



## WHO recommends setting night noise limits at 40 decibels

**The World Health Organisation (WHO)** has set the European target limit of outdoor night noise levels at annual average of 40 decibels (dB) in its new guidelines. This would protect the public, including the most vulnerable, such as children and the elderly.

**Environmental noise** damages human health, particularly at night when it can interrupt sleep. The EU has tackled this problem with the introduction of the Directive on Environmental Noise<sup>1</sup>, which obliges Member States to assess and manage noise levels. With the support of the European Commission, the WHO Regional Office for Europe has developed night noise guidelines for Europe to help Member States develop legislation to control noise exposure. The guidelines are based on scientific evidence on the effects of noise and the thresholds above which these effects appear to harm human health.

A review of available scientific research led to the following conclusions:

- Sleep is a biological necessity and disturbed sleep is associated with poor health.
- There is strong evidence that night noise causes increases in heart rate, arousal, changes in sleep stage, awakening and use of medicine.
- There is limited evidence that night noise is related to hypertension, heart attacks, depression, changes in hormone levels, fatigue and accidents.

The report identified a number of vulnerable groups. Although children have a higher waking threshold they are equally or more reactive to night noise than adults and require greater amounts of sleep. Elderly people, pregnant women, those with ill health and shift workers are also at greater risk of experiencing negative impacts from night noise.

The report summarised the threshold levels of night noise above which a negative effect starts to occur or above which the impact becomes dependent on the level of exposure. For example, the threshold level for waking in the night and/or too early in the morning was 42 dB, whereas the threshold for heart attacks was 50 dB.

It also established that there are differences in the intensity and frequency of noise depending on the source, which lead to different impacts. Road traffic is characterised by low levels of noise per event, but as there are a high number of events, on average it has a greater effect on awakenings than air traffic, which has high levels of noise per event but fewer events.

Integrating these findings, the report proposed a guideline target limit of outdoor night noise of 40 dB (annual average defined as 'L<sub>night</sub>' in the Environmental Noise Directive). There is not sufficient evidence that the biological effects observed below this level are harmful to health but adverse effects are observed above 40 dB. Above 55 dB cardiovascular effects become a major health concern and the report proposed that this should be the interim target for those countries unable to meet 40 dB in the short run. However, this interim target must be temporary and only applied in exceptional local situations.

Member States can adopt this night noise guideline to reduce noise using measures such as house insulation, locating offices in noise-exposed areas and creating zones where a certain level of noise cannot be exceeded. It can also be used for health impact assessment of new projects such as roads, airports or residential areas.

1. See <http://ec.europa.eu/environment/noise/directive.htm>

**Source:** WHO Regional Office for Europe Night Noise Guidelines for Europe. (2009). *WHO Regional Office for Europe Publications*. Downloadable from [www.euro.who.int/en/what-we-do/health-topics/environmental-health/noise/publications/2009/night-noise-guidelines-for-europe](http://www.euro.who.int/en/what-we-do/health-topics/environmental-health/noise/publications/2009/night-noise-guidelines-for-europe)

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