

WBM Summary of the WHO Environmental Noise Guidelines for the European Region (2018)

The main purpose of the World Health Organisation (WHO) “Environmental Noise Guidelines for the European Region” 2018 is to provide recommendations for external noise levels for protecting human health from exposure to environmental noise originating from various sources. These noise sources include: transportation (road traffic, railway and aircraft), wind turbine and leisure activities. The 2018 guidelines recommendations also apply to exposure to impulse sounds, such as those in shooting facilities or from the use of toys and firecrackers.

The 2018 guidelines complement the “Night Noise Guidelines” (2009) and supersede the outdoor noise recommendations from “Guidelines for Community Noise” (1999) although the 1999 guidelines for internal noise remain valid.

Since 1999 there have been significant advancements in the understanding of the health effects of environmental noise. Although there are many areas of uncertainty, the 2018 guidelines are a comprehensive study based on 400 health effect studies between 1999–2015.

A summary of the recommendations is tabulated below.

Noise Source	L_{den} (dB) ¹	L_{night} (dB) ¹	Recommendation strength ²
Road traffic	<53	<45	Strong
Railway	<54	<44	Strong
Aircraft	<45	<40	Strong
Wind turbine	<45	No recommendation ³	Conditional
Leisure	Reducing the yearly average from all leisure noise sources combined to 70 dB $L_{Aeq,24h}$ ¹		Conditional
¹ L_{den} is the day, evening and night sound level. It is the average sound level over a 24 hour period, determined from the L_{day} ($L_{Aeq,12hr}$ 7am-7pm), $L_{evening}$ ($L_{Aeq,4hr}$ 7pm-11pm) and L_{night} ($L_{Aeq,8hr}$ 11pm-7am), with a 5 dB penalty added to the $L_{evening}$ and a 10 dB penalty added to the L_{night} . The $L_{Aeq,24hr}$ is the average sound level over a 24 hour period.			
² Recommendations are rated as either strong or conditional. A strong recommendation “...is based on the confidence that the desirable effects of adherence to the recommendation outweigh the undesirable consequences. The quality of evidence for a net benefit – combined with information about the values, preferences and resources – inform this recommendation...” For conditional recommendations, “...There is less certainty of its efficacy owing to lower quality of evidence of a net benefit, opposing values and preferences of individuals and populations affected or the high resource implications of the recommendation, meaning there may be circumstances or settings in which it will not apply”			
³ The quality of evidence of night time noise exposure to wind turbine noise is too low to allow recommendations			

Several guiding principles (reduce, promote, coordinate and involve) were also developed and apply to the implementation of all of the specific recommendations:

- Reduce exposure to noise, while conserving quiet areas.
- Promote interventions to reduce exposure to noise and improve health.
- Coordinate approaches to control noise sources and other environmental health risks.
- Inform and involve communities potentially affected by a change in noise exposure.

To reduce health effects, the 2018 guidelines strongly recommended that policy makers implement suitable measures to reduce noise exposure from all sources in the population exposed to levels above the values tabulated above. This is due to the evidence of noise above these levels showing an association with adverse effects on health and sleep.

Leisure activities include attending nightclubs, pubs, fitness classes, live sporting events, concerts or live music venues, listening to loud music through personal listening devices and educational facilities. For leisure activity noise, the 2018 guidelines conditionally recommended reducing the yearly average from all such combined sources to 70 dB $L_{Aeq,24h}$ as leisure noise above this level is associated with adverse health effects. For single event and impulse noise exposures, it is conditionally recommended to follow existing guidelines and legal regulations to limit the increased risk of hearing impairment from leisure noise in both children and adults.

The document does not include guideline values for internal noise but recommends that all indoor noise guideline values set out in the 1999 document remain valid.

The 2018 guidelines make no recommendations for other noise sources such as: occupational, industrial/commercial, ventilation systems, church bells, animals, neighbours, recreational activities or shooting/military.

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