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**COMMISSION STAFF WORKING PAPER**

concerning guidance on preparing a notification of a postponement of the deadline for attaining the limit values for NO<sub>2</sub> under Directive 2008/50/EC on ambient air quality and cleaner air for Europe

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## 1. INTRODUCTION

### 1.1. Context

- (1) Directive 2008/50/EC on ambient air quality and cleaner air for Europe<sup>1</sup> provides Member States with the possibility to notify an exemption from the obligation to apply the air quality limit values for PM<sub>10</sub> and a postponement of the deadline for attaining the limit values for NO<sub>2</sub> and benzene. These limit values have been mandatory since respectively 1 January 2005 and 1 January 2010 and have proved difficult to meet for a majority of Member States. Following a notification, the Commission has nine months within which it can decide to raise objections after which the exemption is deemed to be tacitly approved.
- (2) Member States need to demonstrate in their notification that the conditions listed in Article 22 of Directive 2008/50/EC have been met. The Commission Communication on notifications of postponements of attainment deadlines and exemptions from the obligation to apply certain limit values pursuant to Article 22 of Directive 2008/50/EC on ambient air quality and cleaner air for Europe<sup>2</sup>, and its accompanying Staff Working Paper<sup>3</sup> give some first guidance for that purpose.

As of 4<sup>th</sup> November 2010, 27 decisions have been published by the Commission regarding notifications of exemptions from the obligation to apply the PM<sub>10</sub> limit values in 320 zones and of postponements of the deadline for attaining the NO<sub>2</sub> limit values in 13 zones and of the benzene limit value in one zone. In the majority of zones the Commission has raised objections for a range of reasons. The guidance given in this document draws on the Commission's experience in assessing these notifications and directly addresses common issues and reasons for objections.

### 1.2. Objectives

This guidance document provides clarification on a number of key issues relating to notifications of postponements of the deadline for attaining the limit values for NO<sub>2</sub>. This should help Member States to provide all the relevant information required to demonstrate that the conditions set out in Directive 2008/50/EC have been met. This guidance will be given in two parts: general guidance (section 2) and guidance on specific points within the forms (section 3).

This document provides specific guidance relating to NO<sub>2</sub> notifications. This is required because the majority of NO<sub>2</sub> notifications are yet to be submitted and there are a number of points where NO<sub>2</sub> notifications will be different to PM<sub>10</sub> notifications. Information about how ambient NO<sub>2</sub> concentrations relate to ambient NO<sub>x</sub> concentrations is given in the Annex.

Please note that this guidance is specific to NO<sub>2</sub> notifications, for example in terms of the compliance date, but should also be of use for benzene or PM<sub>10</sub> notifications or re-notifications as relevant.

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<sup>1</sup> OJ L 152, 11.6.2008, p.1

<sup>2</sup> COM(2008)403

<sup>3</sup> SEC(2008)2132

A draft of this guidance was presented and discussed at the NO<sub>2</sub> workshop organized by the Commission in Brussels on 14-15<sup>th</sup> April 2010. Comments were requested from participants and taken into account in the final version of this guidance.

## **2. GENERAL GUIDANCE**

### **How notifications of postponements of the deadline to attain the limit values for NO<sub>2</sub> fit into the overall air quality framework within Member States**

#### **2.1. Air quality reporting framework and air quality plans**

The Directive 96/62/EC on ambient air quality assessment and management<sup>4</sup> required Member States to report exceedances of limit values for a range of pollutants. Member States should use for the purpose of the annual reporting, the questionnaire given in Commission Decision 2004/461/EC<sup>5</sup>. Where the limit value plus the margin of tolerance has been exceeded for a given pollutant, Directive 96/62/EC required Member States to draw up and implement an air quality plan, which must be reported to the Commission at the latest two years after the exceedance was observed. The recommended template for reporting on air quality plans was given in Commission Decision 2004/224/EC<sup>6</sup>.

Hence the Commission expects that Member States will have drawn up and implemented an air quality plan within any zone where there has been an exceedance of the air quality limit value(s) plus margin of tolerance. This plan must set out measures that will be implemented to ensure that compliance with the limit value is achieved by the original deadline. The air quality plan must be formally adopted by the competent authorities.

When a limit value is exceeded for which the attainment deadline is already expired (which is now the case for PM<sub>10</sub>, NO<sub>2</sub> and benzene), Member States must draw up and implement an air quality plan with appropriate measures to ensure that the exceedance period can be kept as short as possible. In the context of the notifications of postponements of the deadline to attain the limit values for NO<sub>2</sub> and benzene, the air quality plan has to show compliance with the limit value as soon as possible and at the latest by 2015. It may be appropriate in some zones to notify a postponement until 2013, for example, rather than the maximum length of the postponement until 2015.

The requirement to draw up and implement a plan was originally stated in Article 8 of Directive 96/62/EC and can now be found in Article 23 of the Directive 2008/50/EC.

It is acceptable for one air quality plan to cover several exceedance situations or zones, or to cover the extent of just one exceedance situation depending on the specifics of the exceedance(s) and on the approach that the Member State has decided to take in order to tackle the exceedance(s). The air quality plan might cover also only one or several pollutants as appropriate.

The air quality plan submitted must, as a minimum, contain the information described in Annex XV of Directive 2008/50/EC. Specifically this includes characteristics of the

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<sup>4</sup> OJ L 296, 21.11.1996, p.55

<sup>5</sup> OJ L 202, 7.6.2004, p.63

<sup>6</sup> OJ L 68, 6.3.2004, p. 27

exceedance (e.g. location and geographical extent), analysis of the source of the pollution (e.g. information on the source apportionment and transboundary sources) and information on measures/projects adopted to reduce the pollution (e.g. list of measures, timetable and resulting estimated improvement in air quality).

## **2.2. Notification reporting forms**

The notification reporting forms have been designed with the specific aim of capturing the key information from the air quality plans. This information is required by the Commission to assess whether the conditions described in Directive 2008/50/EC have been complied with. This key information should be primarily sourced from the relevant air quality plan(s).

It should be noted that the forms are a reporting mechanism for summarizing the content of the air quality plan(s) in each exceedance situation where a postponement is being sought. The forms do not constitute a plan in themselves. Hence, the Commission expects that the information in the forms will primarily be sourced from the relevant air quality plan document for each exceedance situation. The notification must be accompanied by this plan and the Member State must make it clear which document is considered to be the air quality plan for each exceedance situation. Where information included in the notification is drawn from other sources this should be made clear and the information should be clearly referenced.

## **2.3. Key information required for the assessment**

The structure of the forms closely reflects the assessment process carried out by the Commission. All of the information requested in the forms is required for the Commission to carry out a comprehensive and fair assessment of each notification. Specifically the forms have been designed to enable Member States to demonstrate that they have fulfilled the basic conditions for a postponement. The paragraphs below describe how the information requested in the forms is typically used in the assessment process carried out by the Commission.

### 1) Provision of general information for the postponement notification to be assessed

Several pieces of information requested in the forms are key to assessing many of the criteria described in Directive 2008/50/EC. Hence for a postponement notification to be accepted by the Commission this information must be present and coherent in the notification. Typically, the assessment at this stage will include checking that the reference year given is relevant for the notification (Form 1). Additionally, the source apportionment at the maximum point of exceedance (Form 3A) and its suitability for use will be assessed in detail. This is because the source apportionment will dictate which measures are appropriate to eliminate the exceedance as quickly as possible. If a Member State is unable to provide a reasonable unambiguous source apportionment, this suggests that no sufficient information is available on the nature of the exceedance to ensure that their air quality plan will eliminate the exceedance. Finally, time series trends in pollution levels from Form 2 and/or other official submissions to the Commission will be assessed to understand whether pollution levels in the exceedance areas are increasing, decreasing or staying constant with time.

### 2) Demonstrate that sufficient effort has already been made to meet the limit value by the initial deadline for compliance and that compliance by this deadline is/was not achievable.

For this condition, the Commission will firstly check whether the regulatory requirements concerning the establishment of an air quality plan from Directive 96/62/EC have been

complied with. This includes checking whether a plan was established, implemented and reported to the Commission within two years of the first exceedance of the limit value plus margin of tolerance. In addition, checks will be made that the Member State did originally expect to comply with the limit value by the original deadline for compliance (i.e. the air quality plan implemented was expected to deliver the necessary reductions in pollution levels to comply. If non-compliance by the original deadline was expected several years before the deadline, the air quality plan should have been improved to make up the difference.). Implicit in this check is understanding the reasons that the air quality plan failed to deliver the expected reduction. This information is requested in Form 3B.

The next check is to ensure that it is/was not possible to comply with the limit value at the point of maximum exceedance by the original deadline. This is because compliance must be achieved by the original deadline if possible and hence, a postponement notification will be rejected if the original deadline could have been met. Several types of information are considered in this part of the assessment. This includes:

- Comparing the source apportionment in Form 3A with the measures taken before the original deadline described in Form 7 and Annex A to Form 7 to check that all main sources have been addressed proportionately to their contribution.
- Assessing the compliance gap (i.e. the difference between measure/projected levels and the limit value) in the reference year (Form 2) and at the original deadline for compliance under baseline conditions (Form 4A) and including additional measures (Annex to Form 5A). The size of compliance gap is compared with the individual measures in Annex A to Form 7 and the combined impact of the measures in the exceedance situation in Form 5A to check whether earlier compliance is/was possible.
- Looking at the time series of monitoring data (Form 2 and/or airbase) at relevant monitoring sites.

Similar checks are also carried out to assess whether enough effort has been made to improve air quality and meet the limit value at the original deadline, even if it is/was not possible to comply by the original deadline.

3) Demonstrate for PM<sub>10</sub> that non-compliance is due to one or more of the following: (a) Site-specific dispersion characteristics, (b) adverse climatic conditions or (c) transboundary contributions.

This does not apply for NO<sub>2</sub> notifications.

4) Demonstrate that conformity with the limit value will be achieved as soon as possible and by the extended deadline for compliance at the latest.

Implicit within this condition is that compliance must be achieved at the latest by the extended deadline for compliance (Article 22(1) of Directive 2008/50/EC). Hence, the level at the extended deadline for compliance including the impact of additional measures (Form 5B) will be checked to ensure that compliance is predicted. (Note it is insufficient here to state '< limit value'. Actual numbers are required to demonstrate that a proper analysis of levels has been carried out). Then a check on whether the predicted compliance is realistic given the compliance gap (derived from Form 2, Form 4B, Form 5A), current trends (Form 2 and/or airbase) types of measures (Form 7) and their predicted impact at the extended deadline for

compliance (Annex B to Form 7, Annex B to Form 5) and the source apportionment (Form 3A, Form 4B).

In addition, the source apportionment (Form 3A) will be compared with the measures selected (Form 7, Annex B to Form 7) to assess whether all sources have been addressed in proportion to their significance and reduction potential. This is important because compliance must be achieved as soon as possible, so if there are significant sources not being addressed that could be addressed, the Commission may raise objection on these grounds.

5) Demonstrate that the air quality plan meets the requirements of the Directive, including showing how compliance will be achieved.

For this condition, it is important that Member States clearly indicate on Annex to Form 1 which document accompanying the notification is the air quality plan. The Commission will then check whether this plan is relevant to the area of exceedance, is up to date, has been formally adopted and contains all the information required in Section A of Annex XV of Directive 2008/50/EC, including projection of compliance at the latest by the extended deadline. If any of this information is missing, an assessment will be made of how important the missing information is in terms of compliance in each exceedance situation covered by the plan. A cross check between the forms and the air quality plan will also be carried out to ensure that consistent information is given.

6) Information in Section B of Annex XV of the Directive on the status of implementation of community air pollution legislation and on the consideration of the listed pollution abatement measures must be provided.

Form 6 is used by the Commission to assess whether all abatement measures listed in Section B of Annex XV of Directive 2008/50/EC have been considered. Hence it is important for Member States to either list measures from Form 7 for each category in this Form, or to provide a justification of why any category of measures has not been included in the plan. Where information is missing from this Form, the Commission presumes that these measures have not been considered and will take this into account when deciding to object or not to a postponement.

The information in Form 8 is used to check whether there are any infringements or recent judgements regarding Directives listed in Annex XV of Directive 2008/50/EC. Where infringements or judgements have been made the Commission uses the information provided in Annex to Form 8 to assess the potential impact of these on achieving compliance in each exceedance situation. Hence it is important that Annex to Form 8 is filled in as completely as possible by the Member State. Of particular importance on these Forms is the information requested relating to Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants<sup>7</sup>.

More detailed information regarding Directives likely to have a significant impact on air quality is requested in Form 9. The Commission will use this information to assess whether any non-compliance issues with these Directives will impact on the ability to achieve compliance with the limit value in each zone. In particular, it should be noted that any short

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<sup>7</sup> OJ L 309, 27.11.2001, p.22

term action plan drawn up under Article 7(3) of Directive 96/62/EC must be referenced in Form 9.

#### **2.4. Dates for the extended deadline for compliance**

For NO<sub>2</sub> limit values, the final possible extended deadline for compliance is 2015. However, the Commission expects that in many zones Member States will be able to achieve compliance sooner than this. Hence the notification for each zone must clearly state the first year that compliance will be achieved in that zone. This information should be given in comments for clarification in Form 1.

For zones where a shorter deadline for compliance has been stated in Form 1, Member States should, if possible, present projections for this earlier year in Form 4B, Form 5B, Annex to Form 5B and Annex B to Form 7 (i.e. in a zone where the Member State expects compliance to be achieved in 2013, this should be stated as the extended deadline for compliance on Form 1 and the projections in the Forms listed previously should be for NO<sub>2</sub> levels in 2013). However, it may be that projections are not available for the specific year when compliance is expected. In this instance projections from the air quality plan for 2015 should be provided. The Member State must make it clear on these Forms which year the projections are for. Please use the comments for clarification on these Forms to do this.

Please ensure that the reference (including page numbers) for which the projections are taken is given in these Forms so that this can be analysed in more detail by the Commission if required. If the projections are not taken from the air quality plan this should be stated and a justification given.

#### **2.5. General points for filling in the forms**

To make the process as transparent as possible, Member States must give references, including page numbers, to show where the information provided in the forms can be found within the air quality plans and assessment documents. This could be given in the comments for clarification at the bottom of each form, or in the same cell as the numbers are given. If specific numbers given in the forms were derived in the course of preparing the forms and cannot be found in the referenced documents this should be stated explicitly either in the same cell as the number appears, or in the comments for clarification.

Where a numerical value is given in the forms, Member States must ensure that it is very clear what units the numbers are given in. Details of cells where this has been a particular issue in the notifications already submitted are given in section 3 of this guidance.

The forms should be submitted as Excel document(s), not as word documents or PDFs.

If a new version of the forms is submitted in response to the Commission's questions, the changes should be clearly marked, e.g. using a background colour.

### **3. GUIDANCE ON SPECIFIC POINTS WITHIN THE FORMS**

#### **3.1. Form 1**

The 'reference year' refers to the year for which the exceedance has been assessed. The Communication (COM(2008)403final) in its paragraph 15 states that the reference year

should be 2008 or 2010 for NO<sub>2</sub> notifications. However, a reference year of 2009 will also be accepted.

If an exceedance of the limit values for NO<sub>2</sub> or benzene occurs for the first time in 2011 or later, postponing the deadline for compliance is no longer possible. This is because Article 12 of Directive 2008/50/EC states that in zones and agglomerations where levels are below the specified limit value(s), Member States shall maintain levels below the limit value(s). Article 22 only grants a postponement of the attainment date for NO<sub>2</sub>, and not an exemption from the obligation to apply limit values as it does for PM<sub>10</sub>.

In the event that there is an exceedance for the first time in 2011 or later, the Member State will need to produce an air quality plan which sets out appropriate measures to ensure that the exceedance period is kept as short as possible.

In the comments for clarification please specify how long a postponement is required for each exceedance situation (e.g. for zone 1 a postponement is required until end of 2012). This is important because the Commission will only allow a postponement for the minimum period required to achieve compliance.

### **3.2. Annex to Form 1**

Member States must ensure that each reference is either a) provided as a document (e.g. pdf or .doc format), or b) as a web link URL address.

If documents are submitted with the notification, Member States should use the reference given in Annex to Form 1 point a as the file name for the document. This will ensure that the Commission is able to efficiently match documents submitted with the information in the forms.

If the reference is provided as a web link, Member States must ensure that these are correctly pointed at the relevant document and not just at a generic air quality web page. In addition Member States must ensure that the links work.

Member States must clearly indicate on this Form which document constitutes the air quality plan for each exceedance situation. This should be included in point g.

### **3.3. Form 2**

Member States are reminded that the air quality data presented in Form 2 must be consistent with the data presented in the annual reporting questionnaire (decision 2004/461/EC) and information stored in Airbase. If data on Form 2 is inconsistent with the above data then an explanation of how and why the data are different must be given in the comments for clarification.

Where a section of road exceeds the limit value, but not the surrounding area, Member States should enter an estimate of the total road length (km) exceeding in point L and leave point m blank.

A reference to the method used to calculate the total road length and/or background area exceeding must be given in the comments for clarification on this Form.

If the delimitation of the zones has been changed over time, please indicate in the comments for clarification to which zone the exceedance situations belong, for each reporting year. This information is needed to follow in time the status of the air quality zones.

In addition it is important to bear in mind that the Commission decision is taken on zone basis and the delimitation of the concerned zones is the one that was in place in the reference year. Changes in the delimitation of the air quality zones as compared to the delimitations that applied in the reference year during the exemption period that affect the scope of the exemption must be subject to prior approval of the Commission.

### **3.4. Annex to Form 2**

The aim of this Form is to provide relevant information on the geographical location of each exceedance situation. Therefore, it is important that the maps provided by Member States are relevant to the scale of the exceedance. For example, a map for a small scale roadside exceedance might show the road layout in detail. A map just showing the location of the city would be insufficient in this instance.

### **3.5. Form 3A**

Member States should note that contributions to ambient air concentrations (not emissions) are required in this Form and that the required units are % (however, as an option Member States could also provide  $\mu\text{gm}^{-3}$ ). In the comments for clarification, units must be given.

Please note that emissions should only be given here if a split of ambient contributions is not available. If this is the case, this should be stated clearly in the comments for clarification and an explanation of why ambient contributions cannot be estimated must be given. Units must be given. The geographical area covered by the emissions estimate must also be given.

Where several individual exceedance situations (e.g. different traffic stations in the same city) have been grouped into one macro exceedance situation, the source apportionment presented must be relevant to each single exceedance situation and be applicable for the site with the maximum concentration/number of hours exceeding the limit value. If there is a significant difference in source apportionments across the individual exceedance situations, Member States should consider whether it is legitimate to group them into a macro exceedance situation or whether it would be better to split them into smaller groups.

In general the annual limit value is more stringent than the hourly limit value for  $\text{NO}_2$ . Hence for exceedances of both the annual limit value and the hourly limit value in an exceedance situation, the source apportionment for the annual mean concentration should be given in Form 3A (i.e. give the annual mean  $\text{NO}_x$  or  $\text{NO}_2$  contribution from each sector listed in Form 3A). In the event that only the hourly limit value is exceeded, then an hourly source apportionment should be given. This source apportionment must be representative of the exceeding hours only. Hence there is likely to be a significantly higher contribution from the main local source in the hourly source apportionment than would be the case for the annual source apportionment.<sup>8</sup>

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<sup>8</sup> To calculate an hourly source apportionment the following procedure is recommended:  
1. Identify which hours were in exceedance of  $200\mu\text{gm}^{-3}$  (NB this may highlight that the problem is associated with a particular time of day e.g. the morning rush hour).

In the comments for clarification please indicate whether the source apportionment applies for the annual mean or hourly NO<sub>2</sub> limit value.

In this Form, the source apportionment for NO<sub>x</sub> should be given along with an indication of the primary NO<sub>2</sub> levels for traffic, if this is different to primary NO<sub>2</sub> levels for other sources. Alternatively, an NO<sub>2</sub> source apportionment can be given. Either way, please state clearly in the comments for clarification whether the source apportionment applies for NO<sub>x</sub> or NO<sub>2</sub> and give units.

The source apportionment should apply at the monitoring site/modeled location with the highest annual mean concentration/number of exceedances of the hourly limit value. In essence it is asking how much of the total at that single location of maximum exceedance results from each of the sources listed. Hence the following equations apply (irrespective of whether units are % or µgm<sup>-3</sup>):

- 100% of total NO<sub>x</sub> (total concentration at exceedance location) = Total regional background component for NO<sub>x</sub> (i.e. row 10 of Form 3A) + total urban background component for NO<sub>x</sub> (i.e. row 14 of Form 3A) + total local component for NO<sub>x</sub> (i.e. row 25 of Form 3A)
- Regional background component total (row 10) = from within Member State (row 11) + transboundary (row 12)
- Total urban background component for NO<sub>x</sub> (row 14) = Traffic (row 15) + Industry including heat and power production (row 16) + Agriculture (row 17) + Commercial and residential (row 18) + Shipping (row 19) + Off road mobile machinery (row 20) + Natural (row 21) + Transboundary urban background (row 22) + Other (row 23)
- Total local component for NO<sub>x</sub> (row 25) = Traffic (row 26) + Industry including heat and power production (row 27) + Agriculture (row 28) + Commercial and residential (row 29) + Shipping (row 30) + Off road mobile machinery (row 31) + Natural (row 32) + Transboundary urban background (row 33) + Other (row 34)

For the traffic component of point e on Form 3A, please provide a detailed breakdown of the contribution from different vehicle classes (e.g. petrol cars, diesel cars, buses, HGVs, LGVs). Knowledge of the contribution from different vehicle types will be needed in order to develop an air quality plan, including measures targeting the relevant vehicles. Coherence between

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2. Use hourly data from the main local source to calculate an hourly contribution from this source. For traffic driven exceedances this is likely to require detailed hourly traffic count data, NO<sub>x</sub> emissions estimates and primary NO<sub>2</sub> emissions estimates for different vehicle classes, local meteorological data and a dispersion model. For industrially driven exceedances hourly emissions data from the plant(s) causing the exceedance will be required to estimate hourly emissions and then meteorological data and a dispersion model to estimate concentrations for the relevant hours resulting from the local source.

3. Add on hourly contributions from non-local sources. These are likely to be similar in magnitude to the annual mean contribution from these sources.

An alternative method for estimating the contribution from the main local source is to compare the concentrations for the hours with exceedances at the site where the exceedances have been measured with a second site which has similar contributions from urban and regional sources, but little or no contribution from the local source driving the exceedance. For example, the local hourly contribution at a roadside site can be estimated by comparing with a nearby background site. The local contribution at the roadside site can be estimated by subtracting the concentration at the background site.

these air quality plans and urban transport policies promoting clean vehicles should be ensured. The introduction of clean and energy-efficient vehicles is supported by the Directive on the Promotion of Clean and Energy Efficient Road Transport Vehicles<sup>9</sup>, applicable to all procurements of vehicles for public transport services.

### **3.6. Form 3B**

The purpose of Form 3B is to enable Member States to demonstrate that they expected to achieve compliance by the original deadline (2010 for NO<sub>2</sub> limit values) and explain why this expectation has not been realised. This may be achieved by filling in this Form. Alternatively, Member State may choose to provide information covering the key points for this Form in a separate document. The key criteria that need to be addressed are:

- Demonstrate that compliance was expected by the original deadline
- Demonstrate that all appropriate measures have been taken
- Demonstrate that either a) the measures implemented failed to deliver as expected or b) some other factor that was not anticipated by the Member State is responsible for the exceedance

The above criteria for why compliance could not be achieved by the original deadline must be addressed quantitatively. Ideally Member States should demonstrate that an air quality plan showing how compliance would be achieved by the original deadline was developed, implemented and reported to the Commission within the two year period after the exceedance was observed as required by Directive 96/52/EC. The Member State should also provide evidence that the air quality plan has been reviewed and updated in the light of subsequent monitoring data as appropriate. For example, in zones where an exceedance was first measured in 2001, the Member State should demonstrate that a plan with all appropriate measures to achieve compliance was implemented by 2003. Evidence that the plan was subsequently reviewed and amended with more stringent measures in light of subsequent monitoring data should also be given if relevant.

### **3.7. Forms 4A and 4B**

Form 4A (for original deadline for compliance) is not required when the reference year for the notification is 2010 as long as the information in Forms 3A and 3B is complete. Form 4B (for extended deadline for compliance)<sup>10</sup> is required in all notifications.

In point b of these Forms, Member States should state which emissions inventory has been used and also give detailed information on emission factors used. Specifically, please state what emissions factors have been used for road traffic sources and whether these are consistent with the Handbook on Emission Factors V3.1 ((HBEFA) January 2010, <http://www.hbefa.net/>). If they are not consistent, please explain how they compare with these emission factors. This information is required in order to determine whether the recently published information on the emissions from vehicles meeting recent Euro Standards under real world driving conditions has been taken into account in the assessment.

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<sup>9</sup> Directive 2009/33/EC of 23 April 2009, OJ L120, 15.5.2009, p.5-12.

<sup>10</sup> Note that the extended deadline for compliance may be for years before 2015 if compliance can be achieved sooner than 2015. Please state clearly which year the projections are for.

Member States should use the comments for clarification on these Forms to explain how the projections have been calculated (e.g. based on monitoring data for recent years, model projection including all measures, model calculation including some measures etc.). They must also ensure that a reference, including page numbers, is given to a report or other document where a detailed description of how the projections have been calculated can be found.

Member states must give an absolute concentration level/number of exceedances in point c rather than just stating <LV or >LV. Units must also be given.

Please note that the categories in point c are cumulative. Hence for the annual mean limit value the following equations apply:

- Regional background baseline level = contributions from regional background sources only
- Total background baseline level = regional background baseline level + urban background contribution
- Baseline level at location of exceedance = total background baseline level + local contribution

For the hourly limit value the number of hours exceeding  $200\mu\text{g}\text{m}^{-3}$  when just the regional background component of these hours is considered should be given for the regional background baseline level. The number of hours exceeding  $200\mu\text{g}\text{m}^{-3}$  when the total background baseline level component of these hours is considered should be given for the total background contribution.

### **3.8. Form 5A and 5B and Annexes to Forms 5A and 5B**

These Forms provide a summary of the total impact of all measures across one exceedance situation. Hence only one column should be completed for each exceedance situation in each of these Forms. Descriptions, administrative information and impacts of individual measures should be given on Form 7 and Annexes A and B to Form 7 and not here.

The Commission expects that information on the impact of all measures will be given in these Forms since this information should be available from the relevant air quality plan document. If no information is given in these Forms (or in the air quality plan) this implies that the Member state has not carried out a sufficient investigation of whether the measures in the plan can deliver the necessary reductions to achieve compliance by the extended deadline for compliance. Hence Member States should give any information they have on the likely impacts of measures here, even if these are only a rough estimate. Please ensure that units are given for any numbers given in these Forms.

Please note that Form 5A, Annex to Form 5A and Annex A to Form 7 all refer to measures taken before the original deadline for compliance. Form 5B, Annex to Form 5B and Annex B to Form 7 all refer to additional measures taken before the extended deadline for compliance.<sup>11</sup> Measures taken before the original deadline that are still having an impact are

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<sup>11</sup> Note that the extended deadline for compliance may be for years before 2015 if compliance can be achieved sooner than 2015. Please state clearly which year the projections are for.

not included in Form 5B or Annex B to Form 7 – these measures are part of the baseline and their effect is included in Form 4B. Form 7 gives administrative information on all measures.

On Annex to Form 5A and Annex to Form 5B points b (total emissions in the relevant spatial unit) and c (total emission reduction in the relevant spatial unit of the measures combined), please specify the area covered by the emissions estimate. This could be done either in the comments for clarification at the bottom of the Form, or in the cell where the emissions estimate is given. Ideally the area covered should be as close as possible to the area of the exceedance situation and relevant to understanding the potential impact of measures on pollution levels within the area of exceedance. For example, if the exceedance occurs along one stretch of road and therefore road transport related measures are being used to tackle the exceedance, it would be appropriate to give a total emission for the road in point b and an estimated emission reduction for the road in point c. Please note that if the spatial unit used is too big (e.g. the whole city or the GIS grid cell that include the exceedance situation) compared to the exceedance situation (e.g. few roads), then the total emission reduction on this scale is unlikely to provide useful information.

Note that the impact on NO<sub>x</sub> concentrations at different spatial scales should be entered for point d. Reductions in concentrations should be indicated by negative numbers and note that the impacts should be cumulative such that the local impact includes the urban background and regional background impacts. The total impact on NO<sub>2</sub> concentrations should be given in point e.

Please give units for each point on Annex to Form 5A and Annex to Form 5B.

### **3.9. Form 6**

For each type of measure listed in Form 6, Member States must either:

- Provide a reference to the measures that have been or will be taken in each exceedance situation (code of measure from Form 7 point a); or
- Give a justification for why that type of measure has not been taken.

Leaving blanks on this Form is not an option.

### **3.10. Form 7**

This Form provides information on each measure in the air quality plan and hence the notification. Therefore there should be one entry per measure here.

However, if there are several instances where a particular type of measure applies, but the effect cannot be quantified, these measures may be grouped into one column, stating e.g. “Additional traffic measures (effect not quantified); for details see air quality plan, page ...”.

Measures which cannot be quantified but which are of a particular type listed in Directive 2008/50/EC Annex XV.B.3 should be listed, so that it can be shown that all appropriate measures have been considered when completing Form 6.

Similarly, measures which address particular sources should also be listed to show that all relevant sources have been addressed by measures.

Please be as detailed and specific as possible about what each measure constitutes here.

### **3.11. Annexes A and B to Form 7**

These Forms provide information on the impact of each individual measure on levels in each exceedance situation where the measure has an impact. Hence there may be several entries in these Forms per exceedance situation. For measures that apply in more than one exceedance situation one entry is required per exceedance situation.

Please give the marginal change in annual mean NO<sub>x</sub> concentrations (point f) and NO<sub>2</sub> (point g). Alternatively give the marginal change in the number of exceedance hours caused by each measure if the exceedance situation is hourly only. Please state units clearly here.

For emission reductions in these Forms, Member States must provide units and an indication of the spatial area covered by the emissions estimates. This spatial area should be the same as the one used in Form 5B.

Member States must ensure that an accurate and detailed timetable for the implementation of each measure is given in these Forms.

Please note that measures may be selected that target primary NO<sub>2</sub> emissions, but do not have an impact on NO<sub>x</sub> concentrations. In this instance please state 'no change' in point f and put the marginal change in NO<sub>2</sub> in point g, including units.

### **3.12. Form 8**

Please ensure that complete information is given here. In particular information relating to Directive 2001/81/EC must be given.

### **3.13. Annex to Form 8**

Please note that an exceedance of the national emission ceiling for NO<sub>x</sub> defined in Directive 2001/81/EC also constitutes an "incomplete implementation of directives" and must be addressed in this Form.

### **3.14. Form 9**

It is important that Member States provide all relevant information here. In particular a list of the individual installations that jointly (IPPC+LCP+WI) significantly (>3%) contribute to each exceedance situation must be given. A list of all the permitted installation in the zone or region, which may or may not contribute to the exceedance should be avoided. Member States should go through the following process in completing Form 9:

1. Identify installations that jointly contribute to the exceedance situation
2. Verify if these installations fall under the scope of Directive 2008/1/EC concerning integrated pollution prevention and control<sup>12</sup>, Directive 2001/80/EC on the limitation of

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<sup>12</sup> OJ L 24, 29.1.2008, p.8

emissions of certain pollutants into the air from large combustion plants<sup>13</sup> or Directive 2000/76/EC on the incineration of waste<sup>14</sup>

3. List those installations and provide the requested information

Member States are reminded that for air quality plans the date of adoption and formal implementation must be given in point b. In addition, a reference to the first plan or programme (weblink or reference to Annex to Form 1) should also be given.

If no short-term action plan is available, please state this explicitly under point b.

### **3.15. Form 10**

Form 10 is not required for NO<sub>2</sub> notifications and should therefore be left blank.

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<sup>13</sup> OJ L 309, 27.11.2001, p. 1  
<sup>14</sup> OJ L 332, 28.12.2000, p. 91

## ANNEX

### **Guidance on converting NO<sub>x</sub> concentrations to NO<sub>2</sub> concentrations**

The ambient air quality limit values for the protection of human health have been set for NO<sub>2</sub>. Emission regulations and measures to improve air quality typically address the emissions of NO<sub>x</sub> (the sum of NO and NO<sub>2</sub>).

Ambient NO<sub>2</sub> can be considered to consist of two components. Secondary NO<sub>2</sub> is formed by atmospheric oxidation of emitted NO. Primary NO<sub>2</sub> is emitted directly into the atmosphere. For many combustion sources, including petrol vehicles, the fraction of NO<sub>x</sub> emitted as primary NO<sub>2</sub> is small at about 5%. The primary NO<sub>2</sub> emission fraction is generally higher for diesel vehicles and is approximately 10% and much higher at up to 50% for some vehicles fitted with modern exhaust after treatment technology such as oxidation catalysts. Thus primary NO<sub>2</sub> can be an important component of ambient NO<sub>2</sub> concentrations, particularly at the roadside.

It is unlikely that reductions in NO<sub>x</sub> emissions will lead to a linear decrease in ambient NO<sub>2</sub> concentrations. Models describing current ambient NO<sub>2</sub> concentrations and projections of future concentrations for air quality assessment should therefore incorporate methods to calculate the expected impact of changes in NO<sub>x</sub> emissions on ambient NO<sub>2</sub> concentrations. Ideally these methods should also be able to estimate the impact of changes in primary NO<sub>2</sub> emission fraction.

Simple empirical relationships derived from current measurements data can be used to estimate ambient NO<sub>2</sub> from ambient NO<sub>x</sub> but these relationships may not be reliable for calculating projections, particularly if changes in primary NO<sub>2</sub> emission fractions are expected. More complex semi-empirical approaches or chemical schemes are preferred within assessment models because these methods can incorporate the expected impact of changes in atmospheric composition and emissions.