Guideline to Commission Decision 2004/461/EC

laying down a questionnaire to be used for annual reporting on ambient air quality assessment under Council Directives 96/62/EC, 1999/30/EC, 2000/69/EC and 2002/3/EC

August, 2006

Summary

Commission Decision 2004/461/EC[1] provides a questionnaire to be used by the Member States for the annual reporting under the air quality directive Framework Directive 96/62/EC and the first three Daughter Directives 1999/30/EC, 2000/69/EC and 2002/3/EC. This document gives a detailed guideline and recommendations to those responsible for filling in the questionnaire. The various issues are discussed per questionnaire form to be filled in. The guideline also gives an example of a questionnaire filled in.

[1] OJ L 156, 30.4.2004, as corrected by OJ L 202, 7.6.2004, p. 63.

Contents

1. Introduction

The Council Directive 96/62/EC on ambient air quality assessment and management ("Air Quality Framework Directive") and the related daughter directives require the EU Member States to send reports on various issues related to their air quality to the Commission. The Commission Decision 2004/461/EC specifies the questionnaire that Member States shall use for their annual report under the first three daughter directives:

- Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air,
- Directive 2000/69/EC relating to limit values of benzene and carbon monoxide in ambient air,
- Directive 2002/3/EC relating to ozone in ambient air.

This questionnaire is an extension of the previous version specified by Commission Decision 2001/839/EC, which dealt solely with reporting under the First Daughter Directive.

In this document the following references are used for directives and decisions:

Framework Directive	Council Directive 96/62/EC on ambient air quality assessment and management
First Daughter Directive	Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, amended by Commission Decision 2001/744/EC
Second Daughter Directive	Directive 2000/69/EC relating to limit values of benzene and carbon monoxide in ambient air
Third Daughter Directive	Directive 2002/3/EC relating to ozone in ambient air
Questionnaire Decision	Commission Decision 2004/461/EC
EoI Decision	Council Decision 97/101/EC establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within the Member States (amended by Commission Decision 2001/752/EC)

The current guideline is an extension of the previous guideline on filling in the questionnaire for the First Daughter Directive. It has been extended to include the report under the Second and Third Daughter Directive. A few additional changes have been made, reflecting some small changes in questionnaire elements that relate to the First Daughter Directive.

This guideline is intended to give assistance to those responsible for the completion of the questionnaire. It clarifies how to fill in the questionnaire, but not how to acquire the information needed. It is assumed that air quality assessment has been carried out in accordance with the directives. Earlier, a working group established by the EU Air Quality Steering Group has drafted the *Guidance on Assessment under the EU Air Quality Directives*. The user of the current document is advised to read this guidance report. Additional relevant guidance is given in the *Guidance to Member States on PM_{10} monitoring and intercomparisons with the reference method*, which not only discusses the issues referred to in its title, but also recommends how to identify exceedences of PM_{10} limit values due to natural events. While drafting the current document it was assumed that the reader is familiar with the air quality directives and the above mentioned documents, which are all available at http://www.ec.europa.eu/environment/air/.

Parallel to the reporting under the air quality directives specified in the questionnaire, Member States have also to report air quality monitoring data under the EoI Decision. Taking the legal restraints set by the air quality directives into account, duplication of reporting has been minimised in the design of the questionnaire.

In the Decision 2004/461/EC it has been indicated for which questionnaire items filling in is mandatory and for which items this is voluntary. **In the forms voluntary items are printed in italic.** Most of the mandatory items are required by the air quality directives. Some other items have been rendered mandatory in the comitology procedure in which Decision 2004/461/EC describing the questionnaire was prepared.

The Commission has made the questionnaire available in electronic form as an Excel workbook, in all Community languages. Member States can download the file from http://www.ec.europa.eu/environment/air/ambient.htm. The structure of the Excel tables has been copied from the Decision, so the tables may not be changed by Member States.

To submit this information, the Member States are requested to fill in this file and send it to the Commission on a CD-ROM or diskette. As proposed by the Commission DG ENV unit in charge of the Air Quality Directives and endorsed by the CAFE Steering Group, the Member State can fulfil the obligation also by uploading the questionnaire in the appropriate folder in Reportnet CDR, maintained by the European Environment Agency (EEA) and only notifying the Commission via Email at airinfo@ec.europa.eu. Email reply from the Commission can be treated as an official confirmation of receipt. Member States has to ensure that a person making the upload is authorized for submission of the questionnaire.

Upload to the Reportnet CDR is strongly encouraged also when the official submission is provided by post.

Following this introduction, Chapter 2 of this document gives some general points of guidance. Chapter 3 provides where needed clarification per form to be filled in. Annex 3 gives a simple example of a questionnaire, where the first few lines of each form have been filled in.

2. General points

2004 was the first year on which reporting under all three Daughter Directives has been mandatory for all Member States.

2.1 Additional way to submit the report

The Member State may submit the report also through an upload to EEA Reportnet CDR and electronic notification to the Commission. See Introduction chapter for further details.

2.2 Changes in the report under the First Daughter Directive

As a general rule, the existing forms of the previous questionnaire in Decision 2001/839/EC on reporting under the First Daughter Directive have been kept unchanged, but a few improvements were deemed useful:

- Exceedence of the assessment thresholds are to be reported every year, instead of only when it has been reviewed.
- The term “Station code” has been changed into “EoI station code”, emphasising that the station code reported must be identical to the code used for reporting under the EoI Decision.
- It is considered by default that measurements from stations included (Forms 3, 11 etc.) fulfil the appropriate directive's siting criteria and data quality objectives for fixed measurement. If that is not the case, it has to be indicated in the comment.
- Ticking cells by “+” has been changed to ticking by “y”.
- In the formatting of dates, the month and day of month have to be reported as separate entries.
- When there are no exceedences to report in a form, the entry “no exceedences” must be entered in the upper left cell, instead of leaving the form empty.
- For zones in which no areas exist where the limit value for ecosystems for SO_2 or vegetation for NO_x apply, a special code for indicating the exceedence status has been introduced in Form 8.
- Recommendation is given that, where available, GIS (Shape) files on delimitation on zones are provided together with the report.
- Recommendation is given that correction factor is accompanied with a sideline comment on the procedure of its determination.

2.3 Notes in the Questionnaire Decision

The Questionnaire Decision not only lays down the forms that are provided as Excel files for filling in, but it also specifies the forms with notes. These notes are not repeated in the current guideline, but they should be taken into account when filling in the questionnaire.

2.4 Comments and footnotes

It should be avoided to make comments and footnotes, e.g. invalid data should not be reported together with a comment on the invalidity. Such remarks can generally not be taken into account in overview reports. If it is essential to add a remark, it should not be entered in any field of the form, but it should appear in the first unused column at the right of the form. In that case it should also be mentioned on the worksheet of Form 1, in a cell below Form 1, that a comment has been made indicating the form concerned. It would be helpful to include a translation in (preferably) English, German or French.

2.5 Common mistakes

The following text box gives a list of common mistakes. Since they caused problems and possibly errors in the processing of the questionnaires, it is important to avoid these.

Common mistakes

An important reason for providing an unprotected Excel format was to offer flexibility to Member States in filling in the questionnaire. However, to allow automatic processing it is important that Member States ***adhere to the format*** specified. In particular the following points should be taken into account:

- ***In Forms 3 and 4 the EoI station codes used in the report under the EoI Decision must be given***. The current questionnaire avoids duplicate reporting of data submitted under the EoI Decision. This procedure can only be maintained if Member States carefully adhere to specifications of the questionnaire.

- The ***exceedence status of zones*** with respect to limit values and limit values plus margin of tolerance ***must be filled in for all zones***.

- ***Invalid data***, not complying with the data quality requirements, such as the minimum data capture or the equivalency requirement for PM measuring methods, ***should not be reported***.

- ***Zone codes and station codes should be consistent*** (identical) throughout the questionnaire, to avoid that e.g. the number of stations in a zone appears to be inconsistent with the minimum requirements.

- ***Codes deviating from the ones prescribed are not allowed***. Reporting must adhere to the codes defined in the decision (e.g. 'HEV', 'y'); if other codes are used (e.g. 'not available', 'urban'), the information will be lost during automatic processing.

- Comment, remarks, footnotes should be avoided, and certainly not be placed inside the cells of a form. Any remarks deemed necessary should appear in the first unused column at the right of the form, and should be referred to on the worksheet of Form 1.

- Reporting must adhere to the formats specified in the Decision. In particular the following points must be respected:

  - separators: if more than one code is given (e.g. several reasons for exceedence), ***";" shall be used as separator***;

  - **empty cells, separators, codes (e.g. 'y'), should contain no (invisible) spaces.**

3. Clarification per form

Form 1 Contact body and address

The Framework Directive states in Article 11(1) states that the Member State should notify to the Commission the competent authorities, bodies and laboratories referred to in Article 3. This should already have been done by 22.04.99. Notification of any changes should not wait until the annual report, but be sent as soon as possible. Consequently, the reporting of the competent authorities, bodies and laboratories under Art. 11(1) has not been included in the questionnaire.

The purpose of Form 1 is to provide the Commission with a single contact address at the national level that can be approached in case of uncertainties or technical problems with the questionnaire. In Member States where the competent authorities, bodies and laboratories are at the national level, the contact body referred to in Form 1 can be expected to be one of these, in particular the national body responsible for the assessment of air quality (or for the implementation of the directive). However, for Member States where the competent bodies are at the regional or municipal level, the most suitable contact body might be the body that is responsible for the national co-ordination of the implementation of the directives or for the completion of the questionnaire. The National Representation, the official contact body of the Member State in Brussels, is not expected to be the best contact body to be approached for operational details such as indicated above.

The Member State is requested to fill in not only the national contact body, but if possible also a contact person that is directly involved in the co-ordination of the work related to the questionnaire.

Form 2 Delimitation of zones and agglomerations

Zone names and codes

Member States have to divide their entire territory into zones. Zones can be regarded as the primary territorial units for assessment and management of air quality under the air quality directives. Consequently, unambiguous definition of all zones is needed. Member States have employed different approaches for the definition of their zones. Some Member States have divided their territory into a single set of zones serving all pollutants – possibly including those of the future daughter directives as well. Other Member States have defined a single base set of zones and modified some of the zones for the application to particular pollutants. Where a Member State has distinguished different sets of zones in relation to health protection and ecosystem/vegetation protection respectively, a single location can be situated in several zones, *e.g.* in a zone defined for all pollutants except lead and in another, larger zone defined for lead.

National naming methods for zones may differ strongly between Member States. Because of this, an additional zone code is needed to unambiguously identify zones. The zone code is defined as CCxxxx, where CC is the abbreviation of the Member State's name as given in Table A of this guideline and xxxx a serial number to be given to each zone by the Member State. The Member State is entirely free in allocating serial numbers to the zones.

> *Example: For SO_2, NO_2/NO_x, PM_{10}, benzene, CO and ozone, two zones in country CC have been coded as CC0014 and CC0021. When, for the pollutant lead, these zones*

are merged and defined as one zone, the serial number xxxx in the code for this zone would not relate to 0014 or 0021, but could be any "unused" number.

Table A Abbreviations for the names of Member States

Austria: AT; Belgium: BE; Cyprus: CY; Czech Republic: CZ; Denmark: DE; Estonia: EE; Finland: FI; France: FR; Germany: DE; Greece: GR; Hungary: HU; Ireland: IE; Italy: IT; Lithuania: LT; Luxembourg: LU; Latvia: LV; Malta: MT; Netherlands: NL; Poland: PL; Portugal: PT; Slovenia: SI; Slovakia: SK; Spain: ES; Sweden: SW; United Kingdom: UK.

The Member State should also give in Form 2 the full zone name, which is the name (or code) used within the Member State. This name usually gives information on the territory covered by the zone and also allows cross-referencing to national reports in which the zone names are used. If no zone name exists, the zone code can be regarded as the zone name and should be given as the entry for the full zone name.

Agglomerations

Because the monitoring requirements partly depend on whether a zone is an agglomeration or not, the Member State should specify which zone is an agglomeration as defined in Article 2 of the Framework Directive.

Zone area

The zone area should not include the area of sea.

Information on zone borders

It is mandatory to provide information on the zone borders. There are several ways in which these borders can be provided:

- Maps printed on paper

The main advantage of maps on paper is that they are easy to read. The purpose of such paper maps is not to exactly delineate the zone territory, but to provide an overview of how the Member States' territory has been divided into zones and to show where individual zones are located. Consequently, comprehensive maps are preferred that encompass the entire Member State or a large part of a large Member State, instead of separate maps for each zone. However, a major problem of paper maps sent by different Member States is that they will generally have different formats and consequently cannot be combined to give European overviews.

- Bitmaps

Maps supplied electronically as bitmaps (format BMP, TIF, JPG etc.), showing drawn zone borders on a country or region map, can in principle be electronically processed. However, maps from different countries cannot be combined to give European overviews.

- Zone borders coordinates in electronic form

The most exact and flexible form of reporting how the zone territories have been defined is in the form of coordinates of zone borders (see Annex 1 for the notation of the coordinates). This can be reported in the bottom part of Form 2 or in separate files. In view of the anticipated use, a very high resolution of the zone borders is not needed. A good balance between file size and spatial detail is a resolution of about 1 km. For correct interpretation the Member State is requested in Note 5 to add a map of the zones; this is essential if the zone borders consist of more than one closed curves (*e.g.* two combined separate areas or a "hole" in the zone).

It is recommended that for ease of handling on a European scale, where available, a separate GIS (Shape) files are provided with the report. As the boundary overlap between countries (or

between regions if generation of GIS files is in their domain) may be an issue in such case, use of EuroBoundaryMap data set is recommended[2].

Border coordinate pairs
Annex 1 describes how to format the border coordinate pairs.

Zone changes
Although usually the territory of zones does not change every year, Member States are required to report all zone borders annually, to avoid complicated bookkeeping when occasionally some of the borders change. If nothing has changed, this simply means copying the information reported in the previous year.

Changes in administrative borders within a Member State usually do not occur exactly at the turn of the year. However, any changes of the borders of zones should take place at the start or end of the year. Because reporting requirements and, possibly, air quality management actions deriving from the air pollution levels reported need to be addressed under the new administrative structure, it is recommended to change the zone borders already at the beginning of the calendar year in which the administrative border change occurs.

Form 3 Stations used for assessment and measuring methods

EoI station code
All stations used under the air quality directives must be included in the report under the Exchange of Information Decision (EoI). This is needed to link meta data on stations reported under the EoI Decision with the station data in the questionnaire. Decision 2004/461/EC requires that

- ***the EoI station codes used in the report under the EoI Decision shall be given. The Member States are urged to carefully check the consistency of the station codes used in the questionnaire and the EoI report.***

It is considered by default that all listed station fulfils data quality objectives and siting criteria as stated in the directive for fixed (continuous) measurements. It might occur however that it is the indicative measurement which needs to be included (lower data quality in a fixed station due to prolonged technical error, monitored exceedances in zones with no fixed monitoring, etc.). This has to be clearly indicated in a comment. As mobile stations are not considered to be included in EoI, a case-by-case approach should be employed with the Commission.

Local station code
The Member States are requested to report, in addition to the EoI station code, also the local station code, *i.e.* the code (or name) used within the Member State, because these codes allow checking the match of stations with EoI submission and cross-referencing to national reports in which these local codes are used.

Zone code(s)
In the first questionnaire on the First Daughter Directive formally agreed by Committee under Article 12 of 96/62/EC the item "Zone code(s)" was typed in regular font, defining it as a mandatory item for reporting. However, in the Commission Decision 2001/839/EC as

[2] In 2007, geographical templates will be provided by the EEA to support GIS-based submission.

corrected by OJ L 12,15.01.2002, p70 it was unintentionally printed in italics. In the current succeeding questionnaire the format in italics has been retained. Although this formally renders the item voluntary, it is strongly recommended to fill in the zone code(s), as this directly enables checking compliance with the requirement for minimum number of stations.

Station situated in more than one zone
In Member States that have divided their territory in more than one way into zones (see the guideline to Form 2), a station may be in more than one zone. In that case all zone codes are expected in Column 3.

> *Example: a station may be situated in zone CC019 applying to all pollutants except lead and in zone CC148, applying to lead; in the third column of Form 3 this is denoted by "CC019;CC148". In this example, both zones would also be denoted when the station would only measure lead.*

Not all measurements may be used for monitoring under the air quality directives in some cases
For a multipollutant station, the Member State may have reason to regard the measurement of a particular pollutant as unsuitable for assessment under the air quality directives. A reason may be that the quality of the measurement is insufficient or that the siting does not comply with the siting requirements for that pollutant. To avoid confusion, the Member State is requested to indicate in Form 3 which measurements are used officially under the First and Second Daughter Directive. ***This also means that stations that are not used for formal assessment under the directives should not be included in Form 3.***

Not all stations serve to assess compliance with the limit values for ecosystems or vegetation
The limit values for health protection apply everywhere in the Member State's territory. However, Annex VI of 1999/30/EC specifies that stations for the protection of ecosystems and vegetation should not be placed in certain areas. The annex also specifies a minimum area of representativeness for such stations. Consequently, only some the stations can be used for assessment in relation to the limit values for ecosystems or vegetation. To indicate how their stations are used for compliance checking, the Member State needs to specify for each station for which protection target(s) it is used.

It is possible that a station is at a location where the ecosystem and/or vegetation limit values apply, but where the levels are not representative for a surrounding area of at least 1000 km^2 (or less) as described in Annex VI of 1999/30/EC). In that case, the code for the "Function of station" should not refer to ecosystem and/or vegetation protection.

Almost all stations that are used in relation to the protection of ecosystems (SO_2) are also used in relation to the protection of vegetation (NO_x); the "Function of station" is then denoted by "HEV". It is, however, possible that a station is only representative of the area around it only for one of the two pollutants. For that case, the codes "HE" and "HV" are available.

For ozone stations such an indication is not asked, because the ozone station type implies whether a station relates to vegetation protection.

Correction factor and correction equation for particulate matter
The correction factor and correction equation for particulate matter has been extensively clarified in the report *Guidance to Member States on PM_{10} monitoring and intercomparisons*

with the reference method. An example of a correction equation is CR = A · CM + B, where A and B are empirical constants.

When a correction factor or equation is used, the PM concentrations to be reported in the questionnaire should be the "equivalent" concentrations that result from the application of the correction factor or equation.

It is recommended that, following the rules to introduce comments (see Chapter 2.4), a reference to the exercise and a year when factor has been determined, is included. It should indicate whether the *Guidance on Demonstration of Equivalence of Ambient Air Monitoring Methods* has been employed (e.g. add Following GDE). It should be noted that filling in the form cannot be regarded as the full justification as referred to in Annex IX paragraph IV of the First Daughter Directive. It is recommended that when new information on demonstration of equivalence is available, it is without delay made available to the Commission (notification with web link suffices), and reflected in the next report.

Form 4 Stations used for assessment of ozone, including nitrogen dioxide and nitrogen oxides in relation to ozone

The role of NO_2 and NO_x stations

NO_2 and NO_x measurements are reported under the Third Daughter Directive with a purpose that differs from that of the First Daughter Directive. NO_2 measurements under the Third Daughter Directive are done together with ozone in order to provide an indication of the representativeness of the ozone levels. When ozone is converted into NO_2 due to nearby NO_x sources, the elevated NO_2 is a good indication of this local deviation. These NO_2 measurements must therefore always be co-located with ozone measurements.

NO_x is measured under the Third Daughter Directive as a precursor to ozone. These NO_x measurements do not have to be co-located with ozone measurements. Stations that are only used for assessment of NO_2 or NO_x under the First Daughter Directive should not be reported in Form 4, but in Form 3. Stations that are used for assessment of NO_2 or NO_x under the First as well as the Third Daughter Directive should be reported both in Form 3 and 4.

Type of station for ozone

Annex IV of the Third Daughter Directive defines the station types for ozone. These types deviate from the typology used under the EoI Decision. Because the station type for ozone is not reported under EoI, it must be reported in this questionnaire.

Form 8 List of zones and agglomerations where levels exceed or do not exceed limit values (LV) or limit values plus margin of tolerance (LV+MOT)
and
Form 9 List of zones and agglomerations where levels exceed or do not exceed target values or long term objectives for ozone

The exceedence status of a zone in relation to threshold exceedence

As a rule, the exceedence status of a zone is determined by the highest value of the concentration parameter of the limit value (or LV+MOT) that occurs in the zone. There are exceptions to this rule, however:

1. For assessing compliance with the limit values related to ecosystems and vegetation of the First Daughter Directive, only the areas where these limit values apply should be taken into account (see Annex VI(Ib) of the First Daughter Directive).
2. For ozone, the target value and long-term objective for the protection of vegetation should not be applied in urban areas, following the considerations in Annex IV of 2002/3/EC.
3. As the limit value (and LV+MOT) for lead in areas around certain sources are allowed to be higher than elsewhere, the highest level in such an area may not be decisive for the compliance status of the zones encompassing those areas (see below for clarification).

Exceedences calculated by modelling

The level that determines the compliance status of a zone may have been found by measurements at a fixed station or by modelling techniques. The *Guidance on the Assessment under the EU Air Quality Directives*, in particular Chapter 4.3, gives a detailed discussion and guidance on how to use models in assessing the compliance status of a zone.

It is possible that a limit value (or limit value plus margin of tolerance) has not been measured, but determined by modelling solely. The questionnaire does not include forms for reporting such modelled exceedences in detail, as Form 11 does for measured exceedences. When model calculations are the only basis for concluding that a threshold has been exceeded in a particular zone, the Member State is requested to indicate this in Forms 8 and 9 by ticking with "m" (Note 4 to Form 8 and Note 2 to Form 9). If both measurements and model calculations show that a threshold has been exceeded, the Member State should regard the measurements as the primary basis for the compliance status, so 'y' is used. Table B below summarises this.

Table B Indication in Forms 8 and 9 of how the exceedence of a threshold (LV or LV+MOT) has been established

Exceedence in the zone measured?	Exceedence in the zone calculated by a computer model?	Then tick with:
Yes	No	y
Yes	Yes	y
No	Yes	m

The values of the limit value plus margin of tolerance

Table C specifies the values of the limit value plus margin of tolerance for the years in which the margin of tolerance exists, according to Annexes I-IV of the First Daughter Directive and Annexes I and II of the Second Daughter Directive. For the First Daughter Directive the date of introduction of the margin of tolerance was 19/07/99, the date of entry into force of the directive; the first step of reduction was on 01/01/2001.

As indicated, in the year of the attainment date the MoT is reduced to zero, therefore LV+MoT equals the LV. The situation of being in between never applies, so the middle column must always be empty.

Table C Stepwise reduction of the limit value plus margin of tolerance (taken from the *Guidance on the Assessment under the EU Air Quality Directives*)

Pollutant	Averaging period	Limit value (µg/m^3 except CO) [1,2)]	To be met by	Margin of tolerance	Until 31/12/00	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
					Limit value + margin of tolerance (µg/m^3 except CO) [1,2)]										
SO_2	1 hour	350	01/01/05	150 µg/m^3	500	470	440	410	380	350					
SO_2	24 hours	125	01/01/05	-											
SO_2	1 yr, ½ yr [3)]	20	19/07/01	-											
NO_2	1 hour	200	01/01/10	50%	300	290	280	270	260	250	240	230	220	210	200
NO_2	1 year	40	01/01/10	50%	60	58	56	54	52	50	48	46	44	42	40
NO_x	1 year	30	19/07/01	-											
PM_{10}	24 hours	50	01/01/05	50%	75	70	65	60	55	50					
PM_{10}	1 year	40	01/01/05	20%	48	46	45	43	42	40					
PM_{10}	1 year	20 [4)]	01/01/10 [4)]	50%	30	30	30	30	30	30	28	26	24	22	20
Lead	1 year	0.5	01/01/05	100%	1.0	0.9	0.8	0.7	0.6	0.5					
Lead [5)]	1 year	0.5; 1.0 in 2005-2009	01/01/10	100%	1.0	1.0	0.95	0.9	0.85	1.5	1.4	1.3	1.2	1.1	0.5
Benzene	1 year	5	01/01/10	100%		10	10	10	10	10	9	8	7	6	5
CO	8 hours	10	01/01/05	6 mg/m^3		16	16	14	12	10					

1) Numerical value of the limit value

2) For CO in mg/m^3

3) Calendar year and winter (1 October to 31 March)

4) Indicative limit value

5) Only valid for specific point sources, of which the Commission must be notified (according to annex IV of the first Daughter Directive); in these cases the intermediate limit value of 1.0 µg/m^3 must be met by 01/01/2005.

Specific sources of lead

A somewhat complicated situation exists regarding the specific sources that are referred to in Annex IV of the First Daughter Directive. In the immediate vicinity of specific sources the thresholds for lead are temporarily higher than in other, "normal" areas[3]. These provisions only apply to situations of which the Commission has been notified under certain conditions given in Annex IV of the First Daughter Directive.

So, a zone may be composed of "normal" areas and areas around specific sources. The levels in each of these two area types have to be compared with the appropriate threshold.

> *Example: In 2006 in a certain zone the highest level in the areas near specific sources is 0.8 μg/m^3 and the highest level in the other areas of that zone is 0.6 μg/m^3. The compliance status of the zone is then determined by 0.6 μg/m^3, because this is above the limit value of 0.5 μg/m^3, while the (in absolute terms higher) level of 0.8 μg/m^3 is below the local limit value.*

The three cases given in Table D below illustrate how to report the compliance status of such a zone in Form 8. In all cases the zone as a whole is not in compliance, since the limit value is exceeded somewhere. In Cases 1 and 2, where the exceedence occurs irrespective of the specific source areas, the SS column is not ticked. In Case 3, where the non-compliance is solely due to exceedence in the area near specific sources, the SS column is also ticked.

Table D Examples of reporting exceedence of a threshold for a zone in which areas near specific sources exist

	Exceedence in "normal" area?	**Exceedence in area near specific sources?**	**Exceedence status of the zone reported in Form 8**	**SS**
Case 1	Yes	Yes	y	
Case 2	Yes	No	y	
Case 3	No	Yes	y	y

"Old limit values"

It is noted that the "old" limit values of the directives 80/779/EEC, 82/884/EEC and 85/203/EEC remain in effect until the new limit value had/will take over in 2005 and 2010 respectively. Forms 26 and 27 provide tables for reporting exceedences of those limit values.

Form 10 List of zones and agglomerations where levels exceed or do not exceed upper assessment thresholds (UAT) or lower assessment thresholds (LAT), including information on the application of supplementary assessment methods

Five-years basis for exceedence of the assessment thresholds

Section I of Annex V of the First Daughter Directive and the corresponding Annex III of the Second Daughter Directive define the assessment thresholds on the basis of one year. Consequently, the number of exceedences of the numerical value can be determined for each year. *However, Form 6 does not refer to single-year exceedences.* The directives specify in Sections II of the annexes mentioned above that exceedence of the assessment thresholds should be judged on the basis of five consecutive years, to reduce the probability for

[3] In Annex IV of 1999/30/EC specific sources are mentioned separately in relation to the limit value and in relation to the margin of tolerance respectively. In practice these specific sources are expected to be the same sources.

exceptionally high or low concentrations in a single year to alter the assessment requirements. Art. 7(1) of the First Daughter Directive and 5(1) of the Second Daughter Directive mention in addition that this should be reviewed at least every five years or earlier in the event of significant emission changes. Form 10 should indicate the "multi-year" exceedence status calculated according to Sections II of Annex V of the First Daughter Directive and Annex III of the Second Daughter Directive respectively. In contrast to the previous guidance relating to Decision 2001/839/EC, this information is given every year.

During the first years of implementation of the First or Second Daughter Directive, less than five years of data may be available at some stations. In later years this may also be the case when a station has been moved or when no valid data set could be produced at a station for a particular year. A similar situation arises in the event of significant emission changes, when the existing measurement data are no longer representative for the new situation. In that case the more flexible procedure as described in Article 5 of the First Daughter Directive for the Preliminary Assessment can be employed, in which estimations based on computer models or other techniques can be used to determine whether the assessment thresholds are exceeded anywhere in the zone.

Similarity to Form 8
Apart from the SA column, Form 10 is similar to Form 8. For clarification on the exceedence status of a zone in relation to threshold exceedence, on exceedences calculated by modelling and on specific sources of lead the reader is referred to the corresponding paragraphs of Form 8.

Upper and Lower Assessment Thresholds near specific sources of lead
The upper and lower assessment thresholds for lead apply everywhere, irrespective of the presence of specific sources nearby.

Amendment of the calculation of the assessment threshold
The first paragraph of Section II of Annex V of 1999/30/EC has been amended by Decision 2001/744/EC, replacing the paragraph by the following text:

> *"Exceedances of upper and lower assessment thresholds must be determined on the basis of concentrations during the previous five years where sufficient data are available. An assessment threshold will be deemed to have been exceeded if it has been exceeded during at least three separate years out of those previous five years."*

Ticking the SA column
The Member State is requested to use "y" in the SA column for indicating that information from fixed measuring stations has been supplemented by information from other sources as referred to in Art. 7(3) of 1999/30/EC.

Form 11 Individual exceedences of limit values and limit values plus the margin of tolerance

Measured exceedences are reported in more detail than modelled exceedences
Form 11 only applies to measured exceedences. The reporting on modelled exceedences is restricted to notification if exceedences have been concluded from model calculations (Form 8 and 9).

Which exceedences should be reported?
Note 4 to Form 11 states: "All exceedences of the limit value plus the margin of tolerance at a station are reported if the total number of exceedences is above the allowed number. If the total number of exceedences at a station is lower than or equal to the allowed number, no exceedences are reported." The following example is given to clarify this.

Example: Reporting on exceedences of the NO_2 hourly limit value plus margin of tolerance in 2003: 270 $\mu g/m^3$ not to be exceeded more than 18 times per calendar year:

Number of hourly concentrations above 270 $\mu g/m^3$ observed:	*0*	*17*	*18*	*19*	*20*
Number of hourly concentrations exceeding 270 $\mu g/m^3$ reported in Form 11e of the questionnaire:	*0*	*0*	*0*	*19*	*20*

Reporting of reasons
Unfavourable climatological, meteorological or topographical conditions, which exist beyond human control, should not be regarded as a reason for exceedence. Consequently, "reasons of exceedence" in Article 11(1aii) of 96/62/EC should be generally be read as sources or source categories. For natural sources and natural events, the First Daughter Directive gives special provisions and consequently these sources and events are regarded as meaningful reasons for exceedence (1999/30/EC, Art. 3(4) and 5(4)).

Form 12 Reasons for individual exceedences: optional additional codes to be defined by the Member State

To facilitate further processing, Table 2 of the questionnaire offers standard codes for reasons for individual exceedences. The list of standard codes is intended to include the most common reasons, but the Member State may wish to distinguish one or several other reasons of exceedence. To accommodate this, Form 12 has been included in the questionnaire. For easy processing it is suggested that the Member State uses a code defined as CCxx, where CC is the abbreviation of the Member State's name as given in Table A of this guideline and xx a serial number given by the Member State.

Form 13 Individual exceedences of ozone thresholds

Form 13 is similar to the forms used for the month and summer reports on ozone threshold exceedences.

Definition of exceedence period
Note 2 to Form 13 gives the following definition: "An exceedence period is a continuous period on a single calendar day during which a threshold was continuously exceeded. A period cannot include hours of more than a single calendar day. If more than one exceedence period occurs on a calendar day, each period must be reported separately."

The tables below gives some examples of the meaning of this note: Table Ea gives a succession of hourly ozone concentrations, and Table E.b shows how Form 13a should be filled in.

Example:
Table E.a Exceedences of the ozone information threshold value

First hour[1]	***Last hour[1]***	***Successive hourly ozone concentrations***

13h, 12 June	*16h, 12 June*	*181,192, 197,192*
18h, 12 June	*20h, 12 June*	*188, 185, 189*
15h, 13 June	*02h, 14 June*	*188, 210, 244, 234, 225, 199, 187, 215, 222; 215, 198, 203*

[1] *13h indicates the hourly period 13:00-14:00 hour.*

Table E.b Exceedences of Table E.a filled in in Form 13a Exceedence of ozone information threshold value

Zone code	*EoI station code*	*Month*	*Day of month*	*Maximum 1-hour mean ozone concentration ($\mu g/m^3$) during exceedence period*	*Reason code(s)*	*Starting time of the exceedence period*	*Total number of exceedence hours*	*1-hour mean NO_2 concentration ($\mu g/m^3$) during maximum ozone concentration*
...	*...*	*6*	*12*	*197*	*...*	*13*	*4*	*...*
...	*...*	*6*	*12*	*189*	*...*	*18*	*3*	*...*
...	*...*	*6*	*13*	*244*	*...*	*15*	*9*	*...*
...	*...*	*6*	*14*	*215*	*...*	*0*	*3*	*...*

Form 14 Exceedence of ozone target values

The target values for ozone are defined respectively on a 3 and 5 year basis. For the first years of implementation of 2002/3/EC the Member State is requested to take data from previous years, as far as available, into account.

Form 16 Annual average concentrations of ozone precursor substances

The concentrations should be given in $\mu g/m^3$.

Form 17 Monitoring data on 10 minutes mean SO_2 levels

It is recommended to report exceedences for all stations that monitor 10 minutes mean levels for the purpose of the First Daughter Directive[4]; this includes stations where no exceedences were observed.

Form 18 Monitoring data on 24hr mean $PM_{2,5}$ levels

Annex I(4) of the EoI Decision describes how to calculate the statistical parameters of Form 18.

Form 19 Tabular results of and methods used for supplementary assessment

Supplementary assessment

Article 7(3) and Annex VIII(I,II) of the First Daughter Directive give general indications on how to perform and report the assessment by computer modelling, but no detailed prescriptions are given. The reader is referred to the *Guidance on Assessment under the EU*

[4] Art. 3 (3) requirement of the First Daughter Directive, for the purposes of informing the review. The review has by now already taken place. The Member States are free to continue to provide the information, if available.

Air Quality Directives, in particular Chapter 2.3, 2.4 and 4.3, for a more extensive discussion of computer modelling and supplementary assessment under the air quality directives.

Three types of information on supplementary assessment can be reported:

- Tabular information on results;
- Maps on results;
- Information on the methods used (not further clarified here).

Tabular information on results

Form 19 provides a framework for reporting the results of the supplementary assessment in tabular form. Some Member States may be able to complete Form 19 entirely, for all pollutants and all zones. If, however, the information needed is only partly available, the Member State may fill in the form partly.

- *Area*: this entry indicates the total area in km^2 of the part of the zone where the levels exceed the limit value. It should be determined consistently with the determination of the total zone area reported in Form 2.
- *Road length*: this entry refers only to roads in built-up areas[5].
- *Population exposure*: exposure is approximated here as 'potential' exposure, which only takes outdoor concentrations into account. The population exposure above a limit value is calculated as the total number of persons living in houses in an area where the levels are above the limit value. For exposure along roads, houses are taken into account if at least at one side exposed to a level above the limit value.
  In practice, the calculated number of persons will depend on the spatial resolution of the population data and concentration maps. Ideally, a resolution of the order of 10 m would be needed, but in practice lower resolution could be used as well. As the main purpose of this parameter is to give an indication of exposure, not necessarily a precise number, estimates may also be given, in particular when exceedences in the zone occur only at a few hot spots.
  In the case of detailed calculations in which individual dwellings are distinguished, it is recommended to count the residents of a dwelling as exposed above the limit value if the concentration at at least one side is above the limit value.
  Those wishing to perform more advanced calculations might take the structural presence of non-residents into account, e.g. in holiday resorts where during the holiday season the number of persons present is considerably higher than the number of permanent inhabitants, or in office districts in large cities, where this is the case during working hours. For consistency reasons, it may then be also needed to compensate for the structural absence of these persons elsewhere, to avoid double counting.

Maps

The First Daughter Directive encourages Member States to make maps of the concentration distributions in zones, using methods such as models, interpolation techniques etc. For local use, the spatial resolution of these maps should preferably be sufficient to depict hot spots such as streets. For use at the Community level, however, this high resolution represents a challenge because of the large files that have to be exchanged and processed. The maps defined here are suitable for giving large-scale overviews of the air quality in the EU, but

[5] This definition has been chosen to for simplicity; it does not imply that exceedences along roads outside built-up areas are irrelevant.

usually have a lower resolution than needed for identifying small hot spot areas. Annex 2 gives a description of the format to be used in maps.

However, where appropriate (for example when only modelled hot spot exceedances in the zone are reported) the resolution of the map should follow the specific information it wants to communicate, and potentially provide much higher resolution for a limited area and a selected pollutant.

Form 21 Exceedence of limit values of SO_2 due to natural sources[6]

The First Daughter Directive, Art. 3(4) gives Member States the possibility for derogation of the requirement to implement action plans if limit values for SO_2 are exceeded owing to concentrations in ambient air due to natural sources. Form 21 has two purposes: identifying the zones for which the Member State claims derogation and summarising the results of the justification.

The guidance given in *Guidance to Member States on PM_{10} monitoring and intercomparisons with the reference method* on how to determine the impact of natural events on PM_{10} levels can also be useful for determining whether exceedences of the SO_2 limit value are due to natural sources. Once the contributions of natural events to the measured concentrations have been determined, these contributions are subtracted from the observed concentrations. If the resulting concentrations do not exceed the limit value, it is inferred that the measured exceedence was due to natural sources.

Form 21 summarises the results of the analysis and includes the measured concentrations and the concentrations after the subtraction of the contribution of natural events. It should be noted that filling in the form cannot be regarded as the full justification as referred to in Art. 3(4) of the First Daughter Directive. The justification should be given in a separate report that has to be sent to the Commission. The entries in last column of Form 21 provide the reference to that report. This report should describe the methodology used and the results. This separate report does not need to be adapted and sent to the Commission every year. The first year in which a Member State claims derogation for a particular zone or set of zones, the justification report should be sent to the Commission; in subsequent years Form 21 can be used to report the results of the analysis for those years and if only the concentrations have changed, but the methodology has not, the Member State can refer to the justification report that has been used for the first year.

Form 23 Exceedence of limit values of PM_{10} due to natural events

The First Daughter Directive, Art. 5(4) gives Member States the possibility for derogation of the requirement to implement action plans if the limit values for PM_{10} "are exceeded owing to concentrations of PM_{10} in ambient air due to natural events which result in concentrations significantly in excess of normal background levels from natural sources". Form 23 has two purposes: identifying the zones for which the Member State claims derogation and summarising the results of the justification. Zones where exceedences are due to natural events as referred to above, for which the Member State does not wish to use the derogation possibility, should not be entered in the form.

[6] The clarifications regarding Forms 13, 15 and 16 are very similar, but because there are some differences the clarifications are not given as a single, common text.

Chapter 6 of the *Guidance to Member States on PM_{10} monitoring and intercomparisons with the reference method* recommends strategies to determine the impact of natural events on PM_{10} levels. In the methodology proposed, the contribution of natural events is subtracted from the observed concentrations. If the resulting concentrations do not exceed the limit value it is inferred that the measured exceedence was due to natural events.

Form 23 summarises the results of the analysis and includes the measured concentrations and the concentrations after the subtraction of the contribution of natural events. It should be noted that filling in the form cannot be regarded as the full justification as referred to in Art. 5(4) of the First Daughter Directive. The justification should be given in a separate report that has to be sent to the Commission. The entries in last column of Form 23 provide the reference to that report. This report should describe the methodology used and the results. This separate report does not need to be adapted and sent to the Commission every year. The first year in which a Member State claims derogation for a particular zone or set of zones, the justification report should be sent to the Commission; in subsequent years Form 23 can be used to report the results of the analysis for those years and if only the concentrations have changed, but the methodology has not, the Member State can refer to the justification report that has been used for the first year.

It should be noted that the list of natural events is exhaustive: Article 2 of the First Daughter Directive defines what 'natural events' shall mean, excluding other possibilities.

Form 24 Exceedence of limit values of PM_{10} due to winter sanding

The First Daughter Directive, Art. 5(5) gives Member States the possibility for derogation of the requirement to implement action plans if limit values for PM_{10} are exceeded owing to concentrations of PM_{10} in ambient air due to the resuspension of particulates following the winter sanding of roads. Form 24 has two purposes: identifying the zones for which the Member State claims derogation and summarising the results of the justification. Zones where exceedences are due to winter sanding as referred to above, for which the Member State does not wish to use the derogation possibility should not be entered in the form.

The guidance given in *Guidance to Member States on PM_{10} monitoring and intercomparisons with the reference method* on how to determine the impact of natural events on PM_{10} levels can also be very useful for determining whether exceedences are due to winter sanding. Once the contributions of winter sanding to the measured concentrations have been determined, these contributions are subtracted from the observed concentrations. If the resulting concentrations do not exceed the limit value, it is inferred that the measured exceedence was due to winter sanding.

Form 24 summarises the results of the analysis and includes the measured concentrations and the concentrations after the subtraction of the contribution of winter sanding. It should be noted that filling in the form cannot be regarded as the full justification as referred to in Art. 5(5) of the First Daughter Directive. The justification should be given in a separate report that has to be sent to the Commission. This report should also demonstrate that reasonable measures have been taken to lower the concentrations. The entries in last column of Form 24 provide the reference to that report. This report should describe the methodology used and the results. This separate report does not need to be adapted and sent to the Commission every year. The first year in which a Member State claims derogation for a particular zone or set of zones, the justification report should be sent to the Commission; in subsequent years Form 24

can be used to report the results of the analysis for those years and if only the concentrations have changed, but the methodology has not, the Member State can refer to the justification report that has been used for the first year.

It should be noted that ‘winter sanding’ does not include erosion due to spiked tyres.

Form 26 Exceedences of limit values laid down in Directives 80/779/EEC, 82/884/EEC and 85/203/EEC

The “old” limit values remain in force until the new ones set by the First Daughter Directive take over. The dates on which the old limit values are repealed are specified in Art. 9 of the First Daughter Directive, and summarised in Table C (column “To be met by”) of this guideline. Before the existence of the questionnaire relating to the daughter directives, Member States had to use the questionnaire specified in Commission Decision 96/511/EC for reporting exceedences of the old limit values. The role of that questionnaire has been taken over by Forms 26 and 27 of the current questionnaire.

As the expected number of exceedences is small, no further reporting specifications are added here to those given in the notes to Form 26.

Annex 1 Notation of location coordinates

For the notation of longitude and latitude, ISO 6709 uses a combination of the sexagesimal (0-60) system and the decimal (0-10) system. Fractions of degrees can be given in minutes or as decimal fractions. Fractions of minutes can be given in seconds (0-60) or as decimal fractions. It is recommended to use in the questionnaire:

Degrees and minutes, followed by seconds as decimal fractions
This is denoted as: DDMMSS.SS
The first two digits DD represent degrees; the third and fourth digits MM represent minutes; the subsequent digits SS.SS represent seconds and their decimal fraction including the decimal sign ".". The decimal fraction can be omitted.

Northern latitudes are preceded by a plus sign, southern latitudes do not occur in the EU. Longitudes east of Greenwich are preceded by a plus sign, longitudes west of Greenwich by a minus sign. ***This plus-or-minus sign must always be used.***

For values less than ten, leading zeros should be used.

A location is represented by a single string in which the latitude is directly followed by the longitude. No separator between latitude and longitude is used, since the + or - minus sign for the longitude indicates where the longitude starts. The number of digits used for the decimal fraction should be sufficient to represent the location coordinates with sufficient accuracy, but should not exceed 4.

Example: the location (52° 10' 33.2" North; 4° 30' 52.5") is denoted as:

+521033.2+043052.5 or +521033+043052.

Annex 2 Specification of concentration maps in electronic form as referred to in Note 2 to Form 19

General

The maps are generally the result of model calculations, interpolation of measurement results or other mathematical techniques. Each map should be represented by an appropriate number of locations (hereafter called "receptor points") and the concentrations at these receptor points.

The data file representing a map consists of a set of rows of locations within the territory encompassed by the map and the numerical value of one of the concentration parameters listed in Table 3 of the questionnaire at these receptor points. A file of map data may contain data of only one map or of several maps of the same territory for several concentration parameters.

The territory encompassed by a concentration map in electronic form can either be a collection of neighbouring zones (this could be the entire country) or a single zone. A map of the entire country is preferred unless there is a need to communicate specific information from a limited area with a higher resolution (for example when zone has been declared in exceedance based on hot spot modelling).

The choice of the distances between receptor points is left to the Member States. The Member State may use a grid of receptor points with fixed density or a distribution of receptor points with varying density, where a low density is used for areas with low spatial gradients and a higher density where higher spatial gradients exist. The spatial resolution of the maps would typically be 10-100 km, with locally increased resolution up to about a km. So, small-scale hotspots, *e.g.* streets, are not resolved (unless specific situation, see above).

The concentration value of a receptor point should be representative of the area around it, corresponding to the local spacing between the receptor points.

Format description

The map file consists of a series of records. The first two records are header records.

- The first record describes the territory encompassed by the map. If the map encompasses the entire Member State, the code of the Member State CC as given in the guideline to Form 2 is given. If the map does not contain all zones of the Member State, the zone codes of the zones encompassed by the map are given.
- The second record describes the statistical parameter(s) mapped, given in Table 3 of the questionnaire, using the codes given in Table A.1.
- All following records contain the coordinates of a receptor point, combined in a single field, followed by the numerical value(s) of concentration parameter(s) mapped in $\mu g/m^3$.
  Specification of the receptor field:
    - The receptor point locations are denoted in the same way as the zone border coordinates in Form 2. See also Annex 1.

  Specification of the concentration field:
    - All concentration values are given in floating notation, giving at least three significant digits.
    - Unknown concentrations are coded by "-9999".

- Concentrations at receptor points where no relevant concentrations exist[7] are coded by "–9998".

All fields within a record are separated by a semicolon ";". All records are delimited by a carriage return. For the decimal symbol "." is used.

Table A.1 Codes for statistical parameters to be used in concentration maps (Questionnaire Decision, Table 3)

Pollutant	Parameter	Code
SO_2	99.7 percentile of 1h means	SO2HOUR
SO_2	99.2 percentile of 24h means	SO2DAY
SO_2	Annual mean	SO2YEAR
SO_2	Winter mean	SO2WINTER
NO_2	99.8 percentile of 1h means	NO2HOUR
NO_2	Annual mean	NO2YEAR
NO_x	Annual mean	NOXYEAR
PM_{10}	90.0 percentile of 24h means	PM10DAY90
PM_{10}	Annual mean	PM10YEAR
PM_{10}	98.1 percentile of 24h means	PM10DAY98
$PM_{2,5}$	90.0 percentile of 24h means	PM2DAY90
$PM_{2,5}$	Annual mean	PM2YEAR
$PM_{2,5}$	98.1 percentile of 24h means	PM2DAY98
Lead	Annual mean	PBYEAR
Benzene	Annual mean	BENZENE
CO	Maximum dialy eight-hour mean	CO
O_3	92.9 percentile of daily eight-hour means averaged over the last three years	O38H93
O_3	Maximum daily eight-hour mean in reference year	O38HMAX
O_3	AOT40 (May to July) averaged over the last five years	O3AOT40

[7] For concentration parameters associated to ecosystem/vegetation limit values, certain areas are not relevant and may be left "empty", see Annex VI of 1999/30/EC. For proper processing of the map data, it is recommended to fill such empty areas with receptor points with a spatial density that is roughly similar to that of the neighbouring areas.

Examples

Example 1: file containing a map of the 99.7 percentile of 1h mean concentrations of SO_2 in seven zones in Belgium

BE0001;BE0002;BE0005;BE0006;BE0008:BE0009:BE0012
SO2HOUR
+510209.12+044411.28;129
+510610.56+044418.48;125
+511012.18+044424.24;145
(…)

Example 2: file containing maps of all 13 concentration parameters for the whole of Belgium

BE
SO2HOUR;SO2DAY;SO2YEAR;SO2WINTER;NO2HOUR;NO2YEAR;NOXYEAR
;PM10DAY;PM10YEAR;PM2DAY;PM2YEAR;PM2DAY;PBYEAR
+510209.12+044411.28;43;21;7;9;83;26;23;67;38;43;24;0.16
+510610.56+044418.48;47;24;7;9;87;29;26;80;43;44;25;0.18
+511012.18+044424.24;46;24;7;10;88;32;29;73;40;44;24;0.17
(…)

Annex 3 Example of a questionnaire filled in

In this example only a few lines per form have been filled in with hypothetical data. For similar versions of the same form (versions a, b, c etc) only the first version is given.

MEMBER STATE:	Examplia
CONTACT ADDRESS:	A. Cegik
	Clean Street 123
	1357 AB Airtown
	Examplia
REFERENCE YEAR:	2004
COMPILATION DATE:	17-09-05

Form 1 Contact body and address	
Name of the contact body	Ministry of Environment of Examplia
Postal address	Clean Street 123, 1357AB Airtown, Examplia
Name of contact person	A. Cegik
Telephone of contact person	+99 9876543210
Fax of contact person	+99 9876540123
Email address of contact person	Cegik@minenv.ex
Comments for clarification if needed	

Form 2 Delimitation of zones and agglomerations (96/62/EC Articles 5 and 11(1b))			
	Zones		
Full zone name	Regionia	Regionia plus Arcadia	Agglotown
Zone code	EX0010	EX0011	EX0012
Pollutant(s), possibly separate protection targets, to which the zone applies	S;N;P;B;C;O	L	A
Type [ag/nonag]	nonag	nonag	ag
Area (km^2)	2345	7654	345
Population	765321	1234500	456000
Border coordinate pairs	+521032.2+043052.5	+521055.3+043111.5	+523840.5+052319.0
Border coordinate pairs	+521055.9+043111.6	+531104.7+043139.1	+523853.3+052320.4
Border coordinate pairs	+531104.0+043139.6	+531127.9+043140.1	+523815.0+052330.7

Form 3 Stations and measuring methods used for assessment under 1999/30/EC (Annex IX) and 2000/69/EC (Annex VII)													
EoI station code	*Local station code*	*Zone code(s)*	*Use for Directive*						Use for Directive / Measuring method code for PM_{10} and $PM_{2,5}$		*Correction factor or equation used*		*Function of station*
			SO_2	*NO_2*	*NO_x*	*Lead*	*Benzene*	*CO*	PM_{10}	$PM_{2,5}$	*PM_{10}*	*$PM_{2,5}$*	
EX0235	110	EX0010;EX0011	y	y	y	y		Y	M1		1.3		HEV
EX0245	111	EX0010;EX0011				SS							H
EX0254	201	EX0011	y	y	y	y	y	y	M2	M2	1	1	H

Form 4 Stations used for assessment of ozone, including nitrogen dioxide and nitrogen oxides in relation to ozone (2002/3/EC Annex III, IV, VI)						
EoI station code	*Local station code*	*Zone code*	Type of station	*Use in relation to Directive 2002/3/EC*		
				O_3	*NO_2*	*NO_x*
EX0255	202	EX0010	U	Y	Y	
EX0257	206	EX0010	S	Y		
EX0260	207	EX0012	R			Y

Form 5 Stations and measurement methods used for the assessment of recommended volatile organic compounds (2002/3/EC Annex VI)			
	Stations		
EoI station code	EX0260	EX0305	EX0410
Local station code	207	304	402
Zone code applying to ozone	EX0012	EX0015	EX0017
Ethane	M6	M8	M9
Ethylene	M6		
Acetylene	M6		
Propane	M6		
Propene	M6		
n-Butane	M6		
i-Butane	M6		
1-Butene	M6		
trans-2-Butene	M6		
cis-2-Butene	M6		
1.3-Butadiene	M6		
n-Pentane	M6		
i-Pentane	M6		
1-Pentene			
2-Pentene	M6		
Isoprene	M6		
n-Hexane	M6	M8	M9
i-Hexane			
n-Heptane	M6	M8	M9
n-Octane		M8	M9
i-Octane			
Benzene	M6	M8	M9
Toluene	M6	M8	M9
Ethyl benzene	M6	M8	M9

m+p-Xylene	M6	M8	M9
o-Xylene	M6	M8	M9
1,2,4-Trimeth.benzene		M8	M9
1,2,3-Trimeth.benzene		M8	M9
1,3,5-Trimeth.benzene		M8	M9
Formaldehyde			
Total non-methane hydrocarbons			

Form 6 Stations and measurement methods used for the assessment of other ozone precursor substances (2002/3/EC Annex VI)			
	Stations		
EoI station code	EX0305	EX0410	
Local station code	304	402	
Zone code applying to ozone	EX0015	EX0017	
Cyclohexane	M8	M9	
Methylcyclohexane	M8	M9	

Form 7 Methods used to sample and measure PM_{10}, $PM_{2,5}$ and ozone precursor substances: optional additional codes to be defined by the Member State (1999/30/EC Annex IX and 2002/3/EC Annex VI)	
Method code	*Description*
EX1	[...]

Form 8 List of zones and agglomerations where levels exceed or do not exceed limit values (LV) or limit values plus margin of tolerance (LV + MOT) (96/62/EC Articles 8, 9 and 11, 1999/30/EC Annexes I, II, III and IV, 2000/69/EC Annexes I and II)
- Form 8a List of zones in relation to limit value exceedences for SO_2

Zone code	LV for health (1hr mean)			LV for health (24hr mean)		LV for ecosystems (annual mean)		LV for ecosystems (winter mean)	
	>LV+MOT	≤LV+MOT; >LV	≤LV	>LV	≤LV	>LV	≤LV	>LV	≤LV
EX0010	y			y		m		m	
EX0012		y			y		y		y
EX0013			y		y		y		y

Form 9 List of zones and agglomerations where levels exceed or do not exceed target values or long term objectives for ozone (2002/3/EC, Annex I)

Zone code	Thresholds for health			Thresholds for vegetation		
	>TV	≤TV; >LTO	≤LTO	>TV	≤TV; >LTO	≤LTO
EX0010	y				y	
EX0012	y			y		
EX0013		y				y

Form 10 List of zones and agglomerations where levels exceed or do not exceed upper assessment thresholds (UAT) or lower assessment thresholds (LAT), including information on the application of supplementary assessment methods (96/62/EC Article 6, 1999/30/EC Article 7(3) and Annex V, 2000/69/EC Article 5(3) and Annex III, 2002/3/EC Article 9(1) and Annex VII)
- Form 10a List of zones in relation to threshold exceedences and supplementary assessment for SO_2

Zone code	*UAT and LAT related to health LV (24h mean)*			*UAT and LAT related to ecosystems LV (winter mean)*			*SA*
	>UAT	*≤UAT; >LAT*	*≤LAT*	*>UAT*	*≤UAT; >LAT*	*≤LAT*	
EX0010	y			y			y
EX0012		y				y	y
EX0013			y			y	y

Form 11 Individual exceedences of limit values and limit values plus margin of tolerance (MOT) (96/62/EC Article 11(1) (a) (i) and (ii), 1999/30/EC Annexes I, II, IV and V and 2000/69/EC Annexes I and II)
- Form 11a Exceedence of SO_2 limit value plus MOT for health (1hr mean)

Zone code	*EoI station code*	Month	Day of month	Hour	Level (mg/m^3)	Reason code(s)
EX0010	EX0235	1	12	5	387	S3
EX0010	EX0235	1	12	6	434	S3
EX0010	EX0235	1	17	11	397	S3

Form 12 Reasons for individual exceedences: optional additional codes to be defined by the Member State (96/62/EC Article 11(1) (a) (i) and (ii)) and 1999/30/EC Annexes I, II, IV and V, 2000/69/EC Annexes I and II)

Reason code	*Description*
EX1	Temporary building activities (nearby off-road vehicle emissions)

Form 13 Individual exceedences of ozone thresholds (2002/3/EC, Article 10(2b) and Annex III)
- Form 13a Exceedence of ozone information threshold value

Zone code	*EoI station code*	Month	Day of month	Maximum 1-hour mean ozone concentration (mg/m^3) during exceedence period	*Reason code(s)*	*Starting time of the exceedence period*	Total number of exceedence hours	1-hour mean NO_2 concentration (mg/m^3) during maximum ozone concentration
EX0010	EX055	6	12	197	S10	13	4	24
EX0010	EX055	6	12	189	S10	18	3	37
EX0010	EX055	6	13	244	S10	15	9	33

Form 14 Exceedence of ozone target values (2002/3/EC, Article 10(2b) and Annex III) **- Form 14a Stations where the ozone target value for human health is exceeded**			
Zone code	EoI station code	Number of exceedence days per calendar year averaged over three years	If a full and consecutive set of data of 3 year was not used:calendar year(s) taken into account
EX0010	EX0255	31	
EX0010	EX0257	32	
EX0012	EX0266	41	2004

Form 15 Annual statistics of ozone (2002/3/EC, Article 10(2b) and Annex III)						
Zone code	EoI station code	AOT40 for vegetation protection (µg/m^3.h)		AOT40 for forest protection (µg/m^3.h)		Annual average
		Value	Number of valid data	Value	Number of valid data	
EX0010	EX0255	12900	1048	27600	2103	29
EX0010	EX0257	13200	1055	28000	2108	45
EX0012	EX0270	11000	1088	20800	2136	42

Form 16 Annual average concentrations of ozone precursor substances (2002/3/EC Article 10(2b) and Annex VI) **- Form 16a Annual average concentrations of recommended volatile organic compounds**			
	Stations		
EoI station code	EX0260	EX0305	EX0410
Ethane	8.40		
Ethylene	3.75		
Acetylene	6.22		
Propane	6.77		
Propene	3.61		
n-Butane	8.99		
i-Butane	4.01		
1-Butene	0.49		
trans-2-Butene	0.77		

cis-2-Butene	0.42		
1.3-Butadiene	0.50		
n-Pentane	1.86		
i-Pentane	7.02		
1-Pentene			
2-Pentene	0.53		
Isoprene	0.28		
n-Hexane	0.86	1.49	1.7
i-Hexane			
n-Heptane	0.54	0.58	0.6
n-Octane		0.66	1.6
i-Octane			
Benzene	3.32	1.54	3.1
Toluene	7.82	3.64	8.6
Ethyl benzene	2.12	0.88	6.3
M+p-Xylene	6.40	1.86	21.8
o-Xylene	2.12	0.7	6.0
1,2,4-Trimeth.benzene		0.74	1.8
1,2,3-Trimeth.benzene		0.18	0.4
1,3,5-Trimeth.benzene		0.29	0.5
Formaldehyde			
Total non-methane hydrocarbons			

Form 16 Annual average concentrations of ozone precursor substances (2002/3/EC Article 10(2b) and Annex VI) - Form 16b Annual average concentrations of other ozone precursor substances			
	Stations		
EoI station code	EX0305	EX0410	
Cyclohexane	8.40	5.44	
Methylcyclohexane	3.75	1.57	

Form 17 Monitoring data on 10 minutes mean SO_2 levels (1999/30/EC Article 3(3))						
EoI station code	The number of concentrations averaged over 10 minutes which have exceeded 500 mg/m^3	The number of days within the calendar year on which such exceedences occurred	The number of the days referred to in the previous column, on which hourly concentrations of sulphur dioxide simultaneously exceeded 350 mg/m^3	The maximum concentration averaged over 10 minutes recorded (mg/m^3)	Date on which the maximum concentration occurred	
					Month	Day of month
EX0238	16	4	3	783	2	17
EX0254	0	0	0	369	11	23
EX0548	0	0	0	470	2	17

Form 18 Monitoring data on 24hr mean $PM_{2,5}$ levels (1999/30/EC Article 5(2))				
EoI station code	Arithmetic mean (µg/m³)	Median (µg/m³)	98 percentile (µg/m³)	Maximum concentration (µg/m³)
EX0235	16	14	45	72
EX0254	19	16	48	68
EX0255	16	14	46	70

Form 19 Tabular results of and methods used for supplementary assessment (1999/30/EC Article 7(3) and Annex VIII(II), 2000/69/EC Article 5(3) and Annex VI(II) and 2002/3/EC Article 9(1) and Annex VII(II))

- Form 11a Results of and methods used for supplementary assessment for SO_2

Zone code	*Above LV for health (1hr mean)*				*Above LV for health (24hr mean)*				*Above LV for ecosystems (annual mean)*				*Above LV for ecosystems (winter mean)*			
	Area		*Population exposed*		*Area*		*Population exposed*		*Area*		*Ecosystem area exposed*		*Area*		*Ecosystem area exposed*	
	km^2	*Method*	*Number*	*Method*	*km^2*	*Method*	*Number*	*Method*	*km^2*	*Method*	*km^2*	*Method*	*km^2*	*Method*	*km^2*	*Method*
EX0010	8	A	23000	A	6	A	15000	A	35	A	30	A	37	A	30	A
EX0012	2	A	3500	A	0	A	0	A	0	A	0	A	0	A	0	A
EX0013	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A

Form 20 List of references to supplementary assessment methods referred to in Form 11 (1999/30/EC Article 7(3) and Annex VIII(II))	
Method	*Full reference*
A	Combination of measurements and modelling; ref EX-EPA report 342 (1999), Cleantown, Examplia
B	Modelling; ref EX-EPA report 434 (1999), Cleantown, Examplia
C	Interpolation; ref EX-EPA report EX-EPA 342 (1999), Cleantown, Examplia

Form 21 Exceedence of limit values of SO_2 due to natural sources (1999/30/EC Article 3(4)) - Form 13a SO_2 limit value for health (1hr mean)					
Zone	EoI station code	*Number of exceedences measured*	Natural source code(s)	*Estimated number of exceedences after subtraction of natural contribution*	Reference to justification
EX0015	EX0340	46	C1	19	Letter of 12/03/02 ref no AS/DF/123 and annexed report
EX0015	EX0341	38	C1	20	Letter of 12/03/02 ref no AS/DF/124 and annexed report
EX0015	EX0344	40	C1	4	Letter of 12/03/02 ref no AS/DF/125 and annexed report

Form 22 Natural SO_2 sources: optional additional codes to be defined by Member State (1999/30/EC Article 3(4))	
Natural source code	*Description*
EX1	[…]

Form 23 Exceedence of limit values of PM_{10} due to natural events (1999/30/EC Article 5(4)) **- Form 23a Contribution of natural events to exceedence of the PM_{10} limit value (stage 1; 24hr mean)**					
Zone	*EoI station code*	*Number of exceedences measured*	Natural event code(s)	*Estimated number of exceedences after subtraction of natural contribution*	Reference to justification
EX0016	EX0677	64	E1	38	Letter of 12/03/02 ref no AS/DF/123 and annexed report
EX0016	EX0678	53	E1	35	Letter of 12/03/02 ref no AS/DF/124 and annexed report
EX0016	EX0801	60	E1	40	Letter of 12/03/02 ref no AS/DF/125 and annexed report

Form 24 Exceedence of limit values of PM_{10} due to winter sanding (1999/30/EC Article 5(5)) **- Form 24a Contribution of winter sanding to exceedence of the PM_{10} limit value**				
Zone	*Station code*	*Number of exceedences measured*	*Estimated number of exceedences after subtraction of winter sanding contribution*	Reference to justification
EX0020	EX0840	54	20	Letter of 12/03/02 ref no AS/DF/123 and annexed report
EX0020	EX0841	62	45	Letter of 12/03/02 ref no AS/DF/124 and annexed report
EX0021	EX0860	53	43	Letter of 12/03/02 ref no AS/DF/125 and annexed report

Form 25 Consultations on transboundary pollution (96/62/EC Article 8(6)) **- Form 25a General**	
Has the Member State consulted other Member States on significant air pollution originating in other Member States? Please tick with 'y' if yes or 'n' if no:	y

Form 25 Consultations on transboundary pollution (96/62/EC Article 8(6)) - Form 25b Specification per Member State																									
If yes, please:	*AT*	*BE*	*CY*	*CZ*	*DE*	*DK*	*EE*	*ES*	*FI*	*FR*	*GR*	*HU*	*IE*	*IT*	*LT*	*LU*	*LV*	*MT*	*NL*	*PL*	*PT*	*SE*	*SK*	*SI*	*UK*
– tick the MS or country concerned											y	y													
– tick if the agenda(s) of the consultations has/have been added to this report											y	y													
– tick if the minutes of the consultations have been added to this report																									

Form 26 Exceedences of limit values laid down in Directives 80/779/EEC, 82/884/EEC and 85/203/EEC to be reported under 1999/30/EC Article 9(6))						
Pollutant	Limit value exceeded	Monitoring method used	*EoI station code*	Measured value (μg/m^3)	Reason code(s)	Measures taken
NO2	200 μg/m^3	Chemiluminescence	EX0067	213	EX1	Chimney height increased from 15 to 25 meter

Form 27 Reasons for exceedences of limit values laid down in Directives 80/779/EEC, 82/884/EEC and 85/203/EEC: optional additional codes to be defined by the Member State (1999/30/EC Article 9(6))	
Reason code	*Description*
EX1	Emission from a local combined-energy utility; see the Annex to this questionnaire