Reporting on ambient air quality assessment
Preliminary results for 2007

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Frank de Leeuw, Edward Vixseboxse

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Cover page: *Frequently "heavily trafficked urban centre" and the "proximity to a major road" have been indicated as reason for individual exceedances of limit or target values of PM_{10}, NO_2 and ozone.*

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Author affiliation

Frank de Leeuw, Edward Vixseboxse, Netherlands Environmental Assessment Agency (PBL), Bilthoven, The Netherlands.

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ETC/ACC Technical Paper 2008/4.
European Topic Centre on Air and Climate Change
PO Box 303
3720 AH Bilthoven
The Netherlands
Phone +31 30 2743550
Fax +31 30 2744433
Email: etcacc@pbl.nl
Website http://air-climate.eionet.europa.eu/

Summary

EU Member States have submitted annual reports on air quality in 2007 to the European Commission under the Air Quality Framework Directive (96/62/EC). The reports were provided in the form of a predefined questionnaire. The present report gives a preliminary overview and analysis of the submitted information.

This report is based on information available at the European Topic Centre on Air and Climate Change (ETC/ACC) on 10 November 2008 (that is, more than one month after the official submission deadline). By that date, questionnaires from Luxembourg, the Netherlands and of several regions within Italy were missing. The conclusions listed here have a preliminary character.

Compared to the reporting on 2006 the number of air quality management zones has reduced significantly. This is especially due to Poland which reduced its number of zones from 362 to 186. The analyses indicate that the designation of zones seems to be incomplete in a number of Member States. Zones designated for the protection of human health should cover the whole territory and the total population of a Member State. 13 Member States have a complete or nearly complete coverage for the seven pollutants having a health related limit or target value. A nearly complete coverage is in general found for sulphur dioxide, nitrogen dioxide, PM_{10} and ozone (with exceptions for Belgium and Romania). Lower coverages are found in the case of lead, benzene and carbon monoxide.

Exceedances of the daily limit value for PM_{10} remain a problem across the EU in 2007: it has been exceeded in 40% of the zones. Exceedance of the annual limit value plus margin of tolerance for NO_2 have been reported by 18 of the 25 Member States having submitted information; the hourly limit value of NO_2 is less stringent but still 9 Member States report exceedances in one or more of their zones. Exceedances of the target values of ozone have been reported by 18 Member States; the health related target value is exceeded in 45% of the zones.

Exceedances of the limit values of SO_2 were reported in total in 10 (hourly limit value) and 11 (daily limit value) zones in Bulgaria, Czech Republic, Spain, France, Portugal and Poland.

Problems with benzene have been indicated by Greece, Italy and Poland. Only Belgium and Bulgaria reported high concentrations of lead above the limit values. Carbon monoxide is a problem in three zones in three Member States (Bulgaria, Italy and Romania).

Voluntary information on the pollutants of the 4th DD has been provided by 14 Member States. For the heavy metals (arsenic, cadmium, nickel) a limited number of non-complying zones has been reported. The largest problems have been observed for benzo(a)pyrene: non-compliance areas are found in 7 Member States.

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1. Introduction

This document gives a first preliminary overview of the annual reports by Member States to the European Commission on the results of the assessment of their air quality in 2007. These reports have been submitted under the Air Quality Framework Directive[1], following Commission Decision 2004/461/EC[2], which specifies the information to be sent in detail and provides a set of forms to be filled in. In the remaining of this report this Decision will be called 'the questionnaire' or, when the context is not directly clear, 'the AQ questionnaire'.
This report has been prepared by the European Topic Centre on Air and Climate Change (ETC/ACC) of the European Environment Agency upon a request of DG Environment. A more extensive analysis of the 2007-questionnaire is foreseen to be available by November 2009. Assessments of the air quality in zones in the EU Member States based on the questionnaire for the years 2001-2006 are available from the web site of DG Environment[3].
Modification of the questionnaire and related guidance has been prepared to enable reporting of 4th Daughter Directive[4] on a voluntary basis already for the reporting year 2007. This reporting will become mandatory in 2009. The only changes introduced in the questionnaire are the inclusion of relevant forms covering monitoring of arsenic (As), nickel (Ni), cadmium (Cd), mercury (Hg), benzo(a)pyrene (BaP) and related polycyclic aromatic hydrocarbons (PAH) in ambient air and deposition, and the recommendation on reporting of zones as endorsed already in the past by CAFE Steering Group. The updated questionnaire and guidance document have been made available at the website of DGEnvironment[3].

Member State reports addressed in this document
This document primarily deals with the reports by the EU Member States on the year 2007 submitted under the First Daughter Directive[5], the Second Daughter Directive[6] and the Third Daughter Directive[7]. Member States were free to continue to use the original questionnaire under decision 2004/461/EC, but have been encouraged to use the new questionnaire even if no information of the assessment under 4th Daughter Directive is provided, as the new questionnaire has minor modifications on Form 0 and Form 2[8] to facilitate submission and processing.
The assessments in this report are based on the information received by ETC/ACC before 10 November 2008 (that is, four weeks after the first feedback (see below) and more than one month after the official deadline of September 2008). At that moment Luxembourg and the Netherlands have not submitted any information. Italy has delivered parts of the questionnaire: from 16 of the 21 regions/provinces a separate questionnaire has been received, see Figure 1. Gibraltar submitted its questionnaire separately from the UK. Separate (regional) questionnaires from one Member State complicate and delay the processing of the data. This is for example illustrated by the fact that two Italian regions (Campania and Friuli - Venezia Giulia) use identical zone codes. In contrast to earlier years, no voluntary submission from Norway and Iceland has been received.

1 Council Directive 96/62/EC on ambient air quality assessment and management.
2 Commission Decision 2004/461/EC laying down an AQ questionnaire to be used for annual reporting on ambient air quality assessment under Council Directives 96/62/EC and 1999/30/EC and under Directives 2000/69/EC and 2002/3/EC of the European Parliament and of the Council.
3 http://ec.europa.eu/environment/air/quality/legislation/reporting.htm
4 Council Directive 2004/107/EC relating to arsenic, cadmium, mercury nickel and polycyclic hydrocarbons in ambient air.
5 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).
6 Directive 2000/69/EC relating to limit values of benzene and carbon monoxide in ambient air.
7 Directive 2002/3/EC relating to ozone in ambient air.
8 See Annex I for a listing of the forms in the questionnaire.

Figure 1. The 5 Italian regions for which no information has been received by 10 November 2008 are red shaded.

All questionnaires have been uploaded by the MS on Reportnet CDR. On 8 October 2008 the ETC/ACC has send out a mailing to all contact persons to acknowledge the receipt of the questionnaire. In this mailing a table which summarizes for each (sub)form the number of reported items (e.g., number of zones, number of stations, number of exceedances). MS were invited to check this table and to inform the ETC/ACC in case of misinterpretations from our side (in particular those related to the interpretation of incorrect pollutant codes used in Form 2). Some MS used this option and provided a revised questionnaire or form(s). All updates received before 10 November have been included in this analysis. Note that this feedback concerned the *quantity* not the *quality* or consistency of the information in the questionnaire. A content-oriented feedback is foreseen in the beginning of 2009 when a match with the EoI information can be made (see below). It should be noted that the feedback provided to ETC/ACC or upload to CDR do not constitute official resubmission to the Commission – notification must be provided to the Commission for that purpose.

Reporting under the Exchange of Information Decision

In parallel to the reporting under the Framework Directive, which mainly focuses on compliance checking with obligations under the air quality directives, such as limit values, Member States are sending detailed information from their monitoring networks each year under the Exchange of Information Decision (EoI)[9]. These extensive reports contain to a large extent individual 'raw' data (e.g. all hourly concentrations) and include extensive complementary information about the monitoring stations (metadata). The ETC/ACC publishes annually an assessment of these reports (see, for the assessment of the 2006-data: Mol et al., 2008). To avoid duplicate reporting by Member States, some of the data that are needed for evaluating the reports under the Framework Directive (particularly the meta-information on monitoring stations) are only sent under the EoI. All monitoring stations used for compliance checking under the FWD have to be included in the set of monitoring stations submitting raw data under the EoI. Deadline for submitting the EoI information is 1 October. The processing of the 2007 EoI-data is in full progress while preparing this report and is therefore not yet available. Assessment of those parts of the questionnaire related to monitoring stations has to be postponed until the EoI reporting cycle is finished. These aspects will be discussed in the final assessment report (October 2009).

[9] Council Decision 97/101/EC establishing a reciprocal exchange of information and data from network and individual stations measuring ambient air pollution within the Member States (amended by Commission Decision 2001/752/EC).

Quality of the data received and implications for this overview

To facilitate the submission of the data, the Commission has made the AQ questionnaire available to the Member States in Excel format. This format does not reject erroneous data, and during the processing numerous small errors, e.g. spurious spaces, had to be removed before all reports could be joined in a database. A second form of trivial errors is the use of other symbols than prescribed in the questionnaire or its guidelines, for example, ticking an "x" or "+" in stead of the prescribed "y"; using a comma as separator while the semi-colon is prescribed. Although in general the information is unambiguous, a time consuming correction of this type of errors is necessarily for an automatic processing of the data.

There were also errors that required more insight for correction, such as inconsistent use of zone and pollutant codes or use of codes that were not allowed. Another difficult type of error is that MS do not use the same codes for stations in the AQ questionnaire and EoI reports.

Abbreviations used

Member States have been abbreviated following the ISO3166-1 country alpha-2 code[1]:

Austria: AT; Belgium: BE; Bulgaria: BG; Cyprus: CY; Czech Republic: CZ; Denmark: DK; Estonia: EE; Finland: FI; France: FR; Germany: DE; Greece: GR; Hungary: HU; Ireland: IE; Italy: IT; Latvia: LV; Lithuania: LT; Luxembourg: LU; Malta: MT; Netherlands: NL; Poland: PL; Portugal: PT; Slovakia: SK; Slovenia: SI; Spain: ES; Sweden: SE; United Kingdom: GB[2], and Iceland: IS and Norway: NO.

AQ questionnaire	Questionnaire on air quality set out by Commission Decision 2004/461/EC
As	Arsenic
B(a)P	Benzo(a)pyrene
Cd	Cadmium
CO	Carbon monoxide
EoI	Exchange of Information Decision: Council Decision 97/101/EC, amended by Commission Decision 2001/752/EC
EU27	The 27 EU Member States after accession of 12 new Member States in 2004 and 2007
LAT	Lower assessment threshold
LTO	Long Term Objective (O_3)
LV	Limit value
MOT	Margin of Tolerance
MS	Member State(s)
Ni	Nickel
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
O_3	Ozone
PAH	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PM_{10}	Particulate matter composed of particles smaller than 10 micrometer in aerodynamic diameter
$PM_{2.5}$	Particulate matter composed of particles smaller than 2.5 micrometer in aerodynamic diameter
questionnaire	Questionnaire on air quality set out by Commission Decision 2004/461/EC
SO_2	Sulphur dioxide
TV	Target value

Notes

1: see http://www.iso.ch/iso/en/prods-services/iso3166ma/02iso-3166-code-lists/index.html

2. Including Gibraltar.

It is most likely that we made mistakes while making corrections or completing the missing information. In view of these corrections and remaining mistakes, this preliminary report provides only a statistical overview of the air quality status at the national level. Not all aspects of the questionnaire will be discussed here. Focus will be on the designation of zones and their air quality status. The number and reasons of exceedances of the limit or target values will be briefly discussed. In Chapter 6 a summary of the $PM_{2.5}$ concentrations as measured in 2007 will be presented. In Chapter 7 the voluntary reporting on the 4th DD pollutants is presented. More detailed information will be presented in the final report.

Disclaimer

This report contains summary information based on data delivered before 10 November, that is, within four weeks after the first feedback action. Revisions or new data[10] received after this date will be included in the final assessment report. The information describing the situation in 2007 is based on the submitted information only. Information submitted under the EoI is being processed and is therefore not yet available as additional input in the assessment. For processing the information, the ETC/ACC has, where needed, corrected or completed the information. Due to time constraints the Member States have not been consulted in this process. Hence, this report should be regarded as preliminary and it cannot be used for legal compliance checking.

[10] While preparing this report revised or additional information has been received from Sweden, the Netherlands and the Italian regions Veneto, Molise, Puglia and Sicilia.

2. Designation of zones

Designated zones in the Member States to assess and manage air quality vary widely dependant on the chosen variable: size, population, measured individual pollutant or types of protection targets. Member States are free in defining their own zone structure and characteristics (population and area) which make mutual comparison of final results between countries more difficult. Delimitations of zones may differ between different pollutants in order to optimize management of air quality due to differences in sources and abatement strategies.

Table 1 gives an overview of the total number of zones defined for 2007 (Form 2). The total number of 868 zones is lower than in 2006 (1056 zones, Vixseboxse and de Leeuw, 2008). This difference is mainly caused by a re-definition of the zones in Poland: the number of zones has been reduced from 362 to 186. Minor changes have been observed in Denmark (minus 7 zones), France (minus 7 zones), Romania (plus 17 zones). However, similar numbers as last year does not necessarily imply that the designation of zones is similar in both years as zone boundaries or designation between pollutants may have been changed.

Table 1. Number of zones per Member State in 2007, including the designation of the zones for individual pollutants or types of protection targets.

		SO2		NO2	NOx					
	Total (a)	health	ecosystem	health	vegetation	PM10	Pb	benzene	CO	O3
AT	19	11	8	11	8	11	11	11	11	11
BE	18	12	0	11	0	11	13	5	7	6
BG	6	6	1	6	1	6	6	5	6	6
CY	1	1	1	1	1	1	1	1	1	1
CZ	15	15	15	15	15	15	15	15	15	15
DE	120	79	15	85	15	82	72	84	84	63
DK	3	3	3	3	1	3	3	1	3	3
EE	4	4	4	4	4	4	4	3	4	4
ES	138	138	36	138	37	138	138	138	138	138
FI	18	14	1	14	1	14	14	3	14	2
FR	81	81	75	81	75	80	45	53	57	77
GB	44	44	44	44	44	44	44	44	44	44
GR	4	4	4	4	4	4	0	1	4	4
HU	11	11	0	11	0	11	11	11	11	11
IE	4	4	1	4	1	4	4	4	4	4
IT	115	77	54	105	75	97	42	76	87	83
LT	3	3	1	3	0	3	3	3	3	3
LU	na	na	na	na	na	na	na	na	na	na
LV	2	2	2	2	2	2	2	2	1	2
MT	2	2	1	2	1	2	1	2	1	2
NL	na	na	na	na	na	na	na	na	na	na
PL	186	170	125	170	125	170	170	170	170	28
PT	27	25	8	25	8	25	1	1	1	25
RO	21	21	1	20	1	21	21	19	20	4
SE	6	6	6	6	6	6	2	6	3	6
SI	9	9	9	8	8	6	6	6	6	6
SK	11	10	10	10	10	10	7	10	10	2
EU27	868	752	425	783	443	770	636	674	705	550

(a) *Total* refers here to the total number of designated zones in a Member States. As for each pollutant/protection target a different set of zones might be defined, the total equals or is larger than the number of zones per pollutant per protection target.

The lowest number of zones is found for the two objectives related to the protection of ecosystems and/or vegetation. In relation to the protection of health, the number of zones defined for SO_2, NO_2 and PM_{10} tends to be higher than for the other four pollutants.

In the EU27 about 25-30% of the zones has been given the status of *agglomeration*[11] which has implications for the number of required monitoring stations. The ratio of the number of agglomerations to the total number of zones varies strongly between the Member States: less than 10% of the zones is classified as agglomeration in Cyprus, Finland, Hungary and Poland; in Bulgaria, Denmark, United Kingdom and Lithuania more than 60 % is classified as agglomeration. Excluding Cyprus which has not defined an agglomeration but only one zone covering the whole country and Bulgaria which has designated all zones as agglomeration, the percentage of national population living in agglomerations varies between 12% (Slovakia) to 68% (Malta). On the average about one third of the EU27 population reside in agglomerations.

Information on population and area of the zones, provided on voluntary basis, is almost completely available (for 99% of the zones). In case of Germany, information on population and area was partly lacking but has been calculated by ETC/ACC using the GIS information provided by Germany. For those zones for which Germany has provided information on population and/or area, the numbers calculated ETC/ACC were in good agreement with the data reported by Germany.

The limit values for the protection of human health apply throughout the whole territories of the Member States, so areas that do not belong to any zone related to health protection should not exist. Similar, the population living in zones related to health protections should add up to the national total population numbers. Figure 1 compares the totals of area and population calculated for each of the seven health related objectives with the corresponding national area and population. For most, but not all Member States the total surface area of the health-related zones indeed added up to the total surface area of the country within a range of 5%. Small deviations from the 100% are to be expected in view of the different information sources and by difference in base year of the census. National totals on area and population data provided by Eurostat or the FAO has been used here as a reference.

In 13 Member States (AT, CY, CZ, DE, ES, FI, GB, HU, IE, LT, PL, PT, SI) the population totals are nearly the same for the seven pollutants and are close to the 100% indicating that the total territory has been designated. This is confirmed in the upper part of Figure 2 showing the summed area of the zones in relation to the total territory. For some Member States the population varies slightly for the various pollutants. This indicates (minor) inconsistencies in the zone designation.
A nearly complete coverage is in general found for SO_2, NO_2, PM_{10} and O_3 (except BE and RO). Lower coverages are found in the case of lead, benzene and CO. Greece has not designated any zone for lead. In a second feedback cycle the ETC/ACC will ask the Member States to add the missing information.

[11] An agglomeration is defined as "a zone that is a conurbation with a population in excess of 250 000 inhabitants or, where the population is 250 000 inhabitants or less, with a given population density per km^2 to be established by the Member State".

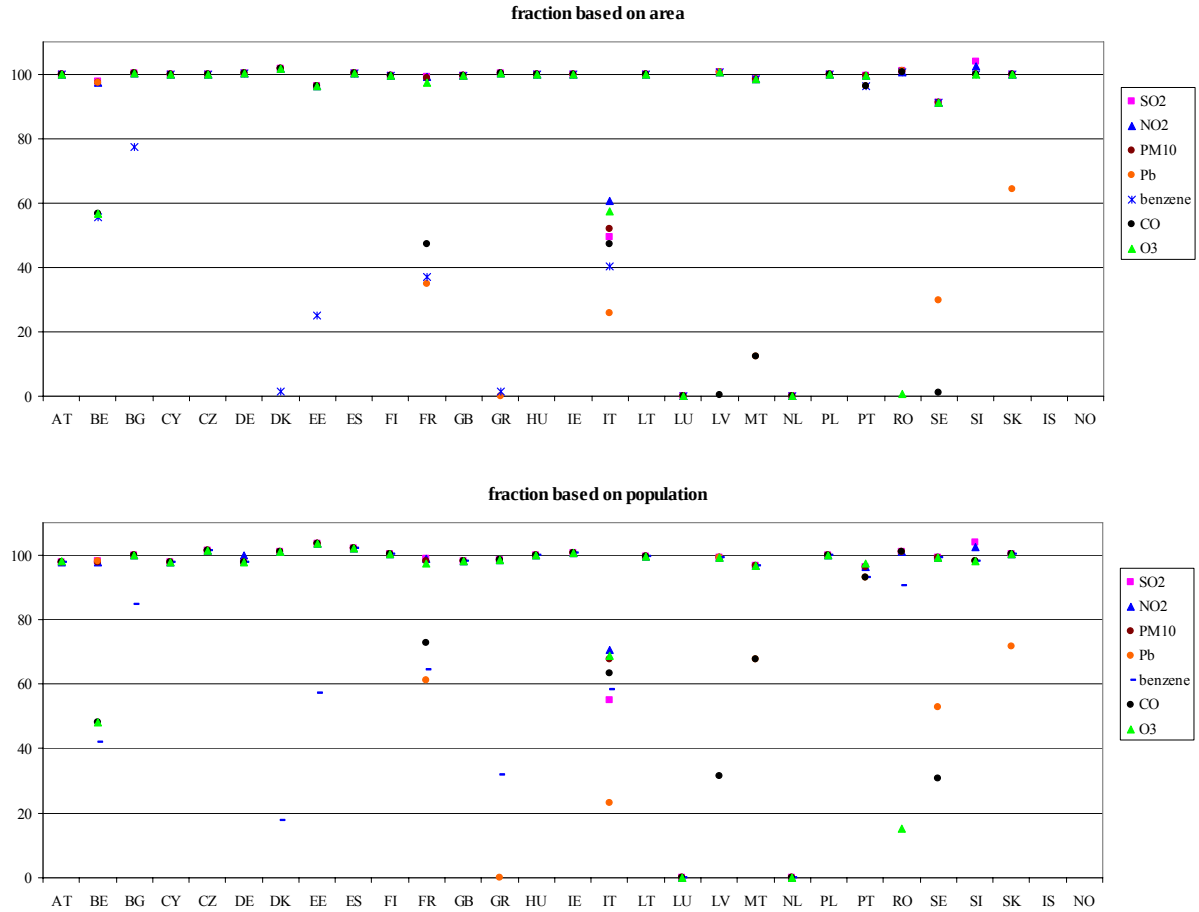

Figure 2. The total area (top) and population (bottom) of zones designated in relation to health protection as fraction of the national area and population. Note that no questionnaire is available neither for Luxembourg and the Netherlands nor for Iceland and Norway. Information for Italy is based on an incomplete set of questionnaires.

3. Overview of zones where air quality thresholds were exceeded

If measurements or model calculations show that a limit value or limit value plus margin of tolerance is exceeded somewhere in the zone, the whole zone is designated as being in exceedance of this threshold. Table 3 summarises the exceedance status of zones per pollutant/protection target and per Member State. As no questionnaire has been received from Luxembourg and the Netherlands, these countries have not been included in the tables and further discussion. Note that the Italian information is incomplete.

There are some discrepancies between the number of zones listed in Table 3 (based on Forms 8 and 9) and the numbers presented in Table 1 (based on Form 2). In Table 3 the term *undefined* refers to zones which have been defined in Form 2 as being applicable for the given combination pollutant/protection target but the air quality status in the specified zone has not been given in the Forms 8 or 9. On the other hand, Table 3 includes information on the AQ status of pollutant/protection targets in zones which have not been designated for these pollutant/protection targets in Form 2. Further, in a number of cases the information in Form 2 and 8 is in contradiction: according to Form 2 a zone might be designated for protection of ecosystems or vegetation but in Form 8 it has been indicated that in this zone no areas exist where the ecosystem or vegetation limit values apply. In these cases the information presented in Form 8 has been taken as leading. In 3 cases the zone code given in Form 8 or 9 could not be traced in Form 2. To a large extent these discrepancies might result from mistakes (e.g. misprinting zone codes) in the respective forms. It is expected that the discrepancies will not influence the conclusions at the aggregated level presented here.

Figure 3 shows for all limit/target values the percentage of zones in exceedance. The fraction is expressed taking the total number, the total population or the total area of the zones as reference. The graphs are arranged with the percentages in decreasing order, thus indicating the stringency of the limit/target values. The yellow bars correspond to the *undefined* zones, that is, zones designated for the pollutant/protection target combination but for which no information on the air quality has been given.

The PM_{10} daily limit value and the ozone target values, both for health and vegetation, are the most frequently exceeded, both with respect to the number of zones as well as to population and area. The yearly limit value of NO_2 has the third highest score when looking to the fraction of potentially exposed population. In 19 of the 33 zones where the hourly limit value for NO_2 has been exceeded, concentrations are above the limit value plus margin of tolerance; in case of the annual limit value of NO_2, 162 out of 211 zones have a concentration above limit value plus margin of tolerance. During a meeting of the Working Group on Time Extensions (Brussels, October 7, 2008) several Member States indicated that the NO_2 situation is worsening.
For all the indicators shown in Figure 3, exceedances of the health related target values of SO_2 (both hourly and daily), lead, CO, and benzene and of the ecosystem/vegetation related limit values for SO_2 (annual and winter mean) and NO_x are observed in less than 2% of the cases.

- ***It should be noted that the number or percentage of zones in exceedance is only a crude indicator for the area in exceedance. In the first place, the exceedance area might be the entire zone area or just a few hundred square metres at a hotspot. In the second place, some Member States have made very large zones, so very few zones, for pollutants that are everywhere substantially below the air quality thresholds. Hence, the number or percentage of zones cannot be used to estimate the area in exceedance or to compare actual population exposure to air pollution between different Member States or even between regions within a Member State.***

Table 3a. Summary of exceedance status of zones in EU Member States in 2007 with respect to the limit values and limit values plus margin of tolerance for sulphur dioxide and nitrogen oxides.

	SO2 health 1h			SO2 health day			SO2 year			SO2 winter			NO2-h				NO2-y				NOx-y		
MS	und ef	<LV	>LV	und ef	<LV	>LV	und ef	<LV	>LV	und ef	<LV	>LV	und ef	<LV	LV - MOT	>MOT	und ef	<LV	LV - MOT	>MOT	und ef	<LV	>LV
AT	0	11	0	0	11	0	0	8	0	0	8	0	0	11	0	0	0	2	2	7	0	7	1
BE	0	12	0	0	12	0	0	0	0	0	0	0	0	11	0	0	0	7	3	1	0	0	0
BG	0	4	2	0	4	2	0	1	0	0	1	0	0	5	1	0	0	5	0	1	0	1	0
CY	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0
CZ	0	15	0	0	14	1	0	15	0	0	14	1	0	14	0	1	0	8	5	2	0	0	15
DE	0	79	0	0	79	0	0	15	0	0	15	0	0	81	3	1	0	41	9	35	0	15	0
DK	0	3	0	0	3	0	0	3	0	0	3	0	0	3	0	0	0	2	0	1	0	3	0
EE	0	4	0	0	4	0	0	4	0	0	4	0	0	4	0	0	0	4	0	0	0	3	1
ES	5	129	4	5	130	3	5	31	0	6	30	0	7	122	5	4	7	112	10	9	5	32	0
FI	0	14	0	0	14	0	0	1	0	0	1	0	0	14	0	0	0	13	1	0	0	1	0
FR	7	72	3	7	72	3	23	42	0	24	41	0	5	73	1	3	5	60	5	12	32	32	1
GB	0	44	0	0	44	0	0	15	0	0	15	0	0	42	1	1	0	2	3	39	0	15	0
GR	0	4	0	0	4	0	2	2	0	2	2	0	0	3	0	1	0	1	0	3	2	2	0
HU	0	11	0	0	11	0	0	0	0	0	0	0	0	11	0	0	0	9	0	2	0	0	0
IE	0	4	0	0	4	0	0	1	0	0	1	0	0	4	0	0	0	4	0	0	0	0	1
IT	15	69	0	15	69	0	14	15	0	14	15	0	17	82	2	6	17	46	6	38	33	8	8
LT	0	3	0	0	3	0	0	1	0	0	1	0	0	3	0	0	0	3	0	0	0	0	0
LV	0	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	0	1	0	1	0	2	0
MT	0	2	0	0	2	0	0	1	0	0	1	0	0	2	0	0	0	1	0	1	0	1	0
PL	0	170	0	0	169	1	0	125	0	0	125	0	0	169	0	1	0	164	2	4	0	125	0
PT	1	23	1	1	23	1	3	5	0	3	5	0	0	24	1	0	0	22	0	3	2	6	0
RO	17	4	0	17	4	0	0	1	0	0	1	0	16	3	0	1	16	2	1	1	0	1	0
SE	0	6	0	0	6	0	0	6	0	0	6	0	0	6	0	0	0	3	1	2	0	6	0
SI	0	9	0	0	9	0	0	9	0	0	9	0	2	6	0	0	2	6	0	0	2	4	2
SK	0	10	0	0	10	0	8	2	0	8	2	0	0	10	0	0	0	9	1	0	8	2	0
EU27	45	705	10	45	704	11	55	306	0	57	303	1	47	706	14	19	47	528	49	162	84	267	29

Table 3b. Summary of exceedance status of zones in EU Member States in 2007 with respect to the limit values and for particulate matter, lead, benzene and carbon monoxide and the target values and long-term objectives for ozone.

	PM10 health day			PM10 health year			lead			benzene				CO			Ozone health				Ozone vegetation			
MS	under	<LV	>LV	under	<LV	>LV	under	<LV	>LV	under	<LV	LV - MOT	>MOT	under	<LV	>LV	under	<LTO	LTO - TV	>TV	under	<LTO	LTO - TV	>TV
AT	0	4	7	0	11	0	0	11	0	0	11	0	0	0	11	0	0	0	0	11	3	0	0	8
BE	0	0	11	0	9	2	0	12	1	0	7	0	0	0	7	0	0	0	5	1	0	0	5	1
BG	0	0	6	0	0	6	0	5	1	0	5	0	0	0	5	1	0	0	5	1	5	0	1	0
CY	0	0	1	0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1
CZ	0	4	11	0	12	3	0	15	0	0	14	0	1	0	15	0	0	0	0	15	0	0	0	15
DE	0	65	17	0	81	1	0	72	0	0	84	0	0	0	84	0	0	0	37	26	16	1	19	27
DK	0	1	2	0	3	0	0	3	0	0	3	0	0	0	3	0	0	1	2	0	0	1	2	0
EE	0	2	2	0	4	0	0	4	0	0	3	0	0	0	4	0	0	0	1	3	0	0	3	1
ES	8	75	55	8	98	32	44	94	0	55	83	0	0	27	111	0	12	18	57	51	14	29	42	53
FI	0	14	0	0	14	0	0	14	0	0	3	0	0	0	14	0	0	0	2	0	0	2	0	0
FR	4	50	26	4	69	7	5	48	0	3	57	0	0	4	61	0	4	4	31	40	10	21	14	33
GB	0	37	7	0	42	2	0	44	0	0	44	0	0	0	44	0	0	2	42	0	0	40	4	0
GR	0	0	4	0	0	4	0	4	0	0	3	1	0	0	4	0	0	0	2	2	0	0	0	4
HU	0	6	5	1	7	3	0	11	0	0	11	0	0	0	11	0	0	0	4	7	11	0	0	0
IE	0	4	0	0	4	0	0	4	0	0	4	0	0	0	4	0	0	3	1	0	3	1	0	0
IT	18	28	52	18	61	19	37	8	0	15	69	1	0	16	80	1	16	3	6	58	38	1	2	42
LT	0	1	2	0	3	0	0	3	0	0	3	0	0	0	3	0	0	0	3	0	0	0	1	0
LV	0	0	2	0	1	1	0	2	0	0	2	0	0	0	1	0	0	2	0	0	1	1	0	0
MT	0	1	1	0	1	1	0	1	0	0	2	0	0	0	1	0	0	1	0	1	0	0	0	1
PL	0	110	60	0	151	19	0	170	0	0	167	2	1	0	170	0	0	1	16	11	0	0	10	6
PT	0	17	8	0	22	3	0	1	0	0	1	0	0	0	1	0	1	2	12	10	19	0	4	2
RO	17	0	4	17	0	4	17	4	0	16	3	0	0	16	3	1	0	0	0	4	0	0	0	1
SE	0	0	6	0	4	2	0	6	0	0	6	0	0	0	6	0	0	3	3	0	0	5	1	0
SI	0	1	5	0	3	3	0	6	0	0	6	0	0	0	6	0	0	0	1	5	0	0	1	5
SK	0	4	6	0	7	3	0	10	0	0	10	0	0	0	10	0	0	0	0	2	0	0	0	2
EU27	47	424	300	48	607	116	103	553	2	89	602	4	2	63	660	3	33	40	230	249	120	102	109	202

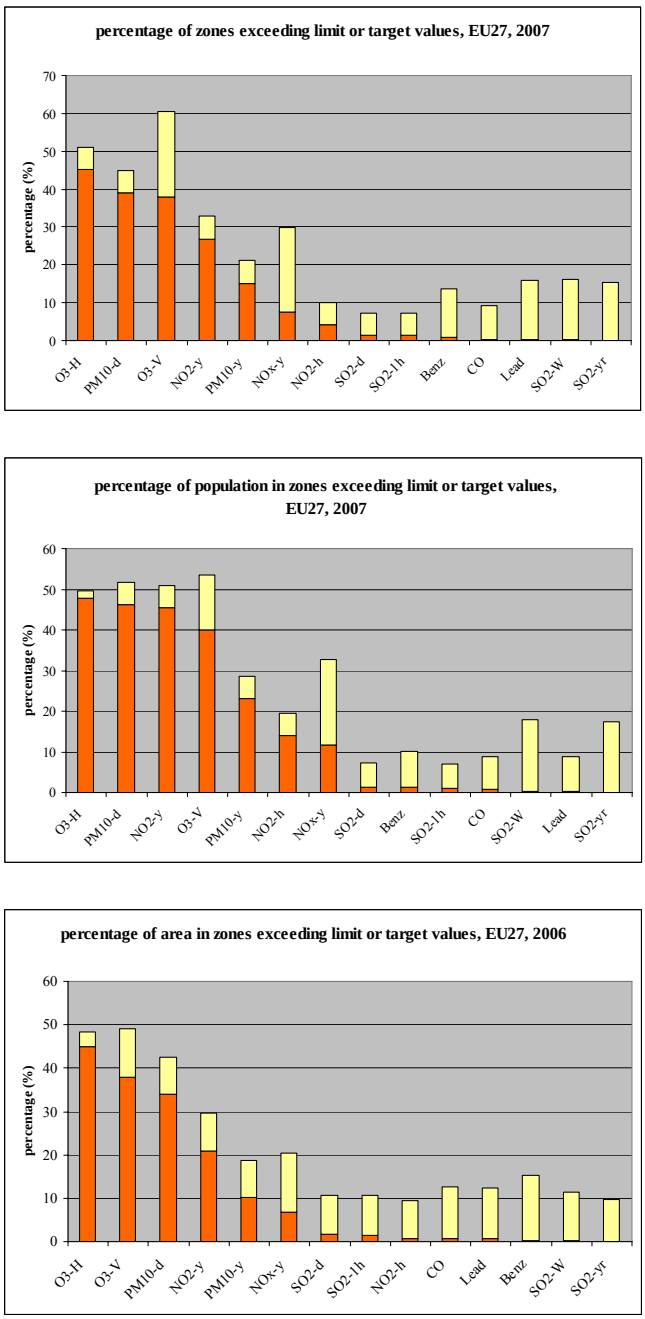

Figure 3. Overview of zones exceeding air quality thresholds. Top: percentage of zone; middle, percentage of population in zones; bottom, percentage of area in zones. In each graph the percentage are arranged in decreasing order. The yellow bars correspond to zones with an undefined air quality status.

Information related to derogation situations

Correction for natural sources for SO_2

The first Daughter Directive, Art. 3(4) gives Member States the possibility for derogation of the requirements to implement action plans if limit values for SO2 are exceeded owing to concentrations in ambient air due to natural sources. None of the Member States indicated in 2007 that exceedances were due to natural SO_2 sources.

Correction for natural sources for PM_{10}

The First Daughter Directive gives Member States in Article 5(4) the possibility of subtracting the contribution from natural events from the PM_{10} concentrations before comparing these with the limit values. This has been done in 2007 for a number of stations by Cyprus, Spain, Greece, Italy, Portugal and Slovakia. For nearly all stations the natural events were described as 'transport of natural particles from dry regions outside the Member State'; Greece reported 'wild-land fire outside the Member State' was indicated as second reason. Slovakia reported the contribution from dust emissions in Ukraine. On 23-25 March high PM_{10} concentrations have been observed in Central and NW Europe (Bessagnet et al., 2008). Model calculations indicated that the dust originated from Southern Ukraine. The major source in this transboundary contribution is resuspended dust from arable land that can not be labelled as a natural event. Commission is assessing each claim individually.

Table 4 shows the effect on the number of exceedance days when days claimed to be attributed to natural events are deducted from the total number of days in exceedance, and claimed impact on the annual average. Such modifications bring 49 stations (or 30 % of the in total 168 stations) below the daily limit value; for the annual limit value 33 stations (or 35 % of the in total 83 stations) would change status when compared to the annual limit value.

Table 4. Claimed influence of natural events on the number of stations exceeding the limit values for PM_{10} in 2007. The numbers indicate the number of stations to which the correction has been applied, not the total number of stations with exceedances in the Member States mentioned.

	Number of stations with exceedance of PM_{10}:			
	Daily limit value		Annual limit value	
MS	before correction	after correction	before correction	after correction
CY	1	1	1	0
ES	135	93	75	44
GR	13	11	12	12
IT	1	0	1	0
PT	4	0	-	-
SK	14	14	4	4

Not included in the table are stations which are listed in Form 23 but where the limit value was not exceeded.

Correction for winter sanding for PM_{10}

The First Daughter Directive also gives Member States the possibility of subtracting the contribution due to winter sanding of roads before comparing PM_{10} concentrations with the limit values. For stations in Estonia, Lithuania, Latvia, and Slovakia such subtraction for the daily limit value were claimed for 2007, and for stations in Latvia and Slovakia also for the annual limit value. Subtraction of the contribution of winter sanding brought in five cases the number of exceedances below the allowed 35 daily exceedances; the corrections of the annual mean concentrations resulted for two stations in an estimated annual mean concentration below the limit value. Commission is assessing each claim individually.

Table 5. Claimed influence of winter sanding contribution on the number of stations exceeding the limit values for PM_{10} in 2007. The numbers indicate the number of stations to which the correction has been applied, not the total number of stations with exceedances in the Member States mentioned.

	Number of exceedance reporting cases of PM_{10} daily and estimated annual mean concentration before and after subtraction of winter sanding contribution			
	Daily limit value		Annual limit value	
MS	before subtraction	after subtraction	before subtraction	after subtraction
EE	1	0	-	-
LT	2	0	-	-
LV	2	2	2	1
SK	14	12	4	3

Not included in the table are stations which are listed in Form 24 but where the limit values were not exceeded.

Exceedance of limit values laid down in Directive 85/203/EEC

The "old" limit values remain in force until the new one set by the first DD take over. Since 1 January 2005 and until 1 January 2010 this applies only for the "old" limit value of NO_2 set in Directive 85/203/EEC. The "old" NO_2 limit value is given as a 98th percentile of hourly averaged values of 200 µg/m^3. This value has been exceeded at 5 stations (Table 6). In all cases the reasons of the exceedance are traffic emissions.

Table 6. Exceedances of the "old" NO_2 limit value laid down in Directive 85/203/EEC

MS	EoI station code	type of station	type of area	Measured value (µg/m^3)
BG	BG0050A	Background	suburban	275
BG	BG0054A	Traffic	urban	271
DE	DEBW118	Traffic	urban	224
DE	DEBW116	Traffic	urban	216
GB	GB0682A	Traffic	urban	229

4. Summary of individual exceedance

Exceedance of the daily PM_{10} limit value

Figure 4 gives an overview of the number of exceedances that Member States reported for each station measured where the limit value of PM_{10} is breached. In the summer period (April-September) the number is relatively low; the averaged concentration during an exceedance is in the summer around 60-70 µg/m^3. The number of exceedances is higher in the winter month and reaches in 2007 a maximum in December. In the winter period the averaged exceedance concentration is between 70 and 90 µg/m^3. Compared to 2006 the number of reported exceedances is in 2007 much lower. The averaged concentration during an exceedance is similar as observed in 2006 except for January: in January 2006 about 13000 exceedances were reported with an averaged concentration of 100 µg/m^3. The Member States should report only exceedances when the total number of exceedances is above the allowed number of 35 days, but in some cases, stations with less than 35 exceedances have also been included. Nevertheless, the actual number of exceedance days will be higher than shown in Figure 4.

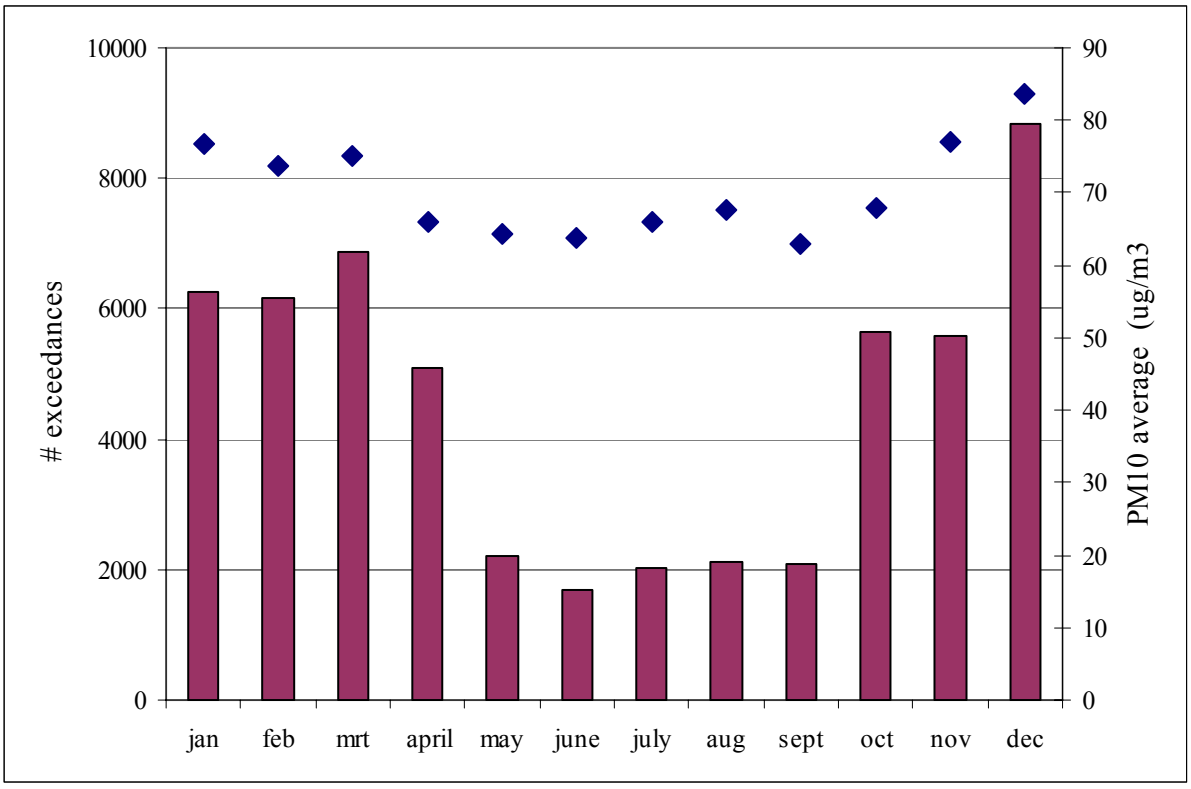

Figure 4. Number of exceedances (bars) and averaged concentration (dots) during an exceedance (µg/m^3) of the daily limit value of PM_{10} per month, 2007.

Exeedance of the ozone long-term objective for health protection

Figure 5 gives a similar overview for the exceedances of the ozone long term objective for health protection, that is, the number of days with a daily maximum 8-hour mean concentration in excess of 120 µg/m^3. In contrast to the PM_{10} exceedance days, all exceedances have to be reported here. This graph shows exceedances of this LTO almost exclusively during the summer months. In 2007 the number of exceedances has been much lower than in previous years. Related to the colder weather, the ozone levels during the summer of 2007 were amongst the lowest in the past decade (EEA, 2008). The large number of exceedances in April is remarkable, and is in direct connection to the meteorological situation (warmer winter followed by warmer spring). The most outstanding episode occurred on 14-21 July (EEA, 2008). The averaged concentration during an exceedance day is 135 µg/m^3 (in 2006 this was 140 µg/m^3).

In December five exceedances with an averaged concentration during exceedance of 143 µg/m^3 have been observed. These exceedances have been reported for a station located on Guadeloupe, the French overseas department in the Caribbean Sea. In this region ozone shows a seasonal behaviour different from the one found in Europe: highest monthly mean concentrations are observed during the winter months.
The exceedance information like presented in Figure 4 and 5 is available since the first reporting cycle of 2001. However, this information a\can not be used to evaluate an overall trend in exceedances. For this, the changes over time in the basic information (increasing number of MS reporting, changes in monitoring networks and in number and location of zones) are too large. Trends have to be evaluated for a stable set of stations, for example, extracted from the EoI database AirBase, Mol et al. (2008) show a flat temporal trend in PM_{10} annual mean concentrations during the period 2001-2006.;

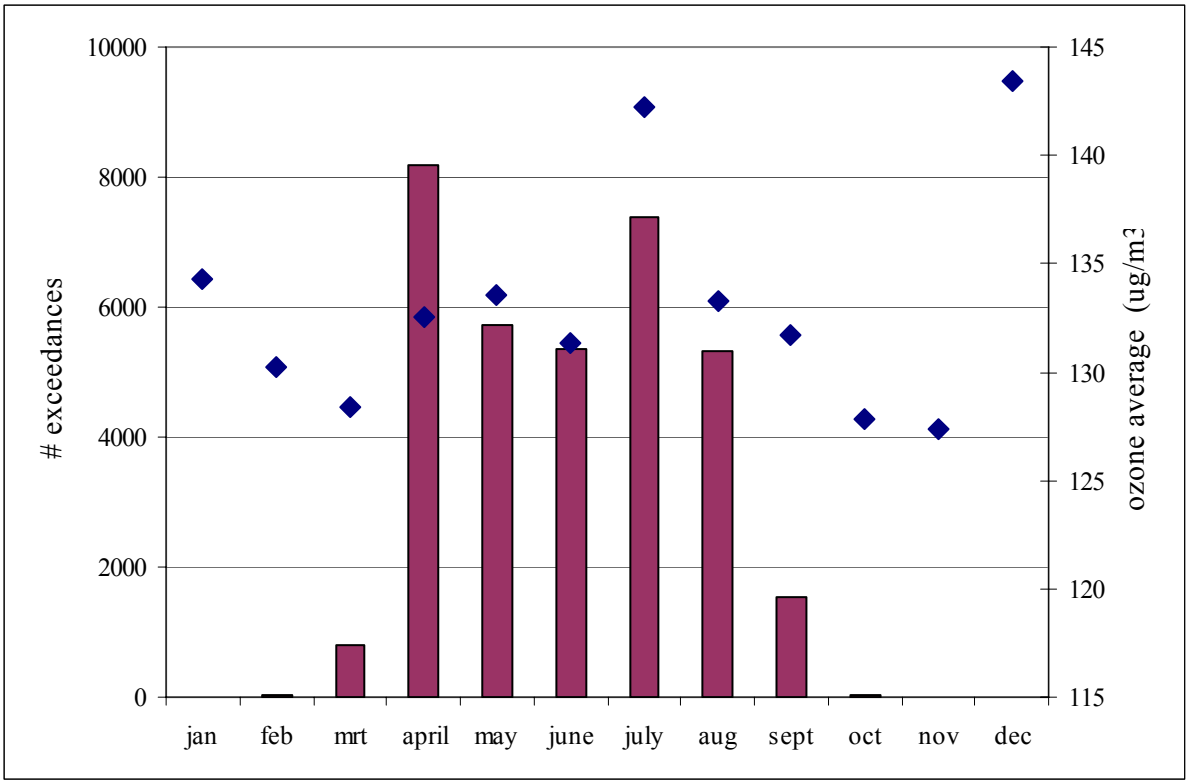

Figure 5. Number of exceedances (bars) and averaged concentration (dots) during an exceedance (µg/m^3) of the ozone long-term objective for health protection per month, 2007.

Reasons of exceedance

Figure 6 gives for the three most widely exceeded LV or TV an overview of the reasons of exceedance that Member States reported for each measured exceedance of the limit value plus, if existing, the margin of tolerance.
It should be noted that the reasons of exceedance were not always filled in. Typically for 80-100% of the exceedances of a limit/target value one or more reasons were reported. Because often several reasons were given for one exceedance, the total number of reasons given tends to be substantially larger than the number of exceedances (up to a factor of two).

The profiles are quite different per pollutant. For NO_2 the vast majority of the exceedances is due to local traffic (≈ 70 %) followed by domestic heating (about 13%). For PM_{10}, the local contribution from traffic and industry has been indicated to be an important reason for exceedance in 50% of the cases. The traffic contribution is less dominant than for NO_2. A substantial number of exceedances were not related to local sources. Of these, “domestic heating” and “natural sources” were of importance. Interestingly, a relatively low number of exceedances were (partially or entirely) ascribed to long range transport of air pollution, in spite of the fact that in many parts of Europe the large scale background is substantial. For ozone a reason for the exceedance of the long-term objective for health

protection has been provided only for about one-third of all exceedances. Of the reasons reported, local sources (traffic, industry and power generation) have a share of more than 30%. This is at first sight remarkable, because often local (NO_x) sources generally tend to decrease the ozone peaks. The cluster "natural sources" accounts for about 20%. The fairly large group "Other than indicated above" consists mainly "Transport from other regions within the country" and 'Local urban sources'.

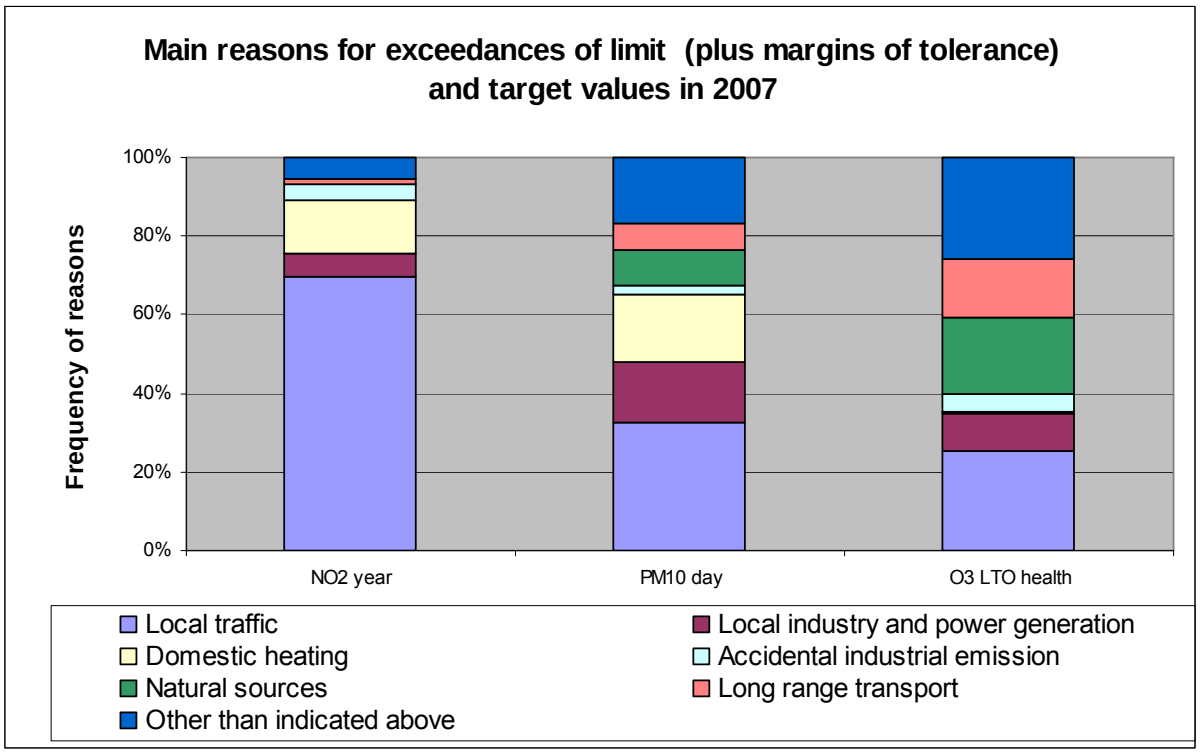

Figure 6. Frequency with which a reason for exceedance of a limit value (plus margin of tolerance) or target value was indicated (2007). The detailed set of reasons reported by the Member States has been grouped here into seven clusters.

5. Measurement methods for particulate matter

Several measurement methods are in use for PM_{10} and $PM_{2.5}$. The First Daughter Directive specifies the gravimetric method (collection on a filter and gravimetric mass determination) as the reference method and it allows other methods to be used, provided that equivalence with the reference method can be demonstrated. To achieve this equivalence, Member States may apply a correction factor (or correction equation).
In 2007 PM_{10} has been measured at 2455 stations, at a few stations two monitors, either parallel or sequential, have been used. The number of installed monitors is 2486. Figure 7 shows that, in terms of the number of monitoring sites, for PM_{10} the beta-absorption method is more common (39%) than the oscillating microbalance method (TEOM, in total 32%) in 2007. The new TEOM FDMS monitor fully accounts for the non-volatile and volatile PM fractions. This means the FDMS agrees with the reference method and the use of a 'correction factor' for PM_{10} and $PM_{2.5}$ is not needed. However, recent parallel measurements of TEOM FDMS and the gravimetric method made in the Swiss network show that the TEOM results are 10-50% higher than the reference method (R.Gehrig, *PM_{10}: Comparison of TEOM-FDMS with Gravimetry* paper presented during the 12th AQUILA meeting, 18/19 November 2008). The ratio between TEOM and reference method may change over the year in an unpredictable way. This may hamper the interpretation of the data. Also when a TEOM FDMS monitor is used, the equivalence with the reference method should be checked continuously.
$PM_{2.5}$ has been measured at 322 stations using 328 monitors which is marginally more than in 2006 (304 monitors). In the newer and much smaller $PM_{2.5}$ network the reference method, has a slightly larger share for $PM_{2.5}$ than for PM_{10}. TEOM is less frequently used to measure $PM_{2.5}$.In a few cases a less commonly used method (TSP or Black smoke measurement with correction, optical techniques) was used. Nearly all $PM_{2.5}$ measurements are co-located with PM_{10} measurements.

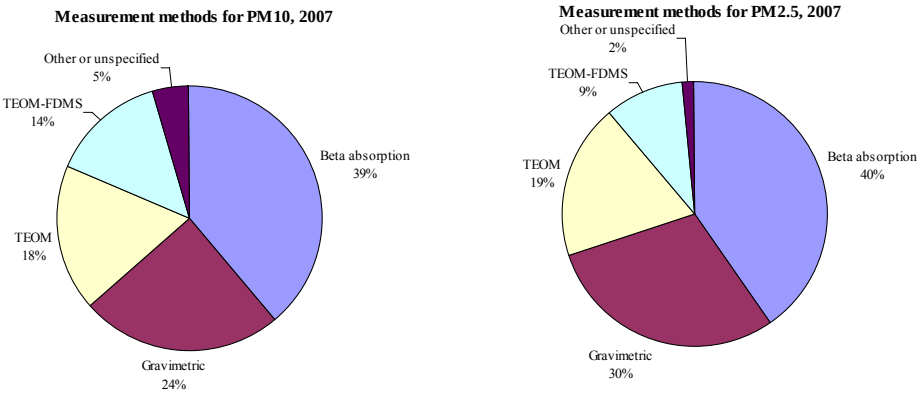

Figure 7. Measurements methods for PM_{10} and $PM_{2.5}$ in 2007.

Within Member States there is sometimes a clear preference for a particulate matter measuring method. For PM_{10} measuring for example, the 'Beta absorption method' is the only method used in Estonia, Greece, Latvia, Lithuania, Malta and Portugal. The 'Oscillating microbalance method' on the other hand is the preferred method used in Cyprus. The reference 'Gravimetric method' is only in three countries applied at more than 50% of the stations: Bulgaria, Ireland and Romania. The general conclusions for $PM_{2.5}$ are that the same differences occur between countries and there isn't a similarity within countries between PM_{10} and $PM_{2.5}$ measuring methods.

6. Overview of PM2.5 measurements

In order to gather data for evaluating a possible $PM_{2.5}$ threshold, the First Daughter Directive requires that "each Member State shall choose the number and the siting of the stations at which $PM_{2.5}$ is to be measured as representative of concentrations of $PM_{2,5}$" and to report the results of those measurements. Over 2007, 25 Member States reported on $PM_{2.5}$ data. It is not known whether the remaining two Member States (Luxembourg and the Netherlands) perform PM2.5 measurements as no questionnaire has been received from these countries. In 2006 both MS did not report on PM2.5.
Table 7 and Figure 8 summarize the observed data for each of the Member States; only stations with sufficient data coverage (as indicated by the MS) are included. Stations with a measured concentration above 25 µg/m^3 (target value to be met in 2010; limit value to be met in 2015) exist in many regions, many of then in central and eastern Europe (CZ, BG, PL and SK).
Figure 9 illustrates the range of $PM_{2.5}$ concentrations, distinguishing traffic stations (close to busy roads), industrial stations (close to industry) and background stations (influenced by diffuse emissions in the surroundings). Station types are based on the classification reported under the Exchange of Information Decision, as far as the stations could be identified. The difference between the observed levels at different types of stations is statistically almost non-relevant due to large variance within the class. It should be noted that this overlap of ranges does not imply that levels are not increased near industry or traffic; it is more likely that the variability in background levels dominates the ranges. The background stations include urban, suburban as well as rural background stations, which explains the wide range in concentrations observed at the background stations.

Table 7. Number of $PM_{2.5}$ monitoring stations, average, minimum and maximum value of the annual mean concentrations per Member State, 2007.

MS	Number of stations	Averaged Annual mean (µg/m³)	Max of annual mean (µg/m³)	Min of annual mean (µg/m³)
AT	9	19.9	25.6	16.2
BE	11	18.5	26.2	13.0
BG	4	29.0	41.0	8.0
CY	2	20.0	26.0	14.0
CZ	23	20.7	36.0	14.0
DE	32	16.2	26.8	8.0
DK	1	23.0	23.0	23.0
EE	1	10.9	10.9	10.9
ES	54	17.1	29.0	6.0
FI	6	7.5	9.5	5.3
FR	42	17.7	36.0	10.0
GB	7	13.6	22.0	4.0
GR	3	30.0	37.0	20.0
HU	3	18.7	24.0	14.0
IE	1	8.0	8.0	8.0
IT	27	26.1	36.6	12.5
LT	3	12.0	17.0	9.0
LV	4	20.5	24.3	17.9
MT	3	17.8	22.7	12.4
PL	2	22.5	25.6	19.4
PT	14	12.1	24.0	1.0
RO	3	31.7	36.0	23.0
SE	13	10.0	13.0	5.0
SI	3	20.7	27.0	10.0
SK	4	21.3	26.8	12.7
Total	275	18.1	41.0	1.0

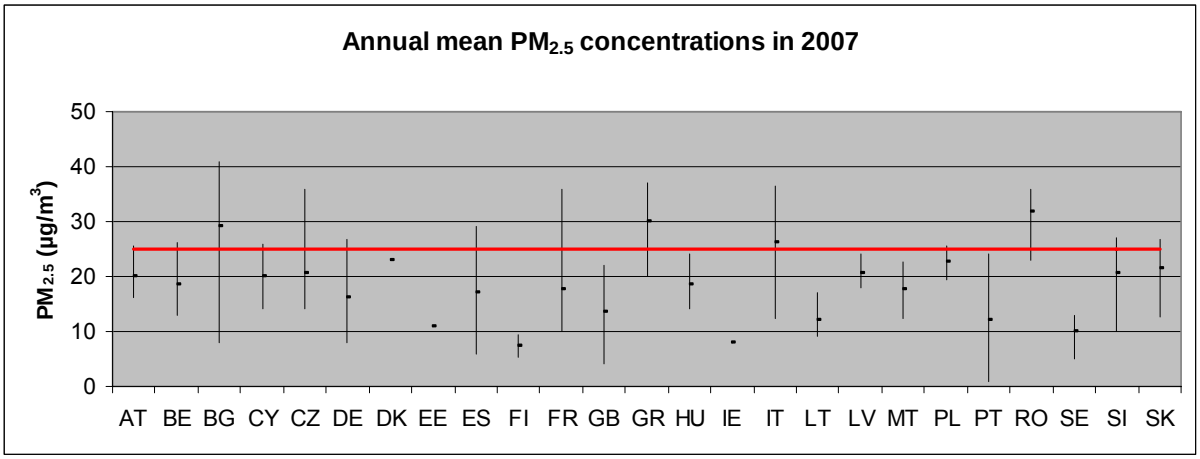

Figure 8. Annual mean (and maximum / minimum value) $PM_{2.5}$ concentrations in 2007 per Member State, the red line corresponds to the target value of 25 µg/m³ to be met in 2010.

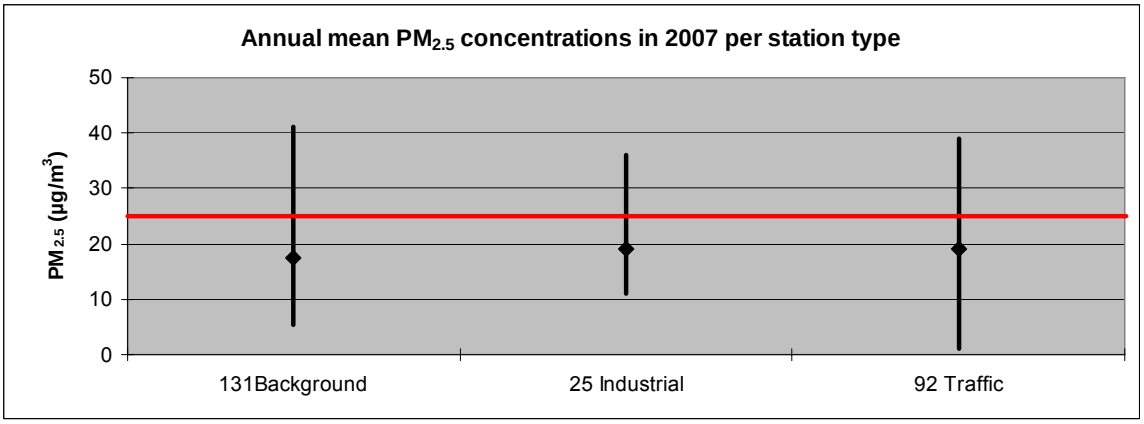

Figure 9. Annual mean (and maximum/minimum value) $PM_{2.5}$ concentrations in 2007 per station type, the red line corresponds to the target value of 25 µg/m³ to be met in 2010.

7. Reporting on 4th DD pollutants

Voluntary information with respect to the pollutants of the 4th DD has been submitted by 14 Member States. The provided information is not always complete.
Eleven MS provided information on zones (see Table 8); the designation of zones in France and Greece has been deduced from the information given in Form 9. The designation of the zones is not yet complete, e.g. Cyprus has not designated any zone for B(a)P; in Sweden zone related to As and Ni are missing. Also with respect to the coverage of the total territory the zoning is incomplete: the Danish zone for B(a)P covers only 1% of the area, the Cd-zone in Sweden covers about 13% of the area. The zones in France cover at least 5% but are certainly not covering the whole territory. For the other MS listed in Table 8 and pollutants the coverage is (nearly) 100%.
The number of monitoring stations used for the assessment of concentrations and the number of stations where other relevant PAH and metals in air and deposition are measured are listed in Table 8. Almost all monitoring stations are also reporting under the EoI decision.

Table 8. Number of zones and number of operational stations for 4th DD-pollutants.

	zones				Monitoring stations					
	As	Cd	Ni	BaP	As	Cd	Ni	BaP	5b (a)	5c (b)
AT	11	11	11	11	15	15	15	17	8	2
BG	6	6	6	6	17	17	17	16	16	17
CY	1	1	1	0	2	2	2	-	-	1
CZ	15	15	15	15	25	25	25	23	23	2
DE	66	66	66	68	120	120	120	102	4	12
DK	3	3	3	1	-	-	-	-	-	-
EE	4	4	4	4	6	6	6	6	0	0
FR (c)	9 (24)	9 (24)	9 (24)	1 (9)	23	23	23	12	7	4
GB	44	44	44	44	29	29	29	17	16	6
GR (c)	0 (4)	0 (4)	0 (4)	0 (4)	21	21	21	21	-	-
IE	-	-	-	-	-	-	-	-	-	1
LT	3	3	3	3	4	4	4	4	4	-
LV	2	2	2	1	4	4	4	-	-	2

(a) Number of stations for the assessment of ambient concentrations of other relevant PAH and metals
(b) Number of stations for indicative measurements of total deposition at background sampling points
(c) Number of zones according to Form 2; in parentheses the number of zones deduced from the information provided in Form 9.

The state of the air quality in the zones in relation to the target values set in the 4th DD to be attained by 31 December 2012 is given in Table 9. In six (out of 178) zones in 4 Member States (Austria, Czech Republic Estonia and France) exceedances of the arsenic target value is reported; the highest reported concentration is 8.5 ng/m^3 at an industrial station in Austria. Two exceedances in the Czech Republic have been based on model calculations. Local industry is indicated as reason for the exceedances. In addition to the four Member States listed above, data, problems might also be found in Slovakia: according to the EoI submission at an urban background station in Prievidza an annual mean concentration of 7.9 ng/m^3 has been observed in 2006 (Mol et al., 2008). In its Preliminary Assessment Report[12] Finland indicates exceedance of the target value at one of the 11 operational stations. A limited number of Member States provided information on the state of the air quality in relation to the upper and lower assessment threshold (Form 10): concentrations are below the lower assessment threshold (LAT) in 45 of the 53 zones for which information has been given.

The target value of cadmium is reported to be exceeded in 4 of the 178 zones in two Member States. In 47 zones (from the 53 reporting zones) concentrations are below the LAT. The exceedance in CZ is

[12] Ilmanlaadun alustava arviointi Suomesssa Arseeni, cadmium, nikkeli, elohopea ja polysykliset aromaattiset hiilivedyt (=PAH-yhdisteet). (Alaviippola, Pietarila, Hakola, Hellen, Salmi). Helsinki 5.7.2006

based on modelling while the exceedances in Bulgaria have been confirmed by measurements. The highest concentration measured is 17.4 ng/m^3 (more than three times the TV) at an urban background station. Traffic and local industry are the main reason for exceedance. The analysis of the 2006 data (Mol et al., 2008) indicates additional problems in Romania.

The target value of nickel is exceeded in 4 of the 178 zones in three Member States; Form 10 indicates that in 51 of the 53 reporting zones concentrations are below the LAT. For both zones in Germany the exceedances are related to local industrial emissions; the total area of exceedance is estimated to be 14 km^2 with a total exposed population of less than 20000. The exceedance in the United Kingdom has been based on a station that has a data capture of less than 70%. In its Preliminary Assessment Report[12] Finland indicates exceedance of the target value at one of the 8 operational stations.

The largest problems are observed for B(a)P: in 28 of the 170 zones an exceedance of the target value has been observed. For all zones in the Czech Republic an exceedance, either based on modelling or monitoring, has been reported; it has been estimated that about 45% of the population is exposed to concentrations above the TV. Traffic, local industry and domestic heating are the main reasons. Also the exceedances in Austria (highest observed concentration is 2.3 ng/m^3) and Bulgaria (max concentration is 4.7 ng/m^3) are attributed to domestic heating and local industry. In Germany it concerns one 6 km^2-sized area closed to industry. France and Greece provide no further information on the exceeding zone. In the United Kingdom it concerns one station with an annual mean of 1.2 ng/m^3. In addition to the Member States listed above, the Preliminary Assessment reports indicate potential problems with meeting the B(a)P target value in Lithuania[13], Slovenia[14] and Finland[12].

Table 9. . Summary of exceedance status of zones in EU Member States in 2007 with respect to the target values for arsenic, cadmium, nickel and benzo(a)pyrene.

	As			Cd			Nl			B(a)P		
MS	undef	<TV	>TV	undef	<TV	>TV	undef	<TV	>TV	undef	<TV	>TV
AT	2	8	1	2	9	0	2	9	0	1	8	2
BG	0	6	0	0	3	3	0	6	0	0	1	5
CY	0	1	0	0	1	0	0	1	0	0	0	0
CZ	0	12	3	0	14	1	0	15	0	0	0	15
DE	0	66	0	0	66	0	0	64	2	0	67	1
DK	3	0	0	3	0	0	3	0	0	1	0	0
EE	0	3	1	0	4	0	0	3	1	0	4	0
FR	0	23	1	0	24	0	0	24	0	0	8	1
GB	0	44	0	0	44	0	0	43	1	0	43	1
GR	0	4	0	0	4	0	0	4	0	0	1	3
IE	-	-	-	-	-	-	-	-	-	-	-	-
LT	0	3	0	0	3	0	0	3	0	0	3	0
LV	0	2	0	0	2	0	0	2	0	0	1	0
SE	0	0	0	1	0	0	0	0	0	0	6	0

[13] Aplinkos oro užterštumo arsenu, kadmiu, nikeliu ir benzo(a)pirenu išankstinis vertinimas atliktas vadovaujantis Europos Parlamento ir Tarybos direktyvos 2004/107/EB reikalvimais. Aplinkos Apsaugos Agentura. Lietuva, 2006.

[14] Methods used for the preliminary assessment of air quality with the respect to arsenic, cadmium, nickel and benzo(a)pyrene in Slovenia. Report under Directive 2004/107/EC. Ministry of Environment and Spatial Planning. Letter 3.07.2007

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Annex I: Listing of forms in AQ questionnaire

Form 0	General information, update history
Form 1	Contact body and address
Form 2	Delimitation of zones and agglomerations
Form 3	Stations and measuring methods used for assessment under first, second and fourth DD
Form 4	Stations used for assessment of ozone, including nitrogen dioxide and nitrogen oxides in relation to ozone
Form 5	Stations and measuring methods used for the assessment of recommended volatile organic compounds (3rd DD) and other relevant PAH and metals in ambient air and deposition (4th DD)
Form 6	Stations and measurement methods used for the assessment of other ozone precursor substances
Form 7	Methods used to sample and measure PM_{10} and PM_2,5, ozone precursor substances, arsenic, cadmium, nickel, mercury, PAH: optional additional codes to be defined by the Member State
Form 8	List of zones and agglomerations where levels exceed or do not exceed limit values or limit values plus margin of tolerance for pollutants listed in first and second DD
Form 9	List of zones and agglomerations where levels exceed or do not exceed target values or long term objectives for ozone and arsenic, cadmium, nickel, B(a)P
Form 10	List of zones and agglomerations where levels exceed or do not exceed upper assessment thresholds or lower assessment thresholds, including information on the application of supplementary assessment methods
Form 11	Individual exceedances of limit values and limit values plus the margin of tolerance of pollutants listed in first and second DD
Form 12	Reasons for individual exceedances: optional additional codes to be defined by the Member State
Form 13	Individual exceedances of ozone thresholds
Form 14	Exceedance of target values of ozone, arsenic, cadmium, nickel, benzo(a)pyrene
Form 15	Annual statistics of ozone, arsenic, cadmium, nickel, and benzo(a)pyrene
Form 16	Annual average concentrations of ozone precursor substances of mercury and other relevant PAH and deposition rates of mercury and other relevant PAH
Form 17	Monitoring data on 10 minutes mean SO_2 levels
Form 18	Monitoring data on 24hr mean $PM_{2.5}$ levels
Form 19	Tabular results of and methods used for supplementary assessment
Form 20	List of references to supplementary assessment methods referred to in Form 19
Form 21	Exceedance of limit values for SO_2 due to natural sources
Form 22	Natural SO_2 sources: optional additional codes to be defined by Member State
Form 23	Exceedance of limit values of PM_{10} due to natural events
Form 24	Exceedance of limit values of PM_{10} due to winter sanding
Form 25	Consultations with other MS on transboundary pollution
Form 26	Exceedances of limit values laid down in Directives 85/203/EEC
Form 27	Reasons for exceedances of limit values laid down in Directives 85/203/EEC: optional additional codes to be defined by the Member State