetation:</p> <p>To assess the exposure of population, crops and natural ecosystems to sub-regional scale ozone concentrations</p>	Sub-regional levels (some hundreds of km <sup>2</sup> )	<p>Stations can be located in small settlements and/or areas with natural ecosystems, forests or crops;</p> <p>representative for ozone away from the influence of immediate local emissions such as industrial installations and roads;</p> <p>at open area sites</p>
Rural background	<p>Protection of vegetation and human health:</p> <p>To assess the exposure of crops and natural ecosystems to regional-scale ozone concentrations as well as exposure of the population</p>	Regional/national/continental levels (1000 to 10000 km <sup>2</sup> )	<p>Station located in areas with lower population density, e.g. with natural ecosystems, forests, at a distance of at least 20 km from urban and industrial areas and away from local emissions;</p> <p>avoid locations which are subject to locally enhanced formation of ground-near inversion conditions;</p> <p>coastal sites with pronounced diurnal wind cycles of local character are not recommended.</p>

Type of station	Objectives of measurement	Representativeness	Macroscale siting criteria
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(1) Sampling points should, where possible, be representative of similar locations not in their immediate vicinity.

For rural and rural background stations the location shall, where appropriate, be coordinated with the monitoring requirements of Commission Regulation (EC) No 1737/2006 of 7 November 2006 laying down detailed rules for the implementation of Regulation (EC) No 2152/2003 of the European Parliament and of the Council concerning monitoring of forests and environmental interactions in the Community.

#### C. Microscale siting.

##### I. Sampling points for the measurement of concentrations in ambient air of group A pollutants

In so far as is practicable, the following shall apply:

- the flow around the inlet sampling probe shall be unrestricted (free in an arc of at least 270° or 180° for sampling points at the building line) without any obstructions affecting the airflow in the vicinity of the inlet (normally some metres away from buildings, balconies, trees and other obstacles and at least 0,5 m from the nearest building in the case of sampling points representing air quality at the building line),

- in general, the inlet sampling point shall be between 1,5 m (the breathing zone) and 4 m above the ground. Higher siting may also be appropriate if the station is representative of a large area and any derogations should be fully documented,

- the inlet probe shall not be positioned in the immediate vicinity of sources in order to avoid the direct intake of emissions unmixed with ambient air,

- the sampler's exhaust outlet shall be positioned so that recirculation of exhaust air to the sampler inlet is avoided,

- for all pollutants, traffic-orientated sampling probes shall be at least 25 m from the edge of major junctions and no more than 10 m from the kerbside. A "major junction" to be considered here is a junction which interrupts the traffic flow and causes different emissions (stop & go) from the rest of the road.

Any deviation from the criteria listed in this Section shall be fully documented through the procedure described in Section D.

#### D. Documentation and review of site selection

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The competent authorities responsible for air quality assessment shall for all zones and agglomerations fully document the site-selection procedures and record information to support the network design and choice of location for all monitoring sites. The documentation shall include compass-point photographs of the area surrounding monitoring sites and detailed maps. The documentation shall be updated as necessary and reviewed at least every 5 years, to ensure that selection criteria, network design and monitoring site locations remain valid and optimal over time. The documentation shall be provided to the Commission within 3 months of being requested.

I. Sampling points for the measurement of concentrations in ambient air and deposition rates of group B pollutants

In so far as is practicable, the following shall apply:

- the flow around the inlet sampling probe should be unrestricted, without any obstructions affecting the airflow in the vicinity of the sampler (normally some metres away from buildings, balconies, trees and other obstacles and at least 0,5 m from the nearest building in the case of sampling points representing air quality at the building line);

- in general, the inlet sampling point should be between 1,5 m (the breathing zone) and 4 m above the ground. Higher positions (up to 8 m) may be necessary in some circumstances. Higher siting may also be appropriate if the station is representative of a large area;

- the inlet probe should not be positioned in the immediate vicinity of sources in order to avoid direct intake of emissions unmixed with ambient air;

- the sampler's exhaust outlet should be positioned so that recirculation of exhaust air to the sample inlet is avoided;

- traffic-orientated sampling points should be at least 25 metres from the edge of major junctions and at least 4 m from the centre of the nearest traffic lane; inlets should be sited so as to be representative of air quality near the building line;

- for the deposition measurements in rural background areas, the EMEP guidelines and criteria should be applied as far as practicable and where not provided for in the Annexes.

The following factors may also be taken into account in the microscale siting of the sampling points for the measurement of the concentrations in ambient air of group A and group B pollutants and deposition rates of group B pollutants:

- interfering sources

- security
- access
- availability of electrical power and telephone communications
- visibility of the site in relation to its surroundings
- safety of the public and operators
- the desirability of co-locating sampling points for different pollutants
- planning requirements.

## II. Sampling points for the measurement of concentrations in ambient air of ozone

In so far as is practicable the procedure on microscale siting in Section C of Annex III shall be followed, ensuring also that the inlet probe is 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.

### B. Documentation and review of site selection.

#### I. Group A and group B pollutants

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

#### II. Ozone

The procedures in paragraph I above shall be followed, applying proper screening and interpretation of the monitoring data in the context of the meteorological and photochemical processes affecting the ozone concentrations measured at the respective sites.

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Schedule 4

Measurements at rural background locations irrespective of concentration

A. Objectives

The main objectives of such measurements are to ensure that adequate information is made available on levels in the background. This information is essential to judge the enhanced levels in more polluted areas (such as urban background, industry related locations, traffic related locations), assess the possible contribution from long-range transport of air pollutants, support source apportionment analysis and for the understanding of specific pollutants such as particulate matter. It is also essential for the increased use of modelling also in urban areas.

B. Substances

Measurement of PM<sub>2.5</sub> must include at least the total mass concentration and concentrations of appropriate compounds to characterise its chemical composition. At least the list of chemical species given below shall be included.

SO <sub>4</sub> <sup>2-</sup>	Na <sup>+</sup>	NH <sub>4</sub> <sup>+</sup>	Ca <sup>2+</sup>	Elemental carbon (EC)
NO <sub>3</sub> <sup>-</sup>	K <sup>+</sup>	Cl <sup>-</sup>	Mg <sup>2+</sup>	Organic carbon (OC)

C. Siting

Measurements should be taken in particular in rural background areas in accordance with parts A, B and C of Schedule 3.

Schedule 5

A. Criteria for determining minimum numbers of sampling points for fixed measurements of concentrations of group A pollutants in ambient air

I. Minimum number of sampling points for fixed measurement to assess compliance with limit values for the protection of human health and alert thresholds in zones and agglomerations where fixed measurement is the sole source of information.

1. *Diffuse sources*

Population of agglomeration or zone	If maximum concentrations exceed the upper assessment threshold <sup>(1)</sup>		If maximum concentrations are between the upper and lower assessment thresholds	
(thousands)	Pollutants except PM	PM <sup>(2)</sup> (sum of PM <sub>10</sub> and PM <sub>2.5</sub> )	Pollutants except PM	PM <sup>(2)</sup> (sum of PM <sub>10</sub> and PM <sub>2.5</sub> )

0 - 249	1	2	1	1
250 - 499	2	3	1	2
500 - 749	2	3	1	2

- (1) For nitrogen dioxide, particulate matter, benzene and carbon monoxide: to include at least one urban background monitoring station and one traffic-orientated station provided this does not increase the number of sampling points. For these pollutants, the total number of urban-background stations and the total number of traffic oriented stations required under Section A(1) shall not differ by more than a factor of 2. Sampling points with exceedances of the limit value for PM<sub>10</sub> within the last three years shall be maintained, unless relocation is necessary owing to special circumstances, in particular spatial development.
- (2) Where PM<sub>2,5</sub> and PM<sub>10</sub> are measured in accordance with regulation 18 at the same monitoring station, these shall count as two separate sampling points. The total number of PM<sub>2,5</sub> and PM<sub>10</sub> sampling points in a Member State required under Section A(1), shall not differ by more than a factor of 2, and the number of PM<sub>2,5</sub> sampling points in the urban background of agglomerations and urban areas shall meet the requirements under paragraph II of Schedule 5A.

## 2. Point sources

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

II. Minimum number of sampling points for fixed continuous measurements to assess compliance with the PM<sub>2,5</sub> exposure reduction target for the protection of human health.

One sampling point per million inhabitants summed over agglomerations and additional urban areas in excess of 100,000 inhabitants shall be operated for this purpose. Those sampling points may coincide with sampling points under section A.

III. Minimum number of sampling points for fixed measurements to assess compliance with critical levels for the protection of vegetation in zones other than agglomerations.

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

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 vegetation.

B. Criteria for determining minimum numbers of sampling points for fixed measurements of concentrations of group B pollutants in ambient air

Minimum number of sampling points for fixed measurement to assess compliance with target values for the protection of human health in zones and agglomerations where fixed measurement is the sole source of information.

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1. *Diffuse sources*

Population of agglomeration or zone (thousands)	If maximum concentrations exceed the upper assessment threshold <sup>(1)</sup>		If maximum concentrations are between the upper and lower assessment thresholds	
	As, Cd, Ni	B(a)P	As, Cd, Ni	B(a)P
0 - 749	1	1	1	1

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

2. *Point sources*

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 BAT as defined by Article 2(11) of Directive 96/61/EC can be monitored.

C. Criteria for determining minimum numbers of sampling points for fixed measurements of ozone

1. Minimum number of sampling points for fixed continuous measurements to assess compliance with target values, long-term objectives and information and alert thresholds where such measurements are the sole source of information.

Population (× 1000)	Agglomeration <sup>(1)</sup>	Other zones <sup>(1)</sup>	Rural background
< 250		1	1 station/ 50,000 km <sup>2</sup> as an average density over all zones <sup>(2)</sup>
< 500	1	2	
< 1000	2	2	

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

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

II. Minimum number of sampling points for fixed measurements for zones and agglomerations attaining the long term objectives

The number of sampling points for ozone shall, in combination with other means of supplementary assessment such as air quality modelling and collocated nitrogen dioxide measurements, be sufficient to examine the trend of ozone pollution and check compliance with the long-term objectives. The number of stations located in agglomerations and other zones may be reduced to one-third of the number specified in Section A. Where information from fixed measurement stations is the sole source of information, at least one monitoring station shall be kept. If, in zones where there is supplementary assessment, the result of this is that a zone has no remaining station, coordination with the number of stations in neighbouring zones shall ensure adequate assessment of ozone concentrations

against long-term objectives. The number of rural background stations shall be one per 100 000 km<sup>2</sup>.

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## Schedule 6

### Measurement of ozone precursor substances

#### A. Objectives

The main objectives of such measurements 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 observed pollution concentrations.

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

#### B. Substances

Measurement of ozone precursor substances shall include at least nitrogen oxides (NO and NO<sub>2</sub>), and appropriate volatile organic compounds (VOC). A list of volatile organic compounds recommended for measurement is given below:

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

#### C. Siting

Measurements shall be taken in particular in urban or suburban areas at any monitoring site set up in accordance with the requirements of this Directive and considered appropriate with regard to the monitoring objectives referred to in Section A.

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## Schedule 7

## Limit values, target values and long-term objectives

A. Limit values, information and alert thresholds, critical levels for group A pollutants excluding PM<sub>2.5</sub>

## 1. Criteria

Without prejudice to Schedule 1, the following criteria shall be used for checking validity when aggregating data and calculating statistical parameters:

Parameter	Required proportion of valid data
One hour values	75% (i.e. 45 minutes)
Eight hour values	75% of values (i.e. 6 hours)
Maximum daily 8-hour mean	75% of the hourly running eight hour averages (i.e. 18 eight hour averages per day)
24-hour values	75% of the hourly averages (i.e. at least 18 hour values)
Annual mean	90% <sup>(1)</sup> of the one hour values or (if not available) 24-hour values over the year

(1) The requirements for the calculation of annual mean do not include losses of data due to the regular calibration or the normal maintenance of the instrumentation.

## II. Limit values

Averaging Period	Limit Value	Margin of Tolerance	Date by which limit value is to be met
Sulphur dioxide			
One hour	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a calendar year	150 µg/m <sup>3</sup> (43%)	- <sup>(1)</sup>
One day	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a calendar year	None	- <sup>(1)</sup>
Nitrogen dioxide			
One hour	200 µg/m <sup>3</sup> , not to be exceeded more than 18 times a calendar year	50% on 19 July 1999, decreasing on 1 January 2001 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2010	1 January 2010
Calendar year	40 µg/m <sup>3</sup>	50% on 19 July 1999, decreasing on 1 January 2001 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2010	1 January 2010
Benzene			

Averaging Period	Limit Value	Margin of Tolerance	Date by which limit value is to be met
Calendar year	5 µg/m <sup>3</sup>	5 µg/m <sup>3</sup> (100 %) on 13 December 2000, decreasing on 1 January 2006 and every 12 months thereafter by 1 µg/m <sup>3</sup> to reach 0% by 1 January 2010	1 January 2010
Carbon monoxide			
Maximum daily eight hour mean (2)	10 µg/m <sup>3</sup>	60%	-(1)
Lead			
Calendar year	0.5 µg/m <sup>3</sup> (3)	100%	-(3)
PM <sub>10</sub>			
One day	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a calendar year	50%	-(1)
Calendar year	40 µg/m <sup>3</sup>	20%	-(1)

(1) Already in force since January 2005

(2) The maximum daily eight hour mean concentration will be selected by examining eight hour running averages, calculated from hourly data and updated each hour. Each eight 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.

(3) Already in force since 1 January 2005. Limit value to be met only by 1 January 2010 in the immediate vicinity of the specific industrial sources situated on sites contaminated by decades of industrial activities. In such cases, the limit value until 1 January 2010 will be 1.0 µg/m<sup>3</sup>. The area in which higher limit values apply must not extend further than 1000 m from such specific sources.

## National exposure reduction target, target value and limit value for PM<sub>2.5</sub>

### I. Average Exposure Indicator

The Average Exposure Indicator expressed in µg/m<sup>3</sup> (AEI) shall be based upon measurements in urban background locations in the zones and in the agglomerations. It should be assessed as a three-calendar year running annual mean concentration averaged over all sampling points established pursuant to Part II of Section A of Schedule 5. The AEI for the reference year 2010 shall be the mean concentration of the years 2008, 2009 and 2010.

However, where data are not available for 2008, the mean concentration of the years 2009 and 2010 or the mean concentration of the years 2009, 2010 and 2011 may be used.

The AEI for the year 2020 shall be the three-year running mean concentration averaged over all those sampling points for the years 2018, 2019 and

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2020. The AEI is used for the examination whether the national exposure reduction target is met.

The AEI for the year 2015 shall be the three-year running mean concentration averaged over all those sampling points for the years 2013, 2014 and 2015. The AEI is used for the examination whether the exposure concentration obligation is met.

## II. National Exposure reduction target

Exposure reduction target relative to the AEI in 2010		Year by which the exposure reduction target is to be met
Initial concentration in $\mu\text{g}/\text{m}^3$	Reduction target in percent	2020
< 8.5 = 8.5	0%	
> 8.5 - < 13	10%	
= 13 - < 18	15%	
= 18 - < 22	20%	
$\geq 22$	All appropriate measures to achieve 18 $\mu\text{g}/\text{m}^3$	

Where the AEI in the reference year is 8.5  $\mu\text{g}/\text{m}^3$  or less the exposure reduction target shall be zero. The reduction target shall be zero also in cases where the AEI reaches the level of 8.5  $\mu\text{g}/\text{m}^3$  at any point of time during the period from 2010 to 2020 and is maintained at or below that level.

## III. National Exposure reduction target

Exposure concentration obligation	Year by which the obligation value is to be met
20 $\mu\text{g}/\text{m}^3$	2015

## IV. Target value

Averaging period	Target value	Date by which target value should be met
Calendar year	25 $\mu\text{g}/\text{m}^3$	1 January 2010

## V. Limit value

Averaging Period	Limit value	Margin of tolerance	Date by which limit value is to be met
Stage 1			
Calendar year	25 $\mu\text{g}/\text{m}^3$	20% on 11 June 2008, decreasing on the next 1 January and every 12 months thereafter by equal annual percentages to reach 0% by January 2015	1 January 2015
Stage 2 <sup>(1)</sup>			
Calendar year	20 $\mu\text{g}/\text{m}^3$		1 January 2020

(1) Stage 2 – indicative limit value to be reviewed in 2013.

## Target values for group B pollutants

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

(1) For the total content in the PM<sub>10</sub> fraction averaged over a calendar year.

## D. Ozone target values and long term objectives

## I. Definitions and criteria

1. *Definitions*

AOT40 (expressed in (µg/m<sup>3</sup>) hours) means the sum of the difference 80 µg/m<sup>3</sup> (= 40 parts per billion) and 80 µg/m<sup>3</sup> over a given period using only the one-hour values measured between 0800 hrs and 2000 hrs Central European Time (CET) each day.

2. *Criteria*

The following criteria shall be used for checking validity when aggregating data and calculating statistical parameters::

Parameter	Required proportion of valid data
One hour values	75% (i.e. 45 minutes)
Eight hour values	75% of values (i.e. six hours)
Maximum daily 8 hours mean from hourly running 8 hours	75% of the hourly running eight hours averages (i.e. 18 eight-hourly averages per day)
AOT 40	90% of the one hour values over the time period defined for calculating the AOT40 value <sup>(1)</sup>
Annual mean	75% of the one hour values over summer (April to September) and 75% over winter (January to March, October to December) seasons separately
Number of exceedances and maximum values per month	90% of the daily maximum eight hours mean values (27 available daily values per month) 90% of the one hour averages between 0800 hrs and 2000 hrs CET
Number of exceedances and maximum values per year	five out of six months over the summer season (April to September)

(1) In cases where all possible measured data are not available, the following factor shall be used to calculate AOT 40 values:

$$\text{AOT 40}_{\text{estimate}} = \text{AOT 40}_{\text{measured}} \times \frac{\text{total possible number of hours}^{(*)}}{\text{number of measured hourly values}}$$

\* being the number of hours within the time period of AOT40 definition, (i.e. 0800 hrs to 2000 hrs CET from 1 May to 31 July each year, for vegetation protection and from 1 April to 30 September each year for forest protection).

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## II. Target values

Objective	Averaging Period	Target Value	Date by which target value should be met <sup>(1)</sup>
Protection of human health	Maximum daily eight-hour mean <sup>(2)</sup>	120 $\mu\text{g}/\text{m}^3$ not to be exceeded on more than 25 days per calendar year averaged over three years <sup>(3)</sup>	1.1.2010
Protection of vegetation	May to July	AOT40 (calculated from 1 h values). 18,000 $\mu\text{g}/\text{m}^3\cdot\text{hr}$ averaged over five years <sup>(3)</sup>	1.1.2010
<p>(1) Compliance with target values will be assessed as of this date. That is, 2010 will be the first year the data for which is used in calculating compliance over the following three or five years, as appropriate.</p> <p>(2) The maximum daily eight-hour mean concentration shall be selected by examining eight-hour running averages, calculated from hourly data and updated each hour. Each eight-hour average so calculated shall 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 the day.</p> <p>(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:</p> <ul style="list-style-type: none"> <li>- for the target value for the protection of human health: valid data for one year,</li> <li>- for the target value for the protection of vegetation: valid data for three years.</li> </ul>			

## III. Longterm objectives

Objective	Averaging period	Longterm objective	Date by which the longterm objective should be met
Protection of human health	Maximum daily eight-hour mean within a calendar year	120 $\mu\text{g}/\text{m}^3$	not defined
Protection of vegetation	May to July	AOT40 (calculated from 1 h values) 6,000 $\mu\text{g}/\text{m}^3\cdot\text{hr}$	not defined

## Schedule 8

## Information and alert thresholds

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

To be measured over three consecutive hours at locations representative of air quality over at least 100 km<sup>2</sup> or an entire zone or agglomeration, whichever is the smaller.

Pollutant	Alert threshold
Sulphur dioxide	500 µg/m <sup>3</sup>
Nitrogen dioxide	400 µg/m <sup>3</sup>

## B. Information and Alert thresholds for ozone

Purpose	Averaging period	Threshold
Information	1 hour	180µg/m <sup>3</sup>
Alert	1 hour <sup>(1)</sup>	240µg/m <sup>3</sup>

<sup>(1)</sup> For the implementation of regulation 36, the exceedance of the threshold is to be measured or predicted for three consecutive hours.

## Schedule 9

## Critical levels for the protection of vegetation

Averaging Period	Critical Level
Sulphur Dioxide	
Calendar year and winter (1 October to 31 March)	20µg/m <sup>3</sup>
Nitrogen dioxide	
Calendar year	30µg/m <sup>3</sup> .

## Schedule 10

## Reference methods for the assessment of concentrations of group A pollutants, group B pollutants and ozone

## A. Reference measurement methods

1. *Reference method for the sampling and analysis of arsenic, cadmium and nickel in ambient air.*

The reference method for the measurement of arsenic, cadmium and nickel

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concentrations in ambient air is described in EN 12341:2014. The reference method for the measurement of arsenic, cadmium and nickel in ambient air is that described in EN 14902:2005 “Ambient air quality - Standard method for the measurement of Pb, Cd, As, and Ni in the PM<sub>10</sub> fraction of suspended particulate matter”.

2. *Reference method for the sampling of benzene*

The reference method for the measurement of benzene is that described in EN 14662:2005, parts 1, 2 and 3 ‘Ambient air quality - Standard method for measurement of benzene concentrations’.

3. *Reference method for the measurement of carbon monoxide*

The reference method for the measurement of carbon monoxide is that described in EN 14626:2012 ‘Ambient Air - Standard method for the measurement of the concentration of carbon monoxide by non-dispersive infrared spectroscopy’.

4. Reference method for the measurement of lead

The reference method for the sampling of lead is that described in section A(8) of this schedule. The reference method for the measurement of lead is that described in EN 14902:2005 ‘Standard method for measurement of Pb/Cd/As/Ni in the PM<sub>10</sub> fraction of suspended matter’.

5. *Reference method for the sampling and analysis of mercury*

The reference method for the measurement of total gaseous mercury concentrations is that described in EN 15852:2010 “Ambient air quality - Standard method for the determination of total gaseous mercury”.

6. *Reference method for the measurement of nitrogen dioxide and oxides of nitrogen*

The reference method for the measurement of nitrogen dioxide and oxides of nitrogen is that described in EN 14211:2012 ‘Ambient Air - Standard method for the measurement of the concentration of nitrogen dioxide and nitrogen monoxide by chemiluminescence’.

7. *Reference method for measurement of ozone*

The reference method for the measurement of ozone is that described in EN 14625:2012 ‘Ambient Air - Standard method for the measurement of the concentration of ozone by ultraviolet photometry’.

8. *Reference method for the 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 12341:2014 ‘Ambient Air - standard gravimetric measurement for the determination of the PM<sub>10</sub> or PM<sub>2,5</sub> mass concentration of suspended particulate matter’.

9. *Reference method for the sampling and measurement of PM<sub>2,5</sub>*

The reference method for the sampling and measurement of PM<sub>10</sub> is that described in EN 12341:2014 ‘Ambient Air – standard gravimetric measurement for the determination of the PM<sub>10</sub> or PM<sub>2,5</sub> mass concentration of suspended particulate matter’.

10. *Reference method for the sampling and analysis of polycyclic aromatic hydrocarbons*

The reference method for the measurement of polycyclic aromatic hydrocarbons in ambient air is described EN 12341:2014. The reference method for the measurement of benzo(a)pyrene in ambient air is that described in EN 15549:2008 “Air quality - Standard method for the measurement of concentration of benzo[a]pyrene in ambient air”. In the absence of a CEN standard method, for the other polycyclic aromatic hydrocarbons (group C pollutants excluding benzo[a]pyrene), an ISO standard method such as ISO 12884 or any national standard method from any of the EU Member States can be used.

11. *Reference method for the measurement of sulphur dioxide*

The reference method for the measurement of sulphur dioxide is that described in EN 14212:2012 ‘Ambient Air - Standard method for the measurement of the concentration of sulphur dioxide by fluorescence’.

12. *Reference method for the sampling and analysis of the deposition rates of group B pollutants*

The reference method for the determination of the deposition of arsenic, cadmium and nickel is that described in EN 15841:2009 “Ambient air quality - Standard method for the determination of arsenic, cadmium, lead and nickel in atmospheric deposition”.

The reference method for the determination of the deposition of mercury is that described in EN 15853:2010 “Ambient air quality - Standard method for determination of mercury deposition”.

The reference method for the determination of the deposition of benzo[a]pyrene and the other polycyclic hydrocarbons referred to in regulation 13 is that described in EN 15980:2011 “Air Quality. Determination of the deposition of benz[a]anthracene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenzo[a,h]anthracene and indeno[1,2,3-cd]pyrene”.

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### B. Demonstration of equivalence

It is possible to use any other method which be shown to give results which are equivalent to any of the methods referred to in Section A, or in the case of particulate matter, any other method which displays a consistent relationship to the reference method. In that event results achieved by that method must be corrected to produce results equivalent to those that would have been achieved by using the reference method.

2. Whenever possible the correction factor should also be applied retroactively to past measurement data in order to achieve better data comparability.

### C. Standardisation

For gaseous pollutants the volume must be standardised at a temperature of 293 K and an atmospheric pressure of 101.3 kPa. For particulate matter and substances to be analysed in particulate matter (e.g. lead) the sampling volume refers to ambient conditions in terms of temperature and atmospheric pressure at the date of measurements.

### D. Mutual recognition of data

When demonstrating that the equipment meets the performance requirements of the reference methods listed in Section A of this Schedule, the competent authority pursuant to regulation 3 shall accept test reports issued in other European Union Member States provided that the test laboratories are accredited to the relevant harmonised standard for testing and calibration laboratories.

The detailed test reports and all the results of the tests shall be available to other competent authorities or their designated bodies. Test reports shall demonstrate that the equipment meets all the performance requirements including where some environmental and site conditions are specific to a EU Member State and are outside the conditions for which the equipment has been already tested and type approved in another EU Member State.

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## Schedule 11

Information to be included in the national air quality plans for improvement in ambient air quality

Information to be provided under regulation 29(2)

### 1. *Localisation of excess pollution*

- (a) City (map)
- (b) 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;
- (e) Sufficient information on the type of targets requiring protection in the zone.

3. *Responsible authorities*

Names and address 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;
- (c) techniques for the assessment

5. *Origin of pollution*

- (a) List the main emission sources responsible for pollution (map);
- (b) Total quantity of emissions from these sources (tonnes/year);
- (c) Information on pollution imported from other regions.

6. *Analysis of situation*

- (a) Details of those factors responsible for the exceedance (e.g. transport, including cross-border transport, formation of secondary pollutants in the atmosphere);
- (b) Details of possible measures for the improvement of air quality.

7. *Details of those measures or projects for improvements which existed*

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*prior to 11 June 2008, i.e.:*

- (a) National, international measures
- (b) Observed effects of these measures.

8. *Details of those measure or projects adopted with a view to reducing pollution following the entry into force of this regulation:*

- (a) Listing and description of all the measures set out in the project;
- (b) Timetable for implementation;
- (c) 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 publications, documents, work, etc. used to supplement information required under this Schedule.*

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## Schedule 12

### Public Information

1. Up-to-date information on ambient concentrations of the pollutants covered by these regulations shall be routinely made available to the public.

2. Ambient concentrations provided shall be presented as average values according to the appropriate averaging period as laid down in Schedule 7. The information shall at least indicate any levels exceeding air quality objectives including limit values, target values, alert thresholds, information thresholds or long term objectives of the regulated pollutant. It shall also provide a short assessment in relation to the air quality objectives of the regulated pollutant. It shall also provide a short assessment in relation to the air quality objectives and appropriate information regarding effects on health, or, where appropriate, vegetation.

3. Information on ambient concentrations of sulphur dioxide, nitrogen dioxide, particulate matter (at least PM<sub>10</sub>), ozone and carbon monoxide shall be updated on at least a daily basis, and, wherever practicable, information shall be updated on an hourly basis. Information on ambient concentrations of lead and benzene, presented as an average value for the last 12 months, shall be updated on a three-monthly basis, and on a monthly basis, wherever practicable.

4. Timely information about actual or predicted exceedances of alert thresholds and any information threshold is provided to the public. The details supplied shall include at least the following information:

(a) Information on observed exceedance(s):

- Location or area of the exceedance,
- Type of threshold exceeded (information or alert),
- Start time and duration of the exceedance,
- Highest one hour concentration and in addition highest eight hour mean concentration in the case of ozone:

(b) Forecast for the following afternoon/day(s):

- Geographical area of expected exceedances of information and/or alert threshold,
- Expected changes in pollution (improvement, stabilisation or deterioration), together with reasons for those changes;

(c) Information on the type of population concerned, possible health effects and recommended behaviour:

- Information on population groups at risk,
- Description of likely symptoms,
- Recommended precautions to be taken by the population concerned,
- Where to find further information;

(d) Information on preventive action to reduce pollution and/or exposure to it: indication of main source sectors; recommendations for action to reduce emissions;

(e) In case of predicted exceedances, steps shall be taken to ensure that such details are supplied to the extent practicable.

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## Schedule 13

## Air Quality Management Order

## Air Quality Regulations 2010

## Regulation 32

The Minister for the Environment acting on the advice of the Environment and Resources Authority, in exercise of the powers conferred upon him/her by regulation 32 of the Air Quality Regulations, 2010, hereby makes the following Order.

This Order may be cited/referred to as the [name of Local Council] Air Quality Management Area [No.] and shall come into effect on [date].

The shaded area shown on the attached map within the confines of the [name of Local Council] Local Council. The area in question is bound by the following coordinates\* 4[xx,xxx], 3,9[xx,xxx] at its northernmost point, 4[xx,xxx], 3,9[xx,xxx] at its southernmost point, 4[xx,xxx], 3,9[xx,xxx] at its westernmost point and 4[xx,xxx], 3,9[xx,xxx] at its easternmost point. The map may be viewed at the Local Council's office in [address] and shall be published on the Gazette.

The Area is designated in relation to a likely exceedance of the [name of pollutant] [limit value/target value/long-term objective] as specified in the Air Quality Regulations 2010.

This Order shall remain in force until it is revoked by a subsequent order.

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Signature

The Onor. [Name of the Minister]

Minister for the Environment

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\* Zone 33s, datum ED 50, ellipsoid – Hayford International

