

**Implementation of the National Plan for
Approximation of Environmental Legislation**

A project for Albania funded by the European Union

**Draft
DCM on Air Quality Management (¹)**

**Draft 1
Version 2**

Dated 15 May 2011

NOTE – The terms “Minister” and “Ministry” are used in this draft DCM because that is what is said in the Air Law. – It may be that some of these tasks should be given to NEA?

¹ This Decision transposes Directive 2008/50/EC on ambient air quality and cleaner air for Europe and Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.



Republic of Albania

Council of Ministers

DECISION

No _____, dated ____/____/2010

**ON
AIR QUALITY MANAGEMENT**

Pursuant to Articles 59 paragraph 1.d and 100 of the Constitution and to Article 5 of the Law Nr 8879, dated 16.05.2002 “on Protection from Air Pollution”, the Council of Ministers;

DECIDES

Part One

I. GENERAL

1. The scope of this Decision is to establish limit values, threshold values and target values for certain pollutants in the air, to establish the methodologies and procedures for monitoring and managing air quality, to set out the requirements for a preliminary assessment of air quality, and the requirements for air quality plans.

II. DEFINITIONS

2. The following terms have the following meanings:
 - a. The following terms have the meaning given to them by the Law “On protection from Air Pollution”;
 - i. “Air environment”
 - ii. Pollutant”
 - iii. “Level”
 - iv. “Assessment”
 - v. “Limit value”
 - vi. “Air quality plan”
 - vii. “Target value”
 - viii. “Threshold signalling” [Alert threshold]
 - ix. “Area of air quality monitoring” [Zone]
 - x. “Aggregate” [Agglomeration]

- b. **“Critical level”** means a level fixed on the basis of scientific knowledge, above which direct adverse effects may occur on some receptors, such as trees, other plants or natural ecosystems but not on humans;
- c. **“Margin of tolerance”** means the percentage of the limit value by which that value may be exceeded subject to the conditions laid down in this Decision;
- d. **“Information threshold”** means a level beyond which there is a risk to human health from brief exposure for particularly sensitive sections of the population and for which immediate and appropriate information is necessary;
- e. **“Upper assessment threshold”** means a level below which a combination of fixed measurements and modelling techniques and/or indicative measurements may be used to assess ambient air quality;
- f. **“Lower assessment threshold”** means a level below which modelling or objective-estimation techniques alone may be used to assess ambient air quality;
- g. **“Long-term objective”** means a level to be attained in the long term, save where not achievable through proportionate measures, with the aim of providing effective protection of human health and the environment;
- h. **“Contributions from natural sources”** means emissions of pollutants not caused directly or indirectly by human activities, including natural events such as volcanic eruptions, seismic activities, geothermal activities, wild-land fires, high wind events, sea sprays or the atmospheric re-suspension or transport of natural particles from dry regions;
- i. **“PM-10”** means particulate matter which passes through a size-selective inlet as defined in the reference method for the sampling and measurement of PM-10, EN 12341, with a 50 % efficiency cut-off at 10 μ m aerodynamic diameter;
- j. **“PM-2,5”** means particulate matter which passes through a size-selective inlet as defined in the reference method for the sampling and measurement of PM-2,5, EN 14907, with a 50 % efficiency cut-off at 2,5 μ m aerodynamic diameter;
- k. **“Average exposure indicator”** means an average level determined on the basis of measurements at urban background locations throughout the Republic of Albania and which reflects population exposure. It is used to calculate the national exposure reduction target and the exposure concentration obligation;
- l. **“Exposure concentration obligation”** means a level fixed on the basis of the average exposure indicator with the aim of reducing harmful effects on human health, to be attained over a given period;
- m. **“Exposure reduction target”** means a percentage reduction of the average exposure of the population of the Republic of Albania set for the reference year with the aim of reducing

harmful effects on human health, to be attained where possible over a given period;

- n. “**Urban background locations**” means places in urban areas where levels are representative of the exposure of the general urban population;
- o. “**Oxides of nitrogen**” means the sum of the volume mixing ratio (ppbv) of nitrogen monoxide (nitric oxide) and nitrogen dioxide expressed in units of mass concentration of nitrogen dioxide (μ g/m³);
- p. “**Fixed measurements**” means measurements taken at fixed sites, either continuously or by random sampling, to determine the levels in accordance with the relevant data quality objectives;
- q. “**Indicative measurements**” means measurements which meet data quality objectives that are less strict than those required for fixed measurements;
- r. “**Volatile organic compounds**” (VOC) means organic compounds from anthropogenic and biogenic sources, other than methane, that are capable of producing photochemical oxidants by reactions with nitrogen oxides in the presence of sunlight;
- s. “**Ozone precursor substances**” means substances which contribute to the formation of ground-level ozone. Annex X of this Decision includes a non-exhaustive list of such substances;
- t. “**Minister**” means the Minister with responsibility for environmental protection, and “**Ministry**” shall be interpreted accordingly;
- u. “**Arsenic, cadmium, nickel and benzo(a)pyrene**” means the total content of those elements and compounds in the PM-10 fraction;
- v. “**Polycyclic aromatic hydrocarbons**” means those organic compounds composed of at least two fused aromatic rings made entirely from carbon and hydrogen;
- w. “**Total gaseous mercury**” means elemental mercury vapour (Hg⁰) and reactive gaseous mercury, i.e. water-soluble mercury species with sufficiently high vapour pressure to exist in the gas phase.

III. Designation of areas of air quality monitoring and aggregates

- 3. In accordance with the requirements of Article 5/1 (2) of the Law “On Protection from Air Pollution” the Minister shall divide the country into areas of air quality monitoring and aggregates.
- 4. The designation of areas of air quality monitoring and of aggregates shall be published in the Official Gazette.
- 5. Air quality assessment and air quality management shall be carried out in all areas of air quality monitoring and aggregates.

Part two. Assessment of ambient air quality

IV. Assessment thresholds

6. The Minister must classify each area of air quality monitoring and aggregate according to whether or not the upper or lower assessment thresholds specified in Section A of Annex II to this Decision are exceeded in relation to sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, lead, benzene and carbon monoxide.
7. The Minister must review the classification of areas of air quality monitoring and aggregates referred to in Paragraph 6 at least every five years, and must do so more frequently than every five years if there are significant changes in the activities which may affect levels of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, lead, benzene and carbon monoxide in ambient air.
8. When carrying out the review of areas of air quality monitoring and aggregates referred to in Paragraph 7 the Minister shall do so in accordance with the procedure set out in Section B of Annex II.

V. Assessment criteria

9. The Ministry must assess the level of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, lead, benzene and carbon monoxide in ambient air in all areas of air quality monitoring and aggregates.
10. In all areas of air quality monitoring and aggregates where the level of the pollutants referred to in Paragraph 9 exceeds the upper assessment threshold referred to in Paragraph 6, fixed measurements must be used, but may be supplemented by modelling or indicative measurements or both in order to provide adequate information on the spatial distribution of the ambient air quality.
11. In all areas of air quality monitoring and aggregates where the level of the pollutants referred to in Paragraph 9 is below the upper assessment threshold referred to in Paragraph 6, a combination of fixed measurements and modelling or indicative measurements or both may be used in order to provide adequate information on the spatial distribution of the ambient air quality.
12. In all areas of air quality monitoring and aggregates where the level of the pollutants referred to in Paragraph 9 is below the lower assessment threshold referred to in Paragraph 6, modelling or estimation techniques or both may be used instead of measurement.
13. In carrying out the assessments referred to in Paragraphs 9-12 the criteria set out in Annex III shall be used.

14. In addition to the assessments referred to in Paragraphs 9-12, the Ministry must measure PM_{2.5} at rural background locations away from significant sources of air pollution, in order to provide information on an annual average basis on the total mass concentration and chemical speciation concentrations of that pollutant.
15. In carrying out the assessment referred to in Paragraph 14, the Ministry shall use the following criteria:
 - a. One sampling point shall be installed for every 100 000 km²;
 - b. At least one measuring station covering neighbouring areas of air quality monitoring and aggregates (or equivalent) in other States, to achieve the necessary spatial resolution;
 - c. Sections A and C of Annex I shall apply in relation to the data quality objectives for mass concentration measurement; and
 - d. Annex IV shall apply in its entirety.

VI. Location and numbers of sampling points

16. The Ministry shall install sampling points for the assessment of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, lead, benzene and carbon monoxide at locations determined in accordance with the criteria set out in Annex III.
17. In areas of air quality monitoring and aggregates where fixed measurement is the sole source of information for the assessment of air quality, the number of sampling points must be more than or equal to the minimum number specified in Section A of Annex V.
18. In areas of air quality monitoring and aggregates other than those referred to in Paragraph 17, the total number of sampling points specified in Section A of Annex V may be reduced by up to 50 %, provided that the following conditions are met:
 - a. the supplementary methods provide sufficient information for the assessment of air quality with regard to limit values or alert thresholds, as well as adequate information for the public;
 - b. the number of sampling points to be installed and the spatial resolution of other techniques are sufficient for the concentration of the relevant pollutant to be established in accordance with the data quality objectives specified in Section A of Annex I and enable assessment results to meet the criteria specified in Section B of Annex I.
19. For the purposes of Paragraph 18, the results of modelling and/or indicative measurement shall be taken into account for the assessment of air quality with respect to the limit values.

VII. Reference measurement methods

20. Subject to Paragraph 21, for the purposes of this Decision the reference measurement methods and criteria specified in Section A and Section C of Annex VI shall be used.
21. Alternative methods to those specified in Paragraph 20 may be used provided that the conditions set out in Section B of Annex VI are met.

Part three. Ozone

VIII. Assessment criteria for ozone

22. The Ministry must assess the level of ozone in all areas of air quality monitoring and aggregates where the concentrations of ozone have exceeded the long-term objectives set out in Section C of Annex VII during any of the previous five years of measurements.
23. Where fewer than five years data are available, the Ministry may combine the results from measurements campaigns of short duration carried out when and where levels of ozone are likely to be at their highest with the results obtained from emission inventories and modelling, for the purposes of determining whether the long-term objectives referred to in Paragraph 22 have been exceeded during those five years.

IX. Sampling points for ozone

24. The Ministry shall install sampling points for the assessment of ozone at locations determined in accordance with the criteria set out in Annex VIII.
25. In areas of air quality monitoring and aggregates where fixed measurement is the sole source of information for the assessment of air quality, the number of sampling points for fixed measurements of ozone must not be less than the minimum number specified in Section A of Annex IX.
26. In areas of air quality monitoring and aggregates where the information from fixed measurement is supplemented by information from modelling or indicative measurement or both, the number of sampling points referred to in Section A of Annex IX may be reduced provided that the following conditions are met:
- a. the supplementary methods provide sufficient information for the assessment of air quality with regard to target values, long-term objectives, information and alert thresholds;
 - b. the number of sampling points to be installed and the spatial resolution of other techniques are sufficient for the concentration of ozone to be established in accordance with the data quality objectives specified in Section A of Annex I and enable assessment results to meet the criteria specified in Section B of Annex I;

- c. the number of sampling points in each area of air quality monitoring and aggregate amounts to at least one sampling point per two million inhabitants or one sampling point per 50 000 km², whichever produces the greater number of sampling points, but must not be less than one sampling point in each area of air quality monitoring and aggregate.
 - d. nitrogen dioxide is measured at all remaining sampling points except at rural background stations as referred to in Section A of Annex VIII.
27. For the purposes of Paragraph 26, the results of modelling and/or indicative measurement shall be taken into account for the assessment of air quality with respect to the target values.
28. The Minister must ensure that nitrogen dioxide is measured at no less than 50% of the sampling points required under Section A of Annex IX.
29. The measurement referred to in Paragraph 28 must be continuous except at rural background locations.
30. In areas of air quality monitoring and aggregates where the concentrations of ozone have been below the long-term objectives for each of the previous five years of measurement, the number of sampling points must be determined in accordance with the criteria set out in Section B of Annex IX.
31. The Minister shall ensure that concentrations of the ozone precursor substances listed in Annex X are measured at at least one sampling point.
32. The Minister may choose the location and number of sampling points for measurements of ozone precursor substances and must take into account the objectives and methods set out in Annex X.

X. Reference measurement methods for ozone

33. Subject to Paragraph 34, the reference method for measurement of ozone set out in point 8 of Section A of Annex VI shall be applied.
34. Alternative methods to those specified in Paragraph 33 may be used provided that the conditions set out in Section B of Annex VI are met.

Part four. Arsenic, cadmium, nickel, mercury, benzo(a)pyrene and other polycyclic aromatic hydrocarbons

XI. Assessment thresholds

35. The Minister must classify each area of air quality monitoring and aggregate according to whether or not the upper and lower

assessment thresholds set out in Section I of Annex XVII are exceeded in relation to arsenic, cadmium, nickel and benzo(a)pyrene.

36. The Minister must review the classification of areas of air quality monitoring and aggregates referred to in Paragraph 35 at least every five years, and must do so more frequently than every five years if there are significant changes in the activities which may affect levels of the pollutants referred to in Paragraph 35 in ambient air.
37. When carrying out the review of areas of air quality monitoring and aggregates referred to in Paragraph 35 the Minister shall do so in accordance with the procedure set out in Section II of Annex XVII.

XII. Assessment criteria

38. The Ministry must assess concentrations of arsenic, cadmium, nickel and benzo(a)pyrene in ambient air.
39. In areas of air quality monitoring and aggregates where the levels of arsenic, cadmium, nickel and benzo(a)pyrene are above the lower assessment thresholds set out in Section I of Annex XVII, a combination of fixed measurements together with indicative measurements as referred to in Section I of Annex XVIII or modelling, or both, may be used to assess the level of those pollutants in ambient air.
40. In areas of air quality monitoring and aggregates where the levels of arsenic, cadmium, nickel and benzo(a)pyrene are below the lower assessment thresholds set out in Section I of Annex XVII, modelling or objective estimation techniques may be used instead of measurement.

XIII. Data quality objectives

41. When assessing levels of arsenic, cadmium, nickel, benzo(a)pyrene and other polycyclic aromatic hydrocarbons and gaseous mercury, the Ministry must apply the data quality objectives and other standards set out in Annex XVIII.

XIV. Location and number of sampling points

42. The Ministry shall determine the location and number of sampling points for the assessment of arsenic, cadmium, nickel and benzo(a)pyrene in accordance with the criteria set out in Annex XIX.

XV. Monitoring of polycyclic aromatic hydrocarbons

43. So as to assess the contribution of benzo(a)pyrene in ambient air, the Ministry shall monitor other relevant polycyclic aromatic hydrocarbons at a limited number of monitoring sites.

44. The compounds referred to in Paragraph 43 shall include, at a minimum;
- a. benzo(a)anthracene,
 - b. benzo(b)fluoranthene,
 - c. benzo(j)fluoranthene,
 - d. benzo(k)fluoranthene,
 - e. indeno(1,2,3-cd)pyrene,
 - f. dibenz(a,h)anthracene.
45. The monitoring sites referred to in Paragraph 43 shall be located together with sampling sites for benzo(a)pyrene.
46. The monitoring sites referred to in Paragraph 43 must be selected so that geographical variations and long term trends in the concentrations of polycyclic aromatic hydrocarbons can be identified.
47. Monitoring sites referred to in Paragraph 43 must be selected in accordance with the criteria in sections I to III of Annex XIX.

XVI. Background monitoring

48. The Ministry must operate background sampling points to provide the indicative measurements of:
- a. concentrations of;
 - i. arsenic, cadmium, nickel and benzo(a)pyrene;
 - ii. the polycyclic aromatic hydrocarbons referred to in Paragraph 43;
 - iii. total gaseous mercury.
 - b. total depositions of;
 - i. arsenic, cadmium, nickel and benzo(a)pyrene within the PM10 fraction;
 - ii. the polycyclic aromatic hydrocarbons referred to in Paragraph 43;
 - iii. mercury.
49. For the purposes of Paragraph 48 the Ministry must ensure that:
- a. at least one sampling point is installed for every 100,000 km²;
and
 - b. each sampling point is located in accordance with Annex XIX

XVII. Reference methods for sampling

50. Measurements of arsenic, cadmium, mercury, nickel, benzo(a)pyrene and other polycyclic aromatic hydrocarbons in ambient air and deposition of those pollutants must be made in accordance with the reference measurement methods set out in Annex XX.

Part five. Obligations in relation to limit values, target values, thresholds and levels

XVIII. Limit values

51. The Ministry and local government units, acting within their respective areas of competence, shall ensure that throughout the areas of air quality monitoring and aggregates, levels of sulphur dioxide, PM10, lead, and carbon monoxide in ambient air do not exceed the limit values set out in Annex XI.
52. The Ministry and local government units, acting within their respective areas of competence, shall ensure that throughout the areas of air quality monitoring and aggregates, levels of nitrogen dioxide and benzene in ambient air do not exceed the limit values set out in Annex XI from the dates specified in that Annex.
53. Compliance with the requirements set out in Paragraphs 51 and 52 shall be assessed in accordance with Annex III.
54. For the purposes of Paragraphs 51 and 52, the margins of tolerance set out in Annex XI shall apply.
55. In areas of air quality monitoring and aggregates where the levels of sulphur dioxide, nitrogen dioxide, PM-10, PM-2,5, lead, benzene and carbon monoxide in ambient air are below the respective limit values specified in Annexes XI and XIV, the Ministry and local government units, acting within their respective areas of competence, shall maintain the levels of those pollutants below the limit values and shall endeavour to preserve the best ambient air quality, compatible with sustainable development.

XIX. Target values

56. The Ministry and local government units, acting within their respective areas of competence, shall take all necessary measures not entailing disproportionate costs to ensure that, as from [31 December 2012] concentrations of arsenic, cadmium, nickel and benzo(a)pyrene, used as a marker for the carcinogenic risk of polycyclic aromatic hydrocarbons, in ambient air, do not exceed the target values set out in Annex XXI.
57. The Ministry shall establish a list of areas of air quality monitoring and aggregates in which the levels of arsenic, cadmium, nickel and benzo(a)pyrene are below the respective target values.
58. The Ministry and local government units, acting within their respective areas of competence, shall maintain the levels of arsenic, cadmium, nickel and benzo(a)pyrene in the areas of air quality monitoring and aggregates referred to in Paragraph 57 below the respective target

values and shall endeavour to preserve the best ambient air quality, compatible with sustainable development.

59. The Ministry shall establish a list of areas of air quality monitoring and aggregates in which the levels of arsenic, cadmium, nickel and benzo(a)pyrene are above the respective target values.

60. For those areas of air quality monitoring and aggregates referred to in Paragraph 59, the Ministry shall specify the areas of exceedance and the sources contributing thereto. For such areas the Ministry shall demonstrate the application of all necessary measures not entailing disproportionate costs, directed in particular at the predominant emission sources, in order to attain the respective target values. For industrial installations that require a Class A environmental permit in accordance with the Law "On Environmental permitting" this means the application of Best Available Techniques (BAT).

XX. Critical levels for the protection of vegetation

61. The Ministry shall ensure compliance with the critical levels for the protection of vegetation set out in Annex XIII, as assessed in accordance with the requirements set out in Section A of Annex III.

62. For the purposes of Paragraph 61, where fixed measurements are the sole source of information for assessing air quality, the number of sampling points shall not be less than the minimum number specified in Section C of Annex V.

63. For the purposes of Paragraph 61, where fixed measurements are supplemented by indicative measurements or modelling, the minimum number of sampling points may be reduced by up to 50 % so long as the assessed concentrations of the relevant pollutant can be established in accordance with the data quality objectives specified in Section A of Annex I.

XXI. Long term objectives for ozone

64. The Ministry and local government units, acting within their respective areas of competence, shall take all necessary measures not entailing disproportionate costs to ensure that the target values and long-term objectives for ozone set out in Annex VII are attained.

65. For those areas of air quality monitoring and aggregates where a target value referred to in Paragraph 64 is exceeded, the Ministry and local government units, acting within their respective areas of competence, shall ensure that a relevant programme, and if appropriate an air quality plan, is implemented in order to attain such target value, insofar as such target value is achievable through measures not entailing disproportionate costs.

66. For those areas of air quality monitoring and aggregates in which the levels of ozone in ambient air are higher than the long-term objectives but below, or equal to the target values, the Ministry and local government units, acting within their respective areas of competence, shall prepare and implement cost-effective measures with the aim of achieving such long-term objectives. Such measures shall, at least, be consistent with the programme and all air quality plans referred to in Paragraph 65.

67. For those areas of air quality monitoring and aggregates in which the levels of ozone meet the long-term objectives, the Ministry and local government units, acting within their respective areas of competence, shall, in so far as factors including the transboundary nature of ozone pollution and the meteorological conditions allow, maintain those levels below the long-term objectives and shall take all proportionate measures to preserve the best ambient air quality compatible with sustainable development and a high level of environmental and human health protection.

XXII. Information and alert thresholds

68. Where any of the information thresholds or alert thresholds set out in Annex XII are exceeded in relation to the relevant averaging periods set out in that Annex, the Ministry must inform the public by means of radio, television, newspapers or the internet.

XXIII. Contributions from natural sources

69. The Ministry shall maintain a list for any given year, of areas of air quality monitoring and aggregates where exceedances of limit values for any pollutant to which this Decision applies are attributable to natural sources.

70. The list referred to in Paragraph 69 shall provide information on concentrations and sources and the evidence demonstrating that such exceedances are attributable to natural sources.

71. The list referred to in Paragraph 69 and the information referred to in Paragraph 70 shall be published by the Ministry and made available to the public.

XXIV. Exceedances attributable to winter-sanding or winter-salting of roads

72. The Minister may designate areas of air quality monitoring and aggregates within which limit values for PM-10 are exceeded in ambient air due to the re-suspension of particles following winter-sanding or winter-salting of roads.

73. The Ministry shall maintain a list of areas of air quality monitoring and aggregates designated in accordance with Paragraph 72.
74. The list referred to in Paragraph 73 shall provide information on concentrations and sources of PM-10 therein, and the evidence necessary to demonstrate that any exceedances are due to re-suspended particulates and that all reasonable measures have been taken to lower the concentrations.
75. The list referred to in Paragraph 73 and the information referred to in Paragraph 74 shall be published by the Ministry and made available to the public.
76. Without prejudice to Chapter XXIII, in the case of areas of air quality monitoring and aggregates referred to in Paragraph 72, the relevant air quality plan need not relate to such exceedances.

Part six. National Exposure Reduction for PM-2,5

XXV. Average exposure indicator for PM-2,5

77. The Ministry shall calculate the average exposure indicator for PM-2,5 for the Republic of Albania in accordance with Section A of Annex XIV.
78. The Ministry shall ensure, in accordance with Annex III, that the distribution and the number of sampling points on which the average exposure indicator for PM-2,5 is based adequately reflects the exposure of the general population.
79. The Ministry shall ensure that the number of sampling points referred to in Paragraph 78 shall be no less than that determined by the application of Section B of Annex V.

XXVI. National exposure reduction target

80. The Minister shall establish the national exposure reduction target for the Republic of Albania in accordance with Section B of Annex XIV.

XXVII. Limiting exposure to PM-2,5

81. The Ministry and local government units, acting within their respective areas of competence, shall take all necessary measures not entailing disproportionate costs with the aim of attaining the national exposure reduction target by 2020.
82. The Ministry and local government units, acting within their respective areas of competence, shall take all necessary measures to ensure that the average exposure indicator for PM-2,5 for the year 2015 does not exceed the exposure concentration obligation set out in Section C of Annex XIV.

83. The Ministry and local government units, acting within their respective areas of competence, shall take all necessary measures not entailing disproportionate costs to ensure that concentrations of PM-2,5 in ambient air do not exceed the target value set out in Section D of Annex XIV as from the date specified in that Section.
84. The Ministry and local government units, acting within their respective areas of competence, shall take all necessary measures to ensure that concentrations of PM-2,5 in ambient air do not exceed the limit value set out in Section E of Annex XIV throughout the areas of air quality monitoring and aggregates as from the dates specified in that Section.
85. The Ministry shall assess compliance with the requirements set out in Paragraph 84 in accordance with Annex III.
86. The margin of tolerance set out in Section E of Annex XIV shall apply for the purposes of air quality plans.

Part seven. Postponement of deadlines for achieving limit values and exemptions from applying limit values

XXVIII. Postponement of certain deadlines

87. Where, for any given area of air quality monitoring or aggregate, the limit values for nitrogen dioxide or benzene cannot be met by the deadlines specified in Annex XI, the Minister may postpone those deadlines for that area of air quality monitoring or aggregate by a maximum of five years.
88. Where a deadline is postponed in accordance with Paragraph 87, an air quality plan for that area of air quality monitoring or aggregate shall be prepared which shall be supplemented by the information listed in Section B of Annex XV related to the pollutants concerned and shall demonstrate how the limit values shall be met by the new deadline.
89. Where Paragraph 87 applies, the Ministry and relevant local government units, acting within their respective areas of competence, shall ensure that the limit value for each pollutant is not exceeded by more than the maximum margin of tolerance specified in Annex XI for each of the pollutants concerned.

XXIX. Exemptions from applying limit values

90. Where, for any given area of air quality monitoring or aggregate, conformity with the limit values for PM-10 set out in Annex XI cannot be achieved because of site-specific dispersion characteristics, the obligation to apply those limit values shall not apply until 11 June 2011 [Directive date].

91. Where a limit value is exempted in accordance with Paragraph 90, an air quality plan for that area of air quality monitoring or aggregate shall be prepared which shall be supplemented by the information listed in Section B of Annex XV related to the pollutants concerned and shall demonstrate how the limit values shall be met by the new deadline. The air quality plan shall also show that all appropriate measures have been taken at national, regional and local levels to meet that deadline.
92. Where Paragraph 90 applies, the Ministry and relevant local government units, acting within their respective areas of competence, shall ensure that the limit value for each pollutant is not exceeded by more than the maximum margin of tolerance specified in Annex XI for each of the pollutants concerned.

Part eight. Plans

XXX. Air Quality Plans

93. The Ministry shall prepare and implement an air quality plan for any area of air quality monitoring and aggregate where the levels of sulphur dioxide, nitrogen dioxide, benzene, carbon monoxide, lead, particulate matter or ozone in ambient air exceed any of the limit values or target values set out in Annexes XI and XIV in relation to that pollutant, taking into account any relevant margin of tolerance, whether or not the attainment date for that limit value or target value has passed.
94. Where the attainment date for a limit value has passed, the air quality plan must set out the measures intended to ensure compliance with limit value as soon as possible.
95. The air quality plan shall include, at a minimum, the information listed in Section A of Annex XV.
96. The air quality plan may include specific measures aimed at the protection of sensitive population groups, including children.
97. The air quality plan may include measures pursuant to any short-term action plans.
98. Where an air quality plan is required in relation to more than one pollutant, the Ministry shall, where appropriate, prepare and implement an integrated air quality plan in relation to all pollutants concerned.
99. Wherever possible, air quality plans must be consistent with other plans prepared which are relevant to air quality or to environmental noise, in order to achieve the relevant environmental objectives.

XXXI. Short Term Action Plans

100. Where, in any area of air quality monitoring or aggregate, there is a risk that the levels of pollutants will exceed one or more of the alert thresholds set out in Annex XII, the Ministry must prepare and implement a short term action plan.
101. The short term action plan must set out the measures to be taken in the short term intended to reduce the risk of alert thresholds being exceeded, or in the event of the levels being exceeded, to reduce the duration of such an incident.
102. Where, in any area of air quality monitoring or aggregate, levels of ozone exceed the alert threshold set out in Section B of Annex XII or there is a risk that they will exceed that threshold, the Ministry must prepare and implement a short term action plan when, in their opinion there is a significant potential, taking into account national geographical, meteorological and economic conditions, to reduce the risk, duration or severity of such a situation.
103. The Ministry may also prepare, where appropriate, short term action plans where there is a risk that one or more of the limit values or target values set out in Annexes VII, XI and XIV will be exceeded.
104. The short term action plan referred to in Paragraphs 100, 101, 102 or 103 may, depending on the individual case, provide for effective measures to control and, where necessary, suspend activities which contribute to the risk of the respective limit values or target values or alert threshold being exceeded. Those action plans may include measures in relation to motor-vehicle traffic, construction works, ships at berth, and the use of industrial plants or products and domestic heating. Specific actions aiming at the protection of sensitive population groups, including children, may also be considered in the framework of those plans.

XXXII. Public participation in preparing Air Quality Plans and Short Term Action Plans

105. The Ministry must consult the public where the Ministry proposes to prepare, modify or review an Air Quality Plan or a Short Term Action Plan.
106. Where Paragraph 105 applies, the Ministry shall:
- a. Inform the public of the proposal and any relevant background information;
 - b. Inform the public of the right of the public to participate in the preparation of the plan;
 - c. Specify the methods by which the public can participate in the consultation;
 - d. Specify the reasonable timescale for the consultation;
 - e. Specify the address to which comments can be made.

107. The Ministry shall take account of the results of the consultation referred to in Paragraph 106 when preparing the plan.

108. When the plan is published, the Ministry shall also provide information to the public as to the reasons for the contents of the plan as well as information about the public participation process that was carried out.

XXXIII. Public information

109. The Ministry shall make the following available to the public and to appropriate interested organisations:

- a. Ambient air quality in accordance with Annex XVI;
- b. Information on any postponement on any deadline for conformity with limit values for nitrogen dioxide or benzene, in accordance with Paragraph 87;
- c. Information about any exemptions on any deadline for conformity with limit values for PM-10, in accordance with Paragraph 90;
- d. Any air quality plan;
- e. Any short term action plans.

110. The information referred to in Paragraph 109 shall be

- a. Adequate;
- b. Made available in good time;
- c. Made available free of charge by means of any easily accessible media, including the internet or any other appropriate means of telecommunication.

111. For the purposes of Paragraph 109, 'interested organisations' shall include, in particular:

- a. Environmental organisations;
- b. Organisations representing the interests of sensitive populations;
- c. Other relevant health-care bodies; and
- d. Relevant industrial federations.

XXXIV. Annual reports

112. The Ministry shall publish and make available to the public annual reports for all the pollutants covered by this Decision.

113. Annual reports must include, for the relevant averaging period:

- a. Details of all cases where levels of pollutants have exceeded limit values;
- b. Details of all cases where levels of pollutants have exceeded target values;
- c. Details of all cases where levels of pollutants have exceeded long term objectives;

- d. Details of all cases where levels of pollutants have exceeded information thresholds;
- e. Details of all cases where levels of pollutants have exceeded alert thresholds;
- f. A summary assessment of the effects of the cases referred to in (a) to (e).

114. The annual reports may also include, where appropriate, further information and assessments on forest protection, as well as information on other pollutants for which monitoring provisions are set out in this Decision, including ozone precursor substances listed in Section B of Annex X.

XXXV. Transboundary air pollution

115. Where any alert threshold, limit value or target values together with any relevant margin of tolerance, or long-term objective is exceeded due to significant transboundary transport of air pollutants or their precursors, the Minister shall endeavour to co-operate with any neighbouring State concerned, and where appropriate, prepare joint activities, including the preparation of joint or coordinated air quality plans.

116. The Minister may direct the Ministry, if appropriate, to prepare and implement joint short term action plans covering neighbouring areas of air quality monitoring and aggregates in other States.

117. The Minister shall ensure that any neighbouring area of air quality monitoring and aggregate in another State which has prepared short term action plans shall receive all appropriate information.

118. Where information thresholds or alert thresholds are exceeded in areas of air quality monitoring and aggregates close to the borders of the Republic of Albania, the Minister shall provide the appropriate authorities in the relevant neighbouring State with prompt information.

Annex I. Data quality objectives

Section A. Data quality objectives for ambient air quality assessment

	Sulphur dioxide, nitrogen dioxide and oxides of nitrogen and carbon monoxide	Benzene	Particulate matter (PM-10/PM-2,5) and lead	Ozone and related NO and NO ₂
Fixed measurement (1)				
Uncertainty	15%	25%	25%	15%
Minimum data capture	90%	90%	90%	90% in summer 75% in winter
Minimum time coverage:				
- urban background and traffic	--	35% (2)	--	--
- industrial sites	--	90%	--	--
Indicative measurements				
Uncertainty	25%	30%	50%	30%
Minimum data capture	90%	90%	90%	90%
Minimum time coverage	14% (4)	14% (3)	14% (4)	More than 10% in summer
Modelling uncertainty				
Hourly	50%	--	--	50%
Eight-hour averages	50%	--	--	50%
Daily averages	50%	--	--	--
Annual averages	30%	50%	50%	--
Objective estimation	75%	100%	100%	75%
Uncertainty				

Notes to Table

- (1) The Ministry may apply random measurements instead of continuous measurements for benzene, lead and particulate matter if they can demonstrate to the Minister 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 PM₁₀ limit value, the 90,4 percentile (to be lower than or equal to 50 µg/m³) 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.
1. 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 5725:1994 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 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 in the case of ozone).
 2. The uncertainty for modelling is defined as the maximum deviation of the measured and calculated concentration levels for 90 % of 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.
 3. 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.
 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.

Section B. Results of air quality assessment

1. The following information shall be compiled for areas of air quality monitoring and aggregates within which sources other than measurement are employed to supplement information from 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 area of air quality monitoring or aggregate 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 lower assessment threshold,
- e. the population potentially exposed to levels in excess of any limit value for protection of human health.

Section C. Quality assurance for ambient air quality: data validation

1. To ensure accuracy of measurements and compliance with the data quality objectives laid down in Section A, the Ministry and local government units shall ensure the following:
 - a. that all measurements undertaken in relation to the assessment of ambient air quality pursuant to Sections V and VII are traceable in accordance with the requirements set out in Section 5.6.2.2 of the ISO/IEC 17025:2005,
 - b. that institutions operating networks and individual stations have an established quality assurance and quality control system which provides for regular maintenance to assure the accuracy of measuring devices,
 - c. 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 Community-wide quality assurance programmes,
 - d. that the national laboratories, are accredited according to EN/ISO 17025 by 2010 for the reference methods referred to in Annex VI. These laboratories shall coordinate, on the national level, the appropriate realisation of reference methods and the demonstration of equivalence of non-reference methods.
2. All data on ambient air quality reported under Paragraphs 109 and 112 shall be deemed to be valid except data flagged as provisional.

Annex II. Determination of requirements for assessment of concentrations of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10 and PM2,5), lead, benzene and carbon monoxide in ambient air within an area of air quality monitoring and aggregate

Section A. Upper and lower assessment thresholds

The following upper and lower assessment thresholds will apply:

1. Sulphur dioxide

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

2. Nitrogen dioxide and oxides of nitrogen

	Hourly limit value for the protection of human health (NO ₂)	Annual limit value for the protection of human health (NO ₂)	Annual critical level for the protection of vegetation and natural ecosystems (NO _x)
Upper assessment threshold	70 % of limit value (140 µg/m ³ , not to be exceeded more than 18 times in any calendar year)	80 % of limit value (32 µg/m ³)	80 % of critical level (24 µg/m ³)
Lower assessment threshold	50 % of limit value (100 µg/m ³ , not to be exceeded more than 18 times in any calendar year)	65 % of limit value (26 µg/m ³)	65 % of critical level (19,5 µg/m ³)

3. Particulate matter (PM-10/PM-2,5)

	24-hour average PM ₁₀	Annual average PM ₁₀	Annual average PM _{2,5} (1)
Upper assessment threshold	70 % of limit value (35 µg/m ³ , not to be exceeded more than 35 times in any calendar year)	70 % of limit value (28 µg/m ³)	70 % of limit value (17 µg/m ³)
Lower assessment threshold	50 % of limit value (25 µg/m ³ , not to be	50 % of limit value (20 µg/m ³)	50 % of limit value (12 µg/m ³)

	exceeded more than 35 times in any calendar year)		
(1) The upper assessment threshold and the lower assessment threshold for PM _{2,5} do not apply to the measurements to assess compliance with the PM _{2,5} exposure reduction target for the protection of human health.			

4. Lead

	Annual average
Upper assessment threshold	70 % of limit value (0,35 µg/m ³)
Lower assessment threshold	50 % of limit value (0,25 µg/m ³)

5. Benzene

	Annual average
Upper assessment threshold	70 % of limit value (3,5 µg/m ³)
Lower assessment threshold	40 % of limit value (2 µg/m ³)

6. Carbon monoxide

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

Section B. Determination of exceedances of upper and lower assessment thresholds

1. Exceedances of upper and lower assessment thresholds shall be determined on the basis of concentrations during the previous five years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least three separate years out of those previous five years.
2. Where fewer than five years' data are available, the Ministry may combine measurement campaigns of short duration during the period of the year and at locations likely to be typical of the highest pollution levels with results obtained from information from emission inventories and modelling to determine exceedances of the upper and lower assessment thresholds.

ANNEX III. Assessment of ambient air quality and location of sampling points for the measurement of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10 and PM2,5), lead, benzene and carbon monoxide in ambient air

Section A. General

Ambient air quality shall be assessed in all areas of air quality monitoring and aggregates in accordance with the following criteria:

1. 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 or modelling.
2. 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 definition of 'ambient air', 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.

Section B. Macroscale siting of sampling points

1. Protection of human health
 - a. Sampling points directed at the protection of human health shall be sited in such a way as to provide data on the following:
 - i. the areas within areas of air quality monitoring and aggregates where the highest concentrations occur to which the population is likely to be directly or indirectly exposed for a period which is significant in relation to the averaging period of the limit value(s),
 - ii. levels in other areas within the areas of air quality monitoring and aggregates 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 a 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 100 m 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. The pollution level should not be dominated by a single source unless such a situation is typical for a larger 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 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;
- 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 that is necessary for the protection of human health.

2. Protection of vegetation and natural ecosystems

- a. Sampling points targeted at the protection of vegetation and natural ecosystems shall be sited more than 20 km away from areas of air quality monitoring and aggregates 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 is representative of air quality in a surrounding area of at least 1 000 km². The Ministry may provide for a sampling point to be sited at a lesser distance or to be representative of air quality in a less extended area, taking account of geographical conditions or of the opportunities to protect particularly vulnerable areas.
- b. Account shall be taken of the need to assess air quality on islands.

Section C. Microscale siting of sampling points

- 1. In so far as is practicable, the following shall apply:
 - a. the flow around the inlet sampling probe shall be unrestricted (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 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 shall 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,
- c. 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,
- d. the sampler's exhaust outlet shall be positioned so that recirculation of exhaust air to the sampler inlet is avoided,
- e. 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.

2. 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 the public and operators,
- g. the desirability of co-locating sampling points for different pollutants,
- h. planning requirements.

Section D. Documentation and review of site selection

1. 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.

ANNEX IV. MEASUREMENTS AT RURAL BACKGROUND LOCATIONS IRRESPECTIVE OF CONCENTRATION

Section A. Objectives

1. 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.

Section B. Substances

1. Measurement of PM_{2,5} 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:
 - a. SO₄²⁻
 - b. Na⁺
 - c. NH₄⁺
 - d. Ca²⁺
 - e. NO₃⁻
 - f. K⁺
 - g. Cl⁻
 - h. Mg²⁺
 - i. Elemental carbon (EC)
 - j. Organic carbon (OC).

Section C. Siting

1. Measurements should be taken in particular in rural background areas in accordance with Sections A, B and C of Annex III.

ANNEX V. Criteria for determining minimum numbers of sampling points for fixed measurement of concentrations of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10, PM2,5), lead, benzene and carbon monoxide in ambient air

A. Minimum number of sampling points for fixed measurement to assess compliance with limit values for the protection of human health and alert thresholds in areas of air quality monitoring and aggregates where fixed measurement is the sole source of information

1. Diffuse sources

Population of or area (thousands)	If maximum concentrations exceed the upper assessment threshold (1)		If maximum concentrations are between the upper and lower assessment thresholds	
	Pollutants except PM	PM (2) (sum of PM10 and PM2,5)	Pollutants except PM	PM (2) (sum of PM10 and PM2,5)
0-249	1	2	1	1
250-499	2	3	1	2
500-749	2	3	1	2
750-999	3	4	1	2
1 000-1 499	4	6	2	3
1 500-1 999	5	7	2	3
2 000-2 749	6	8	3	4
2 750-3 749	7	10	3	4
3 750-4 749	8	11	3	6
4 750-5 999	9	13	4	6
≥ 6 000	10	15	4	7

(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 in Albania required under Section A(1) shall not differ by more than a factor of 2. Sampling points with exceedances of the limit value for PM10 within the last three years shall be maintained, unless a relocation is necessary owing to special circumstances, in particular spatial development.

(2) Where PM2,5 and PM10 are measured at the same monitoring station, these shall count as two separate sampling points. The total number of PM2,5 and PM10 sampling points in Albania required under Section A(1) shall not differ by more than a factor of 2, and the number of PM2,5 sampling points in the urban background of aggregates and urban areas of air quality monitoring shall meet the requirements under Section B of Annex V

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.

B. Minimum number of sampling points for fixed measurement to assess compliance with the PM2,5 exposure reduction target for the protection of human health

One sampling point per million inhabitants summed over aggregates 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.

C. Minimum number of sampling points for fixed measurements to assess compliance with critical levels for the protection of vegetation in areas of air quality monitoring other than aggregates

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

In island areas of air quality monitoring 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.

ANNEX VI. Reference methods for assessment of concentrations of sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10 and PM2,5), lead, benzene, carbon monoxide, and ozone

Section A. Reference measurement methods

1. Reference method for the measurement of sulphur dioxide

The reference method for the measurement of sulphur dioxide is that described in EN 14212:2005 'Ambient air quality — Standard method for the measurement of the concentration of sulphur dioxide by ultraviolet fluorescence'.

2. 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 14211:2005 'Ambient air quality — Standard method for the measurement of the concentration of nitrogen dioxide and nitrogen monoxide by chemiluminescence'.

3. Reference method for the sampling and measurement of lead

The reference method for the sampling of lead is that described in Section A(4) of this Annex. 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 PM10 fraction of suspended particulate matter'.

4. Reference method for the sampling and measurement of PM10

The reference method for the sampling and measurement of PM10 is that described in EN 12341:1999 'Air Quality — Determination of the PM10 fraction of suspended particulate matter — Reference method and field test procedure to demonstrate reference equivalence of measurement methods'.

5. Reference method for the sampling and measurement of PM2,5

The reference method for the sampling and measurement of PM2,5 is that described in EN 14907:2005 'Standard gravimetric measurement method for the determination of the PM2,5 mass fraction of suspended particulate matter'.

6. Reference method for the sampling and measurement 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'.

7. Reference method for the measurement of carbon monoxide

The reference method for the measurement of carbon monoxide is that described in EN 14626:2005 'Ambient air quality — Standard method for the measurement of the concentration of carbon monoxide by non-dispersive infrared spectroscopy'.

8. Reference method for measurement of ozone

The reference method for the measurement of ozone is that described in EN 14625:2005 'Ambient air quality — Standard method for the measurement of the concentration of ozone by ultraviolet photometry'.

Section B. Demonstration of equivalence

1. The Ministry may use any other method which it can demonstrate gives results equivalent to any of the methods referred to in Section A or, in the case of particulate matter, any other method which the Ministry can demonstrate displays a consistent relationship to the reference method. In that event the 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. The Ministry shall prepare and publish and make available to the public a report on the demonstration of equivalence in accordance with paragraph 1.

Section C. Standardisation

1. For gaseous pollutants the volume must be standardised at a temperature of 293 K and an atmospheric pressure of 101,3 kPa.
2. 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.

Section D. Introduction of new equipment

1. All new equipment purchased for implementation of this Decision must comply with the reference method or equivalent by.
2. All equipment used in fixed measurements must comply with the reference method or equivalent by 11 June 2013.

Section E. Mutual recognition of data

1. In carrying out the type approval to demonstrate that equipment meets the performance requirements of the reference methods listed in Section A, the Ministry, local government units shall accept test reports issued in other States by laboratories accredited to EN ISO 17025 for carrying out such testing.

ANNEX VII. OZONE TARGET VALUES AND LONG-TERM OBJECTIVES

Section A. Definitions and criteria

1. Definitions

AOT40 (expressed in $\mu\text{g}/\text{m}^3 \cdot \text{hours}$) means the sum of the difference between hourly concentrations greater than $80 \mu\text{g}/\text{m}^3$ (= 40 parts per billion) and $80 \mu\text{g}/\text{m}^3$ over a given period using only the one-hour values measured between 8.00 and 20.00 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 hours 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)
AOT40	90 % of the one hour values over the time period defined for calculating the AOT40 value (1)
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 values between 8.00 and 20.00 CET
Number of exceedances and maximum values per year	five out of six months over the summer season (April to September)
<p>(1) In cases where all possible measured data are not available, the following factor shall be used to calculate AOT40 values: $\text{AOT40}_{\text{estimate}} = \text{AOT40}_{\text{measured}} \times \text{total possible number of hours (*)} / \text{number of measured hourly values}$</p> <p>(*) being the number of hours within the time period of AOT40 definition, (i.e. 08:00 to 20:00 CET from 1 May to 31 July each year, for vegetation protection and from 1 April to 30 September each year for forest protection).</p>	

Section B. Target values

Objective	Averaging period	Target value	Date by which target value should be met (1)
Protection of human health	Maximum daily eight-hour mean (2)	120 $\mu\text{g}/\text{m}^3$ not to be exceeded on more than 25 days per calendar year averaged over three	1.1.2010

		years (3)	
Protection of vegetation	May to July	AOT40 (calculated from 1 h values) 18 000 µg/m ³ · h averaged over five years (3)	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"> — for the target value for the protection of human health: valid data for one year, — for the target value for the protection of vegetation: valid data for three years 			

Section C. Long-term objectives

Objective	Averaging period	Long term objective	Date by which the long term objective should be met
Protection of human health	Maximum daily eight-hour mean within a calendar year	120 µg/m ³	
Protection of vegetation	May to July	AOT40 (calculated from 1 h values) 6 000 µg/m ³ · h	

ANNEX VIII. Criteria for classifying and locating sampling points for assessments of ozone concentrations

The following apply to fixed measurements:

A. Macroscale siting

Type of station	Objectives of measurement	Representativeness (1)	Macroscale siting criteria
Urban	Protection of human health: 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	A few km ²	Away from the influence of local emissions such as traffic, petrol stations, etc.; Vented locations where well mixed levels can be measured; Locations such as residential and commercial areas of cities, parks (away from the trees), big streets or squares with very little or no traffic, open areas characteristic of educational, sports or recreation facilities
Suburban	Protection of human health and vegetation: to assess the exposure of the population and vegetation located in the outskirts of the aggregate, where the highest ozone levels, to which the population and vegetation are likely to be directly or indirectly exposed occur	Some tens of km ²	At a certain distance from the area of maximum emissions, downwind following the main wind direction/directions during conditions favourable to ozone formation; where population, sensitive crops or natural ecosystems located in the outer fringe of an aggregate are exposed to high ozone levels; where appropriate, some suburban stations also upwind of the area of maximum emissions, in order to determine the regional background levels of ozone
Rural	Protection of human health and vegetation: to assess the exposure of population, crops and natural ecosystems to sub-regional scale	Sub-regional Levels (some hundreds of km ²)	Stations can be located in small settlements and/or areas with natural ecosystems, forests or crops; representative for ozone

	ozone concentrations		away from the influence of immediate local emissions such as industrial installations and roads; at open area sites, but not on summits of higher mountains
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 population	Regional/ national/ continental levels (1 000 to 10 000 km ²)	Station located in areas with lower population density, e.g. with natural ecosystems, forests, at a distance of at least 20 km from urban and industrial areas and away from local emissions; avoid locations which are subject to locally enhanced formation of ground-near inversion conditions, also summits of higher mountains; coastal sites with pronounced diurnal wind cycles of local character are not recommended.
(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 requirements for monitoring forests and environmental interactions.

B. Microscale siting

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 10m from the nearest road, with distance increasing as a function of traffic intensity.

C. Documentation and review of site selection

The procedures in Section D of Annex III 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.

ANNEX IX. Criteria for determining the minimum number of sampling points for fixed measurement of concentrations of ozone

Section A. 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 (× 1 000)	Aggregates (urban and suburban) (1)	Other areas of air quality monitoring (suburban and rural) (1)	Rural background
< 250		1	1 station/50 000 km ² as an average density over all areas per country (2)
< 500	1	2	
< 1 000	2	2	
< 1 500	3	3	
< 2 000	3	4	
< 2 750	4	5	
< 3 750	5	6	
> 3 750	One additional station per 2 million inhabitants	One additional station per 2 million inhabitants	
(1) At least 1 station in suburban areas, where the highest exposure of the population is likely to occur. In aggregates at least 50 % of the stations shall be located in suburban areas.			
(2) 1 station per 25 000 km ² for complex terrain is recommended.			

Section B. Minimum number of sampling points for fixed measurements for areas of air quality monitoring and aggregates 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 aggregates and other areas of air quality monitoring 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 areas where there is supplementary assessment, the result of this is that a area has no remaining station, coordination with the number of stations in neighbouring areas shall ensure adequate assessment of ozone concentrations against long-term objectives. The number of rural background stations shall be one per 100 000 km².

ANNEX X. MEASUREMENTS OF OZONE PRECURSOR SUBSTANCES

Section A. Objectives

1. 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.
2. An additional aim is to support the understanding of ozone formation and precursor dispersion processes, as well as the application of photochemical models.

Section B. Substances

1. Measurement of ozone precursor substances shall include at least nitrogen oxides (NO and NO₂), 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	1,2,4-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	Toluene	Total non-methane hydrocarbons

Section C. Siting

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

ANNEX XI. LIMIT VALUES FOR THE PROTECTION OF HUMAN HEALTH

Section A. Criteria

1. Without prejudice to Annex I, 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 hours 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 % (1) 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.	

Section B. 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 ³ , not to be exceeded more than 24 times a calendar year	150 µg/m ³ (43 %)	— (1)
One day	125 µg/m ³ , not to be exceeded more than 3 times a calendar year	None	— (1)
Nitrogen dioxide			
One hour	200 µg/m ³ , 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 ³	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			
Calendar year	5 µg/m ³	5 µg/m ³ (100 %) on 13 December 2000, decreasing on 1 January 2006 and every 12 months	1 January 2010

Averaging Period	Limit value	Margin of tolerance	Date by which limit value is to be met
		thereafter by 1 µg/m ³ to reach 0 % by 1 January 2010	
Carbon monoxide			
maximum daily eight hour mean (2)	10 mg/m ³	60 %	— (1)
Lead			
Calendar year	0,5 µg/m ³ (3)	100 %	— (3)
PM-10			
One day	50 µg/m ³ , not to be exceeded more than 35 times a calendar year	50 %	— (1)
Calendar year	40 µg/m ³	20 %	— (1)
(1) Already in force since 1 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 ³ . The area in which higher limit values apply must not extend further than 1 000 m from such specific sources.			

ANNEX XII. INFORMATION AND ALERT THRESHOLDS

Section A. Alert thresholds for pollutants other than ozone

To be measured over three consecutive hours at locations representative of air quality over at least 100 km² or an entire area of air quality monitoring or aggregate, whichever is the smaller.

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

Section B. Information and alert thresholds for ozone

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

(1) For the implementation of Paragraphs 68 and 100, the exceedance of the threshold is to be measured or predicted for three consecutive hours

ANNEX XIII. CRITICAL LEVELS FOR THE PROTECTION OF VEGETATION

Averaging period	Critical level	Margin of tolerance
Sulphur dioxide		
Calendar year and winter (1 October to 31 March)	20 µg/m ³	None
Oxides of nitrogen		
Calendar year	30 µg/m ³ NO _x	None

ANNEX XIV. NATIONAL EXPOSURE REDUCTION TARGET, TARGET VALUE AND LIMIT VALUE FOR PM-2,5

Section A. Average exposure indicator

1. The Average Exposure Indicator expressed in $\mu\text{g}/\text{m}^3$ (AEI) shall be based upon measurements in urban background locations in areas of air quality monitoring and aggregates throughout the territory of the Republic of Albania. It should be assessed as a three-calendar year running annual mean concentration averaged over all sampling points established pursuant to Section B of Annex V. The AEI for the reference year 2010 shall be the mean concentration of the years 2008, 2009 and 2010.
2. However, where data are not available for 2008, the Ministry may use the mean concentration of the years 2009 and 2010 or the mean concentration of the years 2009, 2010 and 2011.
3. 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 2020. The AEI is used for the examination whether the national exposure reduction target is met.
4. 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.

Section B. National exposure reduction target

Exposure reduction target relative to the AEI in 2010		Year by which the exposure reduction target should be met
Initial concentration in $\mu\text{g}/\text{m}^3$	Reduction target in percent	
< 8,5 = 8,5	12. 0%	2020
> 8,5 — < 13	14. 10%	
= 13 — < 18	16. 15%	
= 18 — < 22	18. 20%	
≥ 22	. All appropriate measures to achieve 18 $\mu\text{g}/\text{m}^3$	

1. 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.
2. 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.

Section C. Exposure concentration obligation

Exposure concentration obligation	Year by which the obligation value is to be met
23. 20 $\mu\text{g}/\text{m}^3$	2015

Section D. Target value

Averaging period	Target value	Date by which target value should be met
Calendar year	25 µg/m ³	1 January 2010

Section E. Limit value

Averaging period	Limit value	Margin of tolerance	Date by which limit value is to be met
STAGE 1			
Calendar year	25 µg/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 1 January 2015	1 January 2015
STAGE 2 (1)			
Calendar year	20 µg/m ³		1 January 2020
(1) Stage 2 — indicative limit value to be reviewed by the Minister in 2013 in the light of further information on health and environmental effects, technical feasibility and experience of the target value.			

ANNEX XV. Information to be included in the local, regional or national air quality plans for improvement in ambient air quality

Section A. Information to be provided under Paragraph 93 (air quality plans)

1. Localisation of excess pollution
 - (a) region;
 - (b) city (map);
 - (c) measuring station (map, geographical coordinates).

2. General information
 - (a) type of area of air quality monitoring (city, industrial or rural area);
 - (b) estimate of the polluted area (km²) 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 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;
 - (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);
 - (c) information on pollution imported from other regions.

6. Analysis of the 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 improvement which existed prior to 11 June 2008, i.e.:
 - (a) local, regional, national, international measures;
 - (b) observed effects of these measures.

8. Details of those measures or projects adopted with a view to reducing pollution following the entry into force of this Decision:
 - (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 the publications, documents, work, etc., used to supplement information required under this Annex.

Section B. Information to be provided under Paragraph 87

1. All information as laid down in Section A.

2. Information concerning the status of implementation of the following legislation:

- a. on measures to be taken against air pollution by emissions from motor vehicles;
- b. on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations;
- c. on integrated pollution prevention and control;
- d. relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery;
- e. relating to the quality of petrol and diesel fuels;
- f. on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations;
- g. relating to a reduction in the sulphur content of certain liquid fuels;
- h. on the incineration of waste;
- i. on the limitation of emissions of certain pollutants into the air from large combustion plants;
- j. on national emission ceilings for certain atmospheric pollutants;
- k. on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products;
- l. on the sulphur content of marine fuels;
- m. relating to the measures to be taken against the emission of gaseous and particulate pollutants from compression-ignition engines for use in vehicles, and the emission of gaseous pollutants from positive-ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles;
- n. on energy end-use efficiency and energy services.

3. Information on all air pollution abatement measures that have been considered at appropriate local, regional or national level for implementation in connection with the attainment of air quality objectives, including:

- a. reduction of emissions from stationary sources by ensuring that polluting small and medium sized stationary combustion sources (including for biomass) are fitted with emission control equipment or replaced;

- b. reduction of emissions from vehicles through retrofitting with emission control equipment. The use of economic incentives to accelerate take-up should be considered;
- c. procurement by public authorities, in line with the handbook on environmental public procurement, of road vehicles, fuels and combustion equipment to reduce emissions, including the purchase of:
 - (i) new vehicles, including low emission vehicles,
 - (ii) cleaner vehicle transport services,
 - (iii) low emission stationary combustion sources,
 - (iv) low emission fuels for stationary and mobile sources,
- d. measures to limit transport emissions through traffic planning and management (including congestion pricing, differentiated parking fees or other economic incentives; establishing low emission zones);
- e. measures to encourage a shift of transport towards less polluting modes;
- f. ensuring that low emission fuels are used in small, medium and large scale stationary sources and in mobile sources;
- g. measures to reduce air pollution through the environmental permit system, the national emission plans, and through the use of economic instruments such as taxes, charges or emission trading.
- h. where appropriate, measures to protect the health of children or other sensitive groups.

ANNEX XVI. PUBLIC INFORMATION

1. The Ministry shall ensure that up-to-date information on ambient concentrations of the pollutants covered by this Decision is 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 Annex VII and Annexes XI to XIV. 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 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-10), 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. The Ministry shall ensure that timely information about actual or predicted exceedances of alert thresholds, and any information threshold is provided to the public. Details supplied shall include at least the following information:
 - a. Information on observed exceedance(s):
 - i. location or area of the exceedance,
 - ii. type of threshold exceeded (information or alert),
 - iii. start time and duration of the exceedance,
 - iv. 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):
 - i. geographical area of expected exceedances of information and/or alert threshold,
 - ii. expected changes in pollution (improvement, stabilisation or deterioration), together with the reasons for those changes;
 - c. Information on the type of population concerned, possible health effects and recommended behaviour:
 - i. information on population groups at risk,
 - ii. description of likely symptoms,
 - iii. recommended precautions to be taken by the population concerned,
 - iv. 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 the case of predicted exceedances, the Ministry shall take steps to ensure that such details are supplied to the extent practicable.

ANNEX XVII. Target values for arsenic, cadmium, nickel and benzo(a)pyrene

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

(1) For the total content in the PM10 fraction averaged over a calendar year.

ANNEX XVIII. Determination of requirements for assessment of concentrations of arsenic, cadmium, nickel and benzo(a)pyrene in ambient air within a zone or aggregate

I. Upper and lower assessment thresholds

The following upper and lower assessment thresholds will apply:

	Arsenic	Cadmium	Nickel	B(a)P
Upper assessment threshold in percent of the target value	60 % (3,6 ng/m ³)	60 % (3 ng/m ³)	70 % (14 ng/m ³)	60 % (0,6 ng/m ³)
Lower assessment threshold in percent of the target value	40 % (2,4 ng/m ³)	40 % (2 ng/m ³)	50 % (10 ng/m ³)	40 % (0,4 ng/m ³)

II. Determination of exceedances of upper and lower assessment thresholds

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

ANNEX XIX. Location and minimum number of sampling points for the measurement of concentrations in ambient air and deposition rates

I. Macroscale siting

1. The sites of sampling points should be selected in such a way as to:
 - a. provide data on the areas within areas of air quality monitoring and aggregates where the population is likely to be directly or indirectly exposed to the highest concentrations averaged over a calendar year;
 - b. provide data on levels in other areas within areas of air quality monitoring and aggregates which are representative of the exposure of the general population;
 - c. provide data on deposition rates representing the indirect exposure of the population through the food chain.
2. 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 m² at traffic-orientated sites, at least 250 m x 250 m at industrial sites, where feasible, and several square kilometres at urban-background sites.
3. Where the objective is to assess background levels the sampling site should not be influenced by areas of air quality monitoring and aggregates or industrial sites in its vicinity, i.e. sites closer than a few kilometres.
4. 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 the target values set out in Annex XVII are exceeded, the sampling points should be sited such that the application of BAT can be monitored.
5. 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 PM₁₀.

II. Microscale siting

1. The following guidelines should be met as far as practicable:
 - a. 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);

- 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. Higher siting may also be appropriate if the station is representative of a large area;
 - c. 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;
 - d. the sampler's exhaust outlet should be positioned so that recirculation of exhaust air to the sample inlet is avoided;
 - e. 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;
 - f. 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.
2. 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 the public and operators;
 - g. the desirability of co-locating sampling points for different pollutants;
 - h. planning requirements.

III. Documentation and review of site selection

1. 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.

IV. Criteria for determining numbers of sampling points for fixed measurement of concentrations of arsenic, cadmium, nickel and benzo(a)pyrene in ambient air

1. Minimum number of sampling points for fixed measurement to assess compliance with target values for the protection of human health in areas of air quality monitoring and aggregates where fixed measurement is the sole source of information.

(a) Diffuse sources

Population of aggregate or area (thousands)	If maximum concentrations exceed the upper assessment threshold (1)		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
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.

(b) Point sources

1. 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.
2. The sampling points should be sited such that the application of best available techniques (BAT) can be monitored.

ANNEX XX. Data quality objectives and requirements for air quality models

I. Data quality objectives

The following data quality objectives should be used 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	33%	50%		
Indicative measurements (*)	14%	14%	14%	33%
(*) Indicative measurement being measurements which are performed at reduced regularity but fulfil the other data quality objectives.				

1. The uncertainty (expressed at a 95 % confidence level) 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, 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.
2. 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. Twenty-four hour sampling is also 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.

3. The Ministry may use wet only instead of bulk sampling if it can demonstrate that the difference between them is within 10 %. Deposition rates should generally be given as $\mu\text{g}/\text{m}^2$ per day.
4. The Ministry 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 can demonstrate 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.

II. Requirements for air quality models

1. 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 the events.

III. Requirements for objective estimation techniques

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

IV. Standardisation

1. For substances to be analysed in the PM₁₀ fraction, the sampling volume refers to ambient conditions.

ANNEX XXI. Reference methods for assessment of concentrations in ambient air and deposition rates

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

1. The reference method for the measurement of arsenic, cadmium and nickel concentrations in ambient air is currently being standardised by CEN and shall be based on manual PM10 sampling equivalent to EN 12341, followed by digestion of the samples and analysis by Atomic Absorption Spectrometry or ICP Mass Spectrometry. In the absence of a CEN standard method, the Ministry use national standard methods or ISO standard methods.
2. The Ministry may also use any other methods which it can demonstrate give results equivalent to the above method.

II. Reference method for the sampling and analysis of polycyclic aromatic hydrocarbons in ambient air

1. The reference method for the measurement of benzo(a)pyrene concentrations in ambient air is currently being standardised by CEN and shall be based on manual PM10 sampling equivalent to EN 12341. In the absence of a CEN standard method, for benzo(a)pyrene or the other relevant polycyclic aromatic hydrocarbons, the Ministry may use national standard methods or ISO methods such as ISO standard 12884.
2. The Ministry may also use any other methods which it can demonstrate give results equivalent to the above method.

III. Reference method for the sampling and analysis of mercury in ambient air

1. The reference method for the measurement of total gaseous mercury concentrations in ambient air shall be an automated method based on Atomic Absorption Spectrometry or Atomic Fluorescence Spectrometry. In the absence of a CEN standardised method, the Ministry may use national standard methods or ISO standard methods.
2. The Ministry may also use any other methods which it can demonstrate give results equivalent to the above method.

IV. Reference method for the sampling and analysis of the deposition of arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons

1. The reference method for the sampling of deposited arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons shall be based on the exposition of cylindrical deposit gauges with standardised dimensions. In the absence of a CEN standardised method, the Ministry may use national standard methods.

V. Reference air quality modelling techniques

1. Reference air quality modelling techniques are not specified at present.