COMMISSION EUROPEENNE
SECRETARIAT GENERAL

SG.R.2

Bruxelles,, le 26/03/2008

BORDEREAU D'ENVOI DU COURRIER

Référence : **SG/CDC/2008/A/2508.-- /1**	
Date encodage : 26/03/2008	Date du document : 19/03/2008

En attribution: **M. M. CARL MOGENS PETER (DG ENVIRONNEMENT ())**
Pour information: **MME DURAND CLAIRE (SERVICE JURIDIQUE ())**

Doc. scannés : 0 Fichiers attachés : 0 Statut : Normal Fiche nominative : Non

Expéditeur(s) PETERSSON S.O. (REPRESENTATION PERMANENTE DE LA SUEDE ())
Référence
Objet REPONSE CONCERNANT LA DIRECTIVE 2002/49/CE RELATIVE A L'EVALUATION ET A LA GESTION DU BRUIT DANS L'ENVIRONNEMENT

Destinataire(s)
Titre MME MME CATHERINE DAY (SECRETARIAT GENERAL ())
Titre COMMISSION EUROPEENNE
Titre SG/R/2 CDC

POUR INFORMATION OU CHANGEMENT : E-Mail : SG Courrier de la Commission
Fax : 64335

Bordereau émis par le Secrétariat Général par : Mme Angèle WIGBOLD
BERL. 7/207 tél. 53691

SVERIGES
STÄNDIGA REPRESENTATION
VID EUROPEISKA UNIONEN

Ambassadören

Bryssel, 2008-03-19

Generalsekreterare Catherine Day
Europeiska kommissionens
generalsekretariat

Bedömning och hantering av omgivningsbuller

Fru Generalsekreterare,

Härmed översänds svar på kommissionens skrivelse angående Europaparlamentets och rådets direktiv 2002/49/EG om bedömning och hantering av omgivningsbuller.

Högaktningsfullt

Sven-Olof Petersson

Adress
Square de Meeûs 30
B - 1000 BRUSSELS
Belgium

Telefon
+32 2 289 56 11

Telefax
+32 2 289 56 00

E-post
sven-olof.petersson@foreign.ministry.se

REGERINGSKANSLIET

Miljödepartementet

Rättsenheten
Ingela Karlsson
Telefon 08-405 22 09

2008-03-17 M2008/458/R

Europeiska kommissionen
Generalsekretariatet
Rue de la Loi 200
B-1049 BRYSSEL
Belgien

Svar på kommissionens skrivelse angående Europaparlamentets och rådets direktiv 2002/49/EG av den 25 juni 2002 om bedömning och hantering av omgivningsbuller (ENV-C3./DD/ah D(2007)24088)

(1 bilaga)

Kommissionen har i skrivelse som inkom till Sveriges ständiga representation vid Europeiska unionen den 18 januari 2008, bett den svenska regeringen att lämna information om överensstämmelsen mellan de nationella bedömningsmetoderna och de rekommenderade preliminära metoderna enligt Europaparlamentets och rådets direktiv 2002/49/EG av den 25 juni 2002 om bedömning och hantering av omgivningsbuller.

Beräkningsmetoder som används i Sverige

Enligt direktivets artikel 6.2 får medlemsstaterna använda bedömningsmetoder som har anpassats till direktivets bilaga II och som fastställts i deras egen lagstiftning om metoderna ger likvärdiga resultat jämfört med de resultat som erhållits med de metoder som anges i punkt 2.2. i bilaga II till direktivet.

I enlighet med vad som tidigare rapporterats till kommissionen använder Sverige följande beräkningsmetoder för

- *industribuller*: General prediction method, Report 32 from Lydteknisk laboratorium, Lyngby,
- *flygbuller*: Integrated Noise Model Version 6.1, Federal Aviation Administration och ECAC Document 29, Report on Standard Method on Computing Noise Contours around Civil Airports,
- *buller från vägtrafik:* Nordic prediction method, TemaNord 1996:525 och
- *buller från järnvägstrafik:* Nordic prediction method, TemaNord 1996:524.

Samtliga metoder som används i Sverige har anpassats till direktivets bilaga II.

Postadress 103 33 Stockholm
Besöksadress Tegelbacken 2
Telefonväxel 08-405 10 00
Telefax 08-24 16 29
E-post: registrator@environment.ministry.se
Telex 154 99 MINEN S

De nationella metodernas överensstämmelse med preliminära metoder

De metoder som används i Sverige för beräkning av industribuller och flygbuller överensstämmer exakt med de preliminära metoder som anges i direktivet. För beräkning av buller från väg- och järnvägstrafik används metoder som ger likvärdiga resultat jämfört med de preliminära metoderna. Sverige anser därmed att kraven som ställs i artikel 6 i direktivet är uppfyllda. För en mer teknisk presentation av bedömningsmetoderna, se bilaga.

Den svenska regeringen står givetvis till kommissionens förfogande med ytterligare upplysningar i detta ärende om kommissionen så önskar.

Med vänlig hälsning

Magnus Blücher
Kansliråd

Bilaga
Swedish methods used in connection with the EU-directive on the management and assessment of environmental noise.

ASSESSMENT

Handled by, department
Hans Jonasson
Energy Technology
+46 10 516 54 20, hans.jonasson@sp.se

Naturvårdsverket
Ulla Torsmark
106 48 STOCKHOLM

Swedish methods used in connection with the EU-directive on the management and assessment of environmental noise

Assignment

To assess the compliance between the prediction methods used by Sweden for the 2007 noise mapping according to the END, [1], and the interim methods, [2], defined by the European Commission.

Result

Road traffic noise

Source emission data: National data have been used, which are different to given default data for the interim method. However, this is permitted according to the guidelines for interim methods.

Propagation: In the Swedish mapping 1,5 m/s downwind has been used in stead of detailed meteorological statistics. This will approximately yield up to about 1 dB higher values. As this higher level will benefit the consumer when action plans are made it should be acceptable. It should be noted that in urban areas with hard ground and shorter distances the difference will become smaller.

Integration[1)]: This part of the method is fully compatible with the interim method.

Rail traffic noise

Source emission data: National data have been used, which are different to given default data for the interim method. However, this is permitted according to the guidelines for interim methods.

Propagation: In the Swedish mapping only downwind conditions have been used. Compared to the interim method which subtracts a meteorological correction to get a long-term average this means that the levels are 0-3 dB higher. As this higher level will benefit the consumer when action plans are made it should be acceptable. It should be noted that in urban areas with hard ground and shorter distances the difference will become smaller.

Integration: This part of the method is fully compatible with the interim method.

Aircraft noise

Source emission data: The INM data base has been used, which nominally but not necessarily factually is different to given default data for the interim method. In any case, this is permitted according to the guidelines for interim methods.

Propagation: This part of the method is fully compatible with the interim method.

Integration: This part of the method is fully compatible with the interim method.

Industrial noise

The method used is identical to the interim method.

[1)] Adding up noise contributions from moving individual vehicles to represent a traffic flow

Background

Methods used for the Swedish mapping

For the 2007 mapping Sweden has used the following methods:

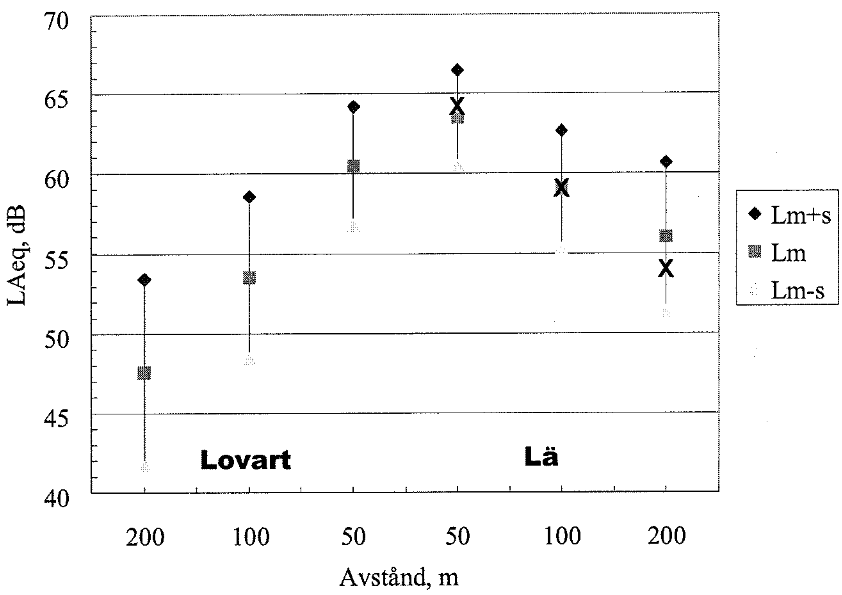
General

All methods have been adapted to the definition of L_{den} and L_{night} using the receiver height 4,0 m. All calculations have been made using favourable propagation conditions. This procedure is in accordance with the precautionary principle mentioned in [2]. Meteorological data have only been used to determine runway use for aircrafts. Under discussions below the consequences of this simplification will be discussed. As to emission data, the optional default data provided with the interim methods, [2], have not been used. In stead data established in the authorized calculation methods described below have been used. For moving sources the integration from sound power/sound exposure level to L_{eq} is equivalent to that of the interim methods.

Road Traffic Noise - Nordic Prediction Method 1996

This method, [3], calculates sound propagation in A-weighted values using algorithms approximated from accurate frequency band calculations under neutral meteorological conditions. To achieve moderate downwind conditions these algorithms have been modified using empirical corrections. This model has been shown to yield accurate results corresponding to about +1,5 m/s downwind conditions. One verification is shown in figure 1 below where, in the right half, the crosses indicate calculated values and the squares the mean value of about one hundred measurements at wind speeds between 0 – 3 m/s. The left half indicates upwind propagation conditions.

The source data used as input are sound exposure levels at 10 m determined from Swedish and Nordic measurements on thousands of vehicle pass-bys. Two vehicle categories are used: Light and heavy vehicles.



Railway Traffic Noise - Nordic Prediction Method 1996

This method, [4], uses ISO 9613, [5], for sound propagation calculations in octave bands using different frequency dependent source heights. Source data have been derived from Swedish pass-by measurements at different speeds. Each type of train has been measured individually on some different tracks and thus there is in general no other categorization.

Environmental Noise from Industrial Plants. General Prediction Method.
Also this method, [6], is based on ISO 9613. There is no generally available data base. Each consultant carrying out calculations either measure each relevant source or takes data from his own data base.

Aircraft noise. INM 6.1 ECAC doc 29
Both these documents, [7, 8], are internationally well known and in general use. As source data base the INM NPD data base was used.

Interim methods

The official interim methods, [2], to use in the process are

Road traffic noise: The French NMPB-Routes 1996
Railway traffic noise : The Dutch RMR
Aircraft noise : ECAC document 29
Industrial noise : ISO 9613

All the interim methods rely on ISO 9613 for downwind propagation calculations. In this standard downwind is defined as "wind direction within an angle of $\pm$ 45°" and "wind speed between 1 m/s and 5 m/s, measured at a height of 3m to 11m above the ground". The French NMPB also calculates neutral conditions using analytical theory identical to the one used in Nord 2000 for neutral conditions. RMR adapts a simple meteorological correction, C_m, to subtract from the downwind calculated value to get the long-term yearly average.

Neither the road nor the rail traffic model contain source data 100% relevant to Swedish conditions. Because of the extensive use of studded winter tyres Swedish roads are significantly rougher and noisier than most continental roads, [9],. As tyre/road noise dominates the noise emission at most speeds this means that Swedish cars make more noise than their European counterparts. Swedish trains are normally different from those of the Netherlands and other European countries The freight trains are heavier and longer and the tracks do not necessarily correspond to those of the Dutch interim method. As to aircraft noise there are no such problems as most countries, including Sweden, rely on the American INM data base for noise emission by aircrafts. Industrial noise sources are normally measured in each case.

Discussion of road traffic noise
The 1996 Nordic model calculates sound propagation during moderate downwind conditions corresponding to about 1,5 m/s downwind. This is a deviation from the yearly average, which, however, turns out to be quite small. Table 1 shows some examples calculated using Nord2000 Road, an advanced model from 2005, [9-13], which has the possibility to calculate the sound propagation for any weather and which also contains representative statistical meteorological data for each of the Nordic countries. For the Swedish average year table 1 gives an interval. This interval shows the highest and lowest L_{Aeq} obtained when turning the road in steps of 45°. The receiver is located at 4,0 m.

Table 1 Calculated variations in L_{Aeq} at different distances from a road with the receiver at the height 4,0 m

Type case	Meteorology	80 m	160 m
Level, soft ground	Uniform	60,4	54,2
	+1,5 m/s	61,2	56,2
	+6,0 m/s	62,2	58,3
	Swedish average year	60,8 – 61,3	55,3 – 56,5
2m screen 10m from road	Uniform	55,3	49,6
	+1,5 m/s	55,6	50,7
	+ 6,0 m/s	56,4	51,8
	Swedish average year	56,1 - 56,5	50,9 – 51,6
4m screen 10m from road	Uniform	50,5	49,6
	+1,5 m/s	50,6	50,7
	+ 6,0 m/s	51,0	46,8
	Swedish average year	51,6 – 51,8	50,9 – 51,6
1m road embankment	Uniform	62,8	56,5
	+1,5 m/s	64,1	59,9
	+6,0 m/s	65,5	61,7
	Swedish average year	63,4 – 64,0	58,0 – 59,3

Table 1 shows that the difference between the 1,5 m/s downwind value and the range defining the Swedish average year is quite small. At 80 m it is only a few tenths of a dB and even at 160 m which is a rather long distance for Swedish traffic conditions it never exceeds 1 dB. These small differences occur for soft ground and rather long distances. In urban areas with hard ground and shorter distances the differences will be even smaller. In this context it should be noted, as discussed in the Good Practice Guide, [14], that the uncertainty of the elevation of the road is often greater than 1 m, something which yields an error far greater than that of the difference between 1,5 m/s and yearly average.

Conclusions: The difference between an average year and 1,5 m/s downwind as used in the Swedish noise mapping is insignificant.

Discussion of rail traffic noise

As to sound propagation the main difference between the Nordic model and the Dutch interim model RMR as described in [2] is the meteorological correction CM with C0 = 3,5 dB as defined in ISO 9613-2, [5]. CM lies in the interval 0 - 3,5 dB. CM is given by

$$CM = 0 \text{ if } d \leq 10(h_s + h_r)$$

where d = the distance (m), h_s = source height (m), h_r = receiver height (m)

$$CM = C0(1 - 10\frac{h_s + h_r}{d})$$

With $h_s + h_r = 5$ we get CM = 1,3 dB at 80 m and CM= 2,4 dB at 160 m.

Conclusions: The difference between an average year as defined in the interim method and the ISO 9613 implementation as used in the Swedish noise mapping is from 0 dB at short distances and in urban areas with hard ground to at most 3 dB at long distances in rural areas. In those cases where the difference is great it will benefit the consumer as the predicted levels are higher.

Discussion of aircraft noise
There does not seem to be any discrepancies between the method used by Sweden and the recommended interim method. However, we have not studied the difference between the INM data base and the default recommendation in [2].

Discussion of industrial noise
In this case the interim method is identical to the Nordic method. The Nordic method does not apply any meteorological correction CM. However, nothing is said about CM in the guidelines for interim methods.

References

[1] END Directive 2002/49/EC
[2] Guidelines on the revised interim computation methods for industrial noise, aircraft noise, road traffic noise and railway noise, and related emission data, Official Journal of the European Union, 22.8.2003.
[3] Road Traffic Noise – Nordic prediction method, TemaNord 1996:525
[4] Rail Traffic Noise – Nordic prediction method, TemaNord 1996:524
[5] ISO 9613-1:93 Attenuation of sound during propagation outdoors - Part 1 Calculation of the absorption of sound by the atmosphere
Part 2: A general method of calculation
[6] Environmental noise from industrial plants – General prediction method, Report 32 from Lydteknisk laboratorium, Lyngby
[7] Integrated Noise Model Version 6.1, Federal Aviation Administration
[8] ECAC Document 29, Report on Standard Method on Computing Noise Contours around Civil Airports
[9] Hans Jonasson, Acoustic Source Modelling of Nordic Road Vehicles, SP Rapport 2006:12, Energy Technology, Borås 2006
[10] User's guide Nord2000 Road, Report Delta AV 1171/06, 2006
[11] B. Plovsing and J. Kragh, Nord2000. Comprehensive Outdoor Sound Propagation Model. Part 1: Propagation in an Atmosphere without Significant Refraction, DELTA Akustik & Vibration, Rapport AV 1849/00, revised Hørsholm 2005.
[12] B. Plovsing and J. Kragh, Nord2000. Comprehensive Outdoor Sound Propagation Model. Part 2: Propagation in an Atmosphere with Refraction, DELTA Akustik & Vibration, Rapport AV 1851/00, revised Hørsholm 2005.
[13] R. Eurasto, Nord2000 for road traffic noise prediction. Weather classes and statistics, VTT Research Report No. VTT-R-02530-06, Esbo 2006
[14] Good Practice Guide for Strategic Noise Mapping and the Production of Associated Data on Noise Exposure, version 2, final draft

SP Sveriges Tekniska Forskningsinstitut
Energy Technology - Acoustics

Hans Jonasson
Technical Manager/Officer