



## WHO Environmental noise guidelines for the European Region - What is new?

### 1. Policy context and methodology used for guideline development

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#### ABSTRACT

WHO Regional Office for Europe is currently coordinating the systematic review of all pertinent literature in order to provide recommendations for the protection of public health as part of the

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upcoming WHO Environmental Noise Guidelines for the European Region (the Guidelines). The entire process is transparent and evidence-based and is conducted according to established WHO procedures for guideline development.

Whereas the scientific evidence on health effects of environmental noise is growing, the recognition of noise as an environmental health issue is insufficient. There is uneven attention given to environmental noise among Member States, with varying degree of policy development, exposure monitoring and use of health risk assessment practices for informing public health policy.

The development of these Guidelines is motivated by the Commitment to Act of European Ministers of Environment and Health included in the Parma Declaration from 2010, which urged WHO to develop suitable guidelines on noise. Further, some of the guideline recommendations are expected to be directly embedded in the revised Annex III of the EU Environmental Noise Directive on “assessment methods for harmful effects”, which has recently been initiated.

Keywords: Noise & Health, Environmental Noise, Noise policy

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## 1. POLICY CONTEXT

World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. Environmental noise has negative impacts on human health and well-being and is a growing concern among both the general public and policy-makers in Europe.

In 2011, the WHO Regional Office for Europe and the Joint Research Centre (JRC) of the European Commission published the report “Burden of Disease from Environmental Noise”, which quantified the healthy years of life lost in Europe due to environmental noise (1). The burden of disease combines in one measure, the disability adjusted life years (DALYs), the time lived with disability and the time lost due to premature mortality in the general population. The burden of disease for a disease or health condition is calculated as the sum of the Years of Life Lost (YLL) due to premature mortality in the population and the Years Lost due to Disability (YLD) for people living with the health condition or its consequences. Sufficient information is available to quantify the burden of disease from environmental noise for effects such as cardiovascular disease, cognitive impairment of children, sleep disturbance, tinnitus, and annoyance. These results, based on a limited set of data, indicate that at least one million healthy years of life are lost every year from road traffic-related noise in the western part of Europe. Sleep disturbance and annoyance, mostly related to road traffic noise, comprise the main burden of environmental ill health. This places the burden of disease from environmental noise as the second major environmental risk after air pollution (1,2).

According to the European Environmental Agency (EEA), 125 million people in the European Union are affected by road traffic noise levels above 55 dB(A) Lden (3). Further, more than 30 % of the population is exposed to noise levels above 55 dB(A) Lnight during the night (4). These values exceed recommendations set by the “WHO Night Noise Guidelines for Europe” (5). However, there is a lack of noise exposure data in the central and eastern parts of the WHO European region, making a complete assessment of the burden of disease challenging.

The “WHO Guidelines for Community Noise” in 1999 (6) included scientific evidence on noise related health outcomes and recommendations for protecting human health from environmental noise exposure originating from various sources and community settings. The “WHO Night Noise Guidelines for Europe” in 2009 (5) are considered as an extension of the former guidelines.

New evidence on the health effects of environmental noise has accumulated in recent years, requiring an update of existing WHO noise guidelines. The need for health-based guidelines also originates in part from the European Union (EU) Directive 2002/49/EC relating to the assessment and management of environmental noise (commonly known as the Environmental Noise Directive), which requires EU Member States to establish action plans to control and reduce the harmful effects of noise exposure (7). Technical guidance was also issued by the EEA on the topic of noise exposure and potential health effects under the requirements of the Directive (8).

In the Parma Declaration Commitment to Act, developed at the Ministerial Conference on Environment and Health in Parma, Italy 2010, the Member States called upon all stakeholders to reduce children’s exposure to noise, including that from personal electronic devices, recreation and traffic, especially in residential areas, at child care centres, kindergartens, schools and public recreational settings. As a consequence the Member States urged WHO to produce appropriate noise

guidelines (9).

Therefore, WHO Regional Office for Europe is developing a new set of guidelines, the “WHO Environmental Noise Guidelines for the European Region” (the Guidelines) to provide suitable scientific evidence and recommendations for policy-makers of the WHO Member States in the European Region and beyond.

## **2. METHODOLOGY USED FOR GUIDELINE DEVELOPMENT**

WHO guidelines represent the most widely accepted set of public health recommendations and are intended to assist policy-makers, health-care providers, and other relevant stakeholders to make informed decisions for the protection of public health. WHO has adopted internationally recognized standards and methods for guideline development to ensure that guidelines are free from biases, meet public health needs and are consistent with the following principles:

1. Recommendations are based on a comprehensive and objective assessment of the available evidence, and
2. The process used to develop the recommendations is clear.

Therefore, the reader will be able to see how a recommendation has been developed, by whom, and on what basis. The entire process is conducted according to the “WHO Handbook for Guidelines” (10).

WHO initiated the process of developing the Guidelines in 2013. The main objectives of the updated Guidelines are to systematically review the scientific literature on the health effects of environmental noise and to provide evidence-based recommendations for protecting public health from the health risks of environmental noise.

In order for experts to be involved in the Guideline process, they are required to declare all potential personal, financial, and academic interests by completing the WHO Declaration of interests form.

According to established procedures, WHO set up a Guideline Development Group (GDG) composed of leading experts and end-users responsible for the process of developing the evidence-based recommendations.

Health outcomes deemed as critical or important by the GDG experts are included in the systematic literature review using a protocol developed for this purpose. In order to assess the quality of the evidence for each health outcome required for appropriate recommendations, the authors of the systematic review use the GRADE methodology which ranks the quality of evidence as high, moderate, low, or very low (11).

Environmental noise is defined in the Guidelines as “noise emitted from all sources except sources of occupational noise exposure in workplaces”.

Significant research has been undertaken in the area of environmental noise and health since the previous WHO environmental noise guidelines were published in 1999 and 2009. Therefore, in order to include these new findings, the Guidelines review all pertinent literature on health evidence, revisit the previous guidelines and issue revised recommendations, as relevant.

As well, the Guidelines review the evidence on health benefits from noise mitigation and interventions to decrease noise levels.

The Guidelines separately assess the environmental noise coming from various sources, for each relevant health outcome: aircraft, railway, road traffic, wind turbines, and leisure noise. The document mainly considers exposure to noise in such relevant settings as residences, hospitals, educational settings and public venues.

## **3. CONCLUSIONS**

Environmental noise is increasingly recognized as a significant public health issue. New scientific evidence in the field of environmental noise and public health has prompted WHO to revisit the recommendations issued in the previous guidelines and develop the “WHO Environmental Noise Guidelines for the European Region”. The Guidelines will provide up-to-date information on the health risks from environmental noise and evidence-based recommendations in order to support WHO Member States in their efforts to prevent and control exposure to excessive noise.

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