

CAETS Noise Control Technology Committee

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Mr Philippe JEAN
Head of Unit F1 DG ENTERPRISE & INDUSTRY
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2011-05-02

Dear Mr Jean

As chairman of the CAETS Noise Control Technology Committee, I write to support an ambitious Commission proposal for stringent standards to reduce road traffic noise throughout Europe.

The letter of 2011-03-13 to European Commission Vice President Tajani, **Expert support for stricter vehicle noise emissions standards**, points to the substantial contribution from road traffic noise to the burden of disease in the EU. It also emphasises the underestimation made by ACEA of benefits, especially health effects which were not included, of substantially reduced noise emission limits for road vehicles.

The CAETS Noise Control Technology Committee agrees with the concerns expressed in this expert letter. The severity of the noise burden has now been further clarified through the

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recent publication of the WHO report, "Burden of disease from environmental noise." For health reasons, the environmental noise situation in the EU has to be much improved in the interest of its citizens. The urgent challenge is to reduce the noise emissions from the road traffic vehicles by more than 10 to 15 dB. This has to be done stepwise as the noise control technology is developed. At present, the technology for a first reduction of more than 5 dB is available.

What is CAETS

The International Council of Academies of Engineering and Technological Sciences, CAETS, is an independent nonpolitical, nongovernmental organization. It represents 26 national academies. Among its activities, CAETS has taken up the noise issue with the purpose of promoting policies leading to a less noisy environment.

The objective is to assist policymakers in improving national and international requirements by emphasizing the need for careful consideration of the noise emissions of dominant noise sources and by providing independent information about the technological options and barriers to counteract the lobbying from industry. What is needed are well informed policymakers who can challenge the industry, set up stringent limits and find market-driving tools.

The noise emission from road vehicles since the 70s

During the last three or four decades the noise emissions of individual vehicles in ordinary traffic has remained almost constant. The exception is heavy vehicles at low speeds where noticeable improvements have been made. This is illustrated in the **attached graph** which shows the situations in 1974 and 1999. Since 1999 the situation has not changed appreciably, except that cars have become a little noisier, probably due to the use of wider tyres. Overall, the traffic noise problem has become more severe, as traffic continues to increase, and especially in view of the growing share of heavy duty vehicles.

In this situation with high and almost unchanged noise emissions per vehicle, the principal means that have been used to limit the noise exposure of citizens has been through mitigation measures for traffic as well as building and city planning. However, there is no such planning in the world that can solve the noise problem for all citizens in urban areas. There is a considerable inconsistency, a gap, between emission legislation and reasonable immission goals. Typical noise levels in every major city in Europe (measured as Lden) outside dwellings and buildings facing busy streets or motorways are 65 dB and above. This is a serious threat to public health.

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Important to demand a substantial noise reduction now

Adverse health effects occur when Lden outside dwellings exceeds 55 dBA. With nighttime levels, Lnight, above 55 dBA (corresponding to Lden somewhat above 60 dBA), WHO considers the situation increasingly dangerous for public health.

The emissions have to be much reduced to get a real reduction of the health effects. The long-term target should be 15 dB or more in noise emission reductions per vehicle in ordinary traffic. We do not yet have the technology for such a large reduction so reductions have to be taken in steps. Especially problematic are HDVs with conventional-fuel (ICE) vehicles. Electric vehicles may offer valuable opportunities in the near future.

It has been well-documented that the type-approval test method for road vehicles has been irrelevant and the tightening in the past of the limit values have not led to a corresponding reduction of the emissions from individual vehicles in ordinary/typical driving. We have had a very long period of time, several decades, without any progress.

Now we have an opportunity to significantly improve the current situation. An important step was taken in 2009 with tighter noise limits for tyres in the General Safety Regulation (EC) No 661/2009. Now the noise limits for the complete vehicle need to be considerably lowered. A new and more relevant test method has been developed, and it is time to set strict emission limits. A good basis for this is the TNO report VENOLIVA, commissioned by your services and published in April 2011.

Technology for quieter road vehicles

Within the CAETS noise project the available technology for emission reductions of various sources is being assessed. In a workshop held in June 2008 at the Institute for Sound and Vibration, ISVR, at the Southampton University, UK, the technology for silent vehicles for air, road and rail transportation was assessed. The participants in the workshop represented both industry and academia. The presentations and the discussions from the workshop were published in the March issue 2010 of *Noise/News International* posted on the web.

http://www.noiseneewsinternational.net/archives/nni_181.pdf

The road vehicle sessions started with the report from the Swedish Royal Academy of Engineering Sciences, IVA. [<http://www.iva.se/upload/seminarier/Bullerrapport.pdf>]. The results from the IVA report were confirmed; the technology for a reduction of road vehicle noise by approximately 5 dB in regular traffic for different types of vehicles and speed conditions is now available.

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It must be emphasized that the automotive industry has exceptionally high competence in noise control engineering. Today, this expertise is principally applied to the interior of vehicles to satisfy consumer demand for low noise levels inside the vehicles. If the industry's noise control technology expertise were applied to exterior noise control of vehicles, this expertise would be more than adequate to accomplish substantial reductions of exterior noise.

The exterior noise limits for cars have not caused the manufacturers any major problems. It has not been any real topic for the industry. It is unlikely that any vehicle platform has been designed with a focus to meet demands for exterior noise formulated in regulations.

For trucks and vans the situation is different. They often dominate the night noise and thereby cause serious health effects. The noise limits for these vehicles should be lowered most.

The exterior noise is a demanding topic for the HDV manufacturers. The noise sources of these vehicles are often less shielded. Increased shielding and enclosure absorption which would be the short-term solution to meet stricter limits lead to heat problems that need to be solved. In the longer run stricter noise limits should be technology driving towards more fundamental redesign instead of technology following.

New limit values

In setting the limit values linked to the new Test Method B it is necessary to consider the severe health effects of traffic noise, the necessary lead time for industry and the long time it takes before quieter vehicles dominate the traffic. A multi-step approach for limits has to be applied and the means to stimulate a more rapid development than the minimum requirements prescribed must be found.

Our standpoint is that a more ambitious goal than Option 5 in the VENOLIVA report should be set now. According to the estimates in the report, Option 5 will lead to a reduction of highly sleep-disturbed from 27 million people to 22 million in the EU and a reduction of the highly-annoyed from 55 million to 41 million, traffic growth not considered. These reductions are certainly significant but not at all satisfactory from a public health point of view. To close the gap between emission demands and acceptable immissions, the emission per vehicle needs to be reduced by more than 10 dB as pointed out above. We therefore propose to clearly indicate already now a much higher long-term goal than Option 5 in the VENOLIVA report and to set limits in an intermediate third step now.

This third step may challenge the industry's noise control engineers but should be achievable with reasonable technology development. The limits in the third step should be set for cars

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3 dB lower than Option 5 in the VENOLIVA report and **4 dB for vans and trucks** to be fulfilled for all new vehicles **by January 2020**.

Use market forces to reach the proposed Step 3 levels more rapidly

The timetable for the three steps has been set considering that the industry needs lead time to meet the stricter limits for all vehicles. But market forces could be used to promote a more rapid development. Serious night noise problems are connected to city bus operations and vans and trucks for delivery services and diverse vehicles for services like street cleaning, garbage collection etc. These nighttime problems will probably increase in the immediate future with increasing daytime traffic congestions. Therefore, city authorities need tools to promote "environmentally friendly vehicles". A noise labeling system for vehicles, similar to that for tyres, should be introduced.

It is therefore suggested to use the limit values in Step 3 as suggested above as a noise criterion for "environmentally friendly vehicles" to stimulate market forces. When purchasing transportation and other services, cities should have the means to improve the noise climate by demanding "Step 3 noise levels" for the vehicles to be used. In the definition of "environmentally friendly vehicles", those that meet Step 3 noise levels should qualify for benefits like access to quiet areas, lower road charges, etc.

In the 70's, the Scania company in Sweden produced a quiet city bus that was approximately 10 dB quieter in traffic than buses that just passed the noise limits. These buses disappeared from the market because they had some technical problems which should be possible to overcome now.

Vehicles that meet the Step 3 criteria should be awarded an accreditation or label to allow them to be recognised for such procurement schemes, preferential access, and charge rates, etc.

There is a useful precedent, which could be scaled-up to EU level, in the PIEK 'QuietTruck' label established and promoted by the Dutch automotive industry association (RAI), for vehicles producing less than 72dB(A). However, in PIEK the noise measurements are not the ISO methods so direct comparison cannot be made of the limit values.

(<http://www.raivereniging.nl/activiteiten/keurmerken/piek-keur.aspx>)

Additional issues

The new test method has been developed due to the failure of the old method. Even though the limit values were strengthened by up to 10 dB, there were no reductions in the noise

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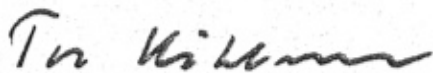
emissions per vehicle in ordinary traffic except for HDV. The test method was irrelevant. The new method is expected to give a better description of emissions in ordinary traffic. It is extremely important that this be the case. This must be carefully checked during the coming years and reactions to deviations from this assumed development must be immediate.

There is an ongoing discussion of which tyres should be used on the drive axle(s) of heavy duty vehicles during the noise test procedure. If the requirement to use tyres appropriate to the axle (traction tyres on drive axle) is lifted, this must be appropriately compensated in the reported tested value in relation to the limit value, as the real world noise level will be increased once traction tyres are installed for use on the road.

For a long time there has been ongoing work within ISO on a new measurement method where vehicles are tested in the laboratory running a representative drive cycle. With this method the tyre/road noise gets separated out. It is essential to get this method into use.

Motorcycle noise is not to be included in the forthcoming proposal. However, it must be emphasized that noise from motorcycles is a growing environmental concern. With the planned noise-reduction measures for cars, buses and trucks in Europe, motorcycle noise will be even more prominent. It is absolutely necessary to tackle the noise emissions of motorcycles, and in particular to improve enforcement as a significant proportion of two wheelers are found to be louder than permitted due to tampering with the mufflers.

A problem that also should be addressed in the future development of test methods and limit values is related to low-frequency noise. The noise limits as they are set in A-weighted sound levels do not take the low-frequency problems sufficiently into account. This is especially important for some types of vehicles. Barriers, windows, etc, attenuate the high frequencies much more effectively than the low frequencies. The low frequencies do not significantly influence the A-weighted levels (dBA) in the certification measurements on 7,5 m distance but may dominate the immission levels; especially indoors. One simple way to correct this problem would be to set limit values with both A- and C-weighting, (dBA and dBC). This would promote noise-reduction measures on the vehicles of importance for the citizens but which are not necessary for complying with certification limits set in dBA only. A first step would be to demand data from industry and certification institutes on the complete spectra measured during certification tests.

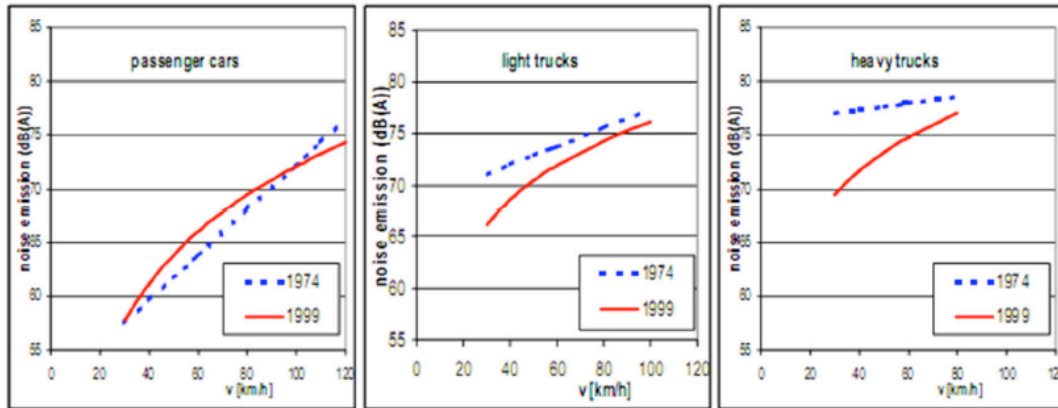


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Progress since 1970?



Comparison noise emission measurements in traffic, 1974-1999

Source: de Graaff, 2000

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