

Progress of Future Road Traffic Noise Abatement

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(Key words) Road traffic noise, loud vehicle, Enlightenment, Eco-driving

1. Actual state of the Road traffic noise

Noise barriers, porous asphalt concrete pavement and vehicle noise emission limits have improved the achievement status of environmental quality standard of automobile noise (in the area facing the road) to approx. 92% on 2011 from approx. 77% on 2000¹⁾. However, as it is difficult to achieve 100% over a short period only through conventional noise abatement measures, we need other measures based on a new idea. Fig. 1 shows the measured value of the noise generated by heavy vehicles on public roads. As shown in the simulated illustration in Fig. 2, noise of a loud vehicle is much bigger than that of ten quiet vehicles.

2. Progress of Future Road Traffic Noise Abatement

We are implementing the following survey with the target of contributing to the policy to convert a loud vehicle to a quiet vehicle.

[Noise of a low-pollution car] It was proved that the noise of a low-pollution car (medium heavy vehicle class) measured on the test road was almost 1/3 (= -5dB)²⁾ to that of average car (Fig. 3).

[Noise of a high noise car] We have measured the noise in several places in the country as to estimate the effect of loud vehicles. The example presented in Fig. 4 shows that values restricted to the top 10% of loud vehicles achieves the reduction of about 1.3dB of the daily average noise level, which does not

include sudden big noise in the late-evenings to early mornings.

[Quiet driving instructions] Reducing the speed and amount of acceleration while driving is expected to reduce the noise and vibration generated, reduce fuel consumption, reduce and prevent accidents and road kills, lessen of the deterioration of roads and vehicles. Although the transport related parties are very aware of eco-driving, they are actually obliged to follow the speed of traffic around them. We have a concept that it is required to educate not only the transporters but all other users of the road as well, therefore we would like to propose posting of banners as an effective way and plan to investigate its effect (Fig.-5)³⁾.

- 1) Ministry of the Environment: Automobile traffic noise actual state survey report on fiscal year 2011, MOE web site.
- 2) YOSHINAGA Hiroshi, SONE Shinri: A study of road traffic noise reduction by reducing vehicle noise, Environment System Study Report Presentation Papers, Vol.38th, pp.233-238 (2010).
- 3) YOSHINAGA Hiroshi, SONE Shinri, KIMURA Keiko, ANDO Shingo: Enlightenment for drivers as a potential noise abatement measure, Institute of Noise Control Engineering of Japan, Papers in presentation, Vol.2011, Fall-time, pp.267-270 (2011).

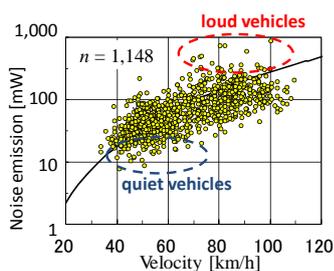


Fig.-1 Noise of the heavy vehicle on public road.

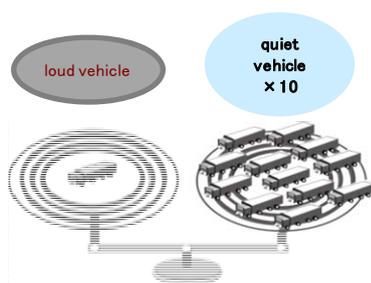


Fig.-2 Loud vehicle vs. Quiet vehicle.

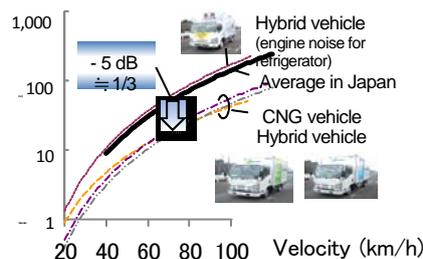


Fig.-3 Noise of medium vehicle on Test road.

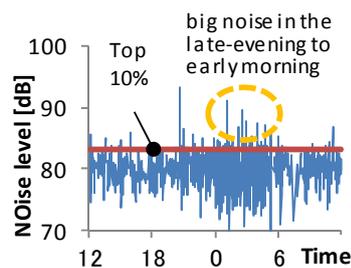


Fig.-4 Example of 24 hour measurement at site.



やさしく静かに運転してね

Fig.-5 Idea of the banner to encourage quiet driving.

Please drive quietly and softly