



## WHO Environmental Noise Guidelines for the European Region - What is new? 4. Implementation of Guidelines and Implications for Practice

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### ABSTRACT

WHO Environmental Noise Guidelines focus on the WHO European Region and provide guidance to its Member States that is compatible with the noise indicators used in the EU Environmental Noise Directive.

The Guidelines aim to serve as a reference for several target audiences, such as decision makers and technical experts, health impact assessment and environmental impact assessment practitioners and researchers, national and local authorities and non-governmental organizations responsible for risk communication and general awareness raising.

The implementation of the guideline recommendations will require coordinated effort from ministries, public and private sectors, NGOs and potentially input from international development programmes and finance organizations.

The Guidelines can be useful by providing exposure-response relationships and health-based exposure limits that provide insight into the expected health effects at observed or expected noise exposure levels. They allow comparison amongst different policy options with regard to the associated health effects and can be valuable information to use in cost-effectiveness and cost-benefit analyses of various policies for noise abatement. In this respect, the guideline recommendations can be an integral part of the policy process for noise reduction by various institutions, and are of greatest value in order to communicate the health risks and potential cost-effective solutions to reduce noise.

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## 1. Introduction

The new WHO Environmental Noise Guidelines will focus on the WHO European Region<sup>1</sup> and provide guidance to European states that is compatible with the noise indicators used in the EU Directive on Environmental Noise (END). They provide information on the exposure-response relationships between exposure to environmental noise from different noise sources and the relative risk increase of such health end points like ischemic heart disease and hypertension and the proportion of persons affected by outcomes like sleep disturbances and noise annoyance, as well as interventions that are considered efficient in reducing exposure to environmental noise and related health outcomes. Implementing the Guideline's recommendations will require coordinated effort from ministries, public and private sectors, NGOs and potentially input from international development (such as United Nations Environment Programme (UNEP), and United Nations Development Programme (UNDP)) and finance organizations. WHO will work with member countries and support the implementation process through its regional and country offices.

The following sections briefly review essential points for the dissemination of the Guidelines and their implementation in environmental protection policies in Europe, and beyond.

## 2. Target audience of the Guidelines

The Environmental Noise Guidelines for the European Region will hopefully serve as a reference for an audience made of different groups and areas of expertise in decision-making, research, and advocacy. More specifically, this covers: Various technical experts and decision-makers at local, national or international level, responsible for developing and implementing regulations and standards for environmental health, noise control, urban planning and housing; Health Impact Assessment and Environmental Impact Assessment practitioners and researchers; National and local authorities and non-governmental organizations engaged in risk communication and general awareness raising.

National needs, including the need for capacity building, differ in the various countries of the WHO European Region. This depends on the existence and level of implementation of national and/or European / international noise policies, which is more likely to be implemented fully in EU Member States due to the legally binding provisions of the Environmental Noise Directive (END).

The recommendations in the Guidelines may also be applied to countries outside of the WHO European Region. Although the largest part of the scientific evidence of noise effects currently stems from European research, all evidence reviews carried out for the Guideline project also considered the research from other areas of the world, notably the Americas and Asia, as long as the respective studies met the inclusion criteria for the systematic reviews.

The Guidelines mostly recommend the application of exposure-response relationships for the exposure indicators Lden and Lnight. They are therefore of particular relevance to EU countries and those applying END. For countries not using these indicators, users of the Guidelines would need to convert their noise indicators into Lden and Lnight before being able to apply the recommendations. Conversion between indicators is often possible, particularly for road traffic noise, using a certain set of assumptions. Practical guidance and/or references on conversions between metrics will be provided in the Guideline document also.

In some cases, average-based noise metrics (Leq and related measures) may not be the best indicator, and measures such as Lmax and/or the number of events are warranted; this will be clearly indicated. Generally, Guideline values are provided for exposure at the most exposed façade, outdoors.

## 3. Usefulness of Guidelines

As indicated above, these Guidelines will serve as a reference for several target audiences. For each of these groups, the Guidelines can be useful in different ways:

For decision makers and technical experts, the Guidelines can be useful by providing exposure-response relationships that give insight into the consequences of certain regulations or standards with regard to the associated health effects. They also can be useful at the national and international level while developing noise limits or standards, as they will provide the scientific basis to identify at what levels environmental noise is causing a significant health impact. Based on these

<sup>1</sup> List of countries of the European Region at <http://www.euro.who.int/en/countries>

recommendations, national governments and international organisations can be better informed when introducing noise limits, to ensure protection of people's health.

For Health Impact Assessment and Environmental Impact Assessment specialists, the Guidelines will provide exposure-response relationships that give insight into the expected health effects at observed or expected noise exposure levels. The Guidelines provide recommendations on the maximum admissible noise levels for some noise sources, but as well provide important input to derive the health burden from noise and, in that sense, can be largely used when producing studies such as noise (effect) maps and action plans to obtain an evaluation of the magnitude of the health problem.

Researchers will benefit from the Guidelines, as they have clearly identified critical research gaps that will need to be filled in the future in order to better protect the population from the harmful effects of noise.

The Guideline recommendations will provide a useful tool when deciding about noise reduction measures, as they provide data and functions to estimate the health burden of the population, and therefore allow comparison amongst different policy options. These policy options can include measures to reduce the noise emitted by the sources (e.g. low-noise road pavement), measures aimed at impeding the transmission of noise from the source to the receiver (e.g. noise barriers, insulated windows), and measures aimed at land use planning.

The exposure-response relationships for various noise sources, that the Guidelines will provide, can be valuable information to use in cost-effectiveness and cost-benefit analyses of various policies for noise abatement. In this respect, the Guideline's recommendations can be an integral part of the policy process for noise reduction by various institutions, and are of greatest value in order to communicate the health risks and potential cost-effective solutions to reduce noise.

National and local authorities and non-governmental organizations responsible for risk communication and general awareness raising can use these Guidelines for promotion campaigns and appropriate risk communication.

#### **4. Promotion of the Guidelines and policy implementation**

Preventing noise impacts on health depends on effective action across different sectors: health, environment, transport, urban planning etc. The health sector needs to be effectively engaged in different sectors' policy processes at regional, national, and international levels. It needs to provide authoritative advice about health impacts of noise and policy options that will bring the greatest benefits to health.

In most countries of the European Region, the commitment of the health sector to engage in action to address environmental noise issues needs to be improved and better coordinated. A more coherent overall response is needed, taking into account relevant linkages with existing health priorities and concerns. Therefore some actions can be foreseen as a part of the role of the health sector:

- Engaging in proper communication with relevant sectors about noise exposure from different sectors and sources (environmental, urban development, transport etc.) to ensure that health issues are adequately addressed.
- Promoting the Guideline recommendations to policy makers from different sectors, and organizing information campaign and awareness raising activities.
- Using decision support instruments such as health impact assessment and health risk assessment to quantify health risks and potential benefits associated with policies and interventions aimed at addressing environmental noise.
- Promoting the Guidelines to health practitioners and physicians, especially at community level.
- Supporting the establishment of national health institutions capable of initiating and developing health promotion measures, as well as conducting research, monitoring and reporting on health impacts from environmental noise and its different sources.
- Organizing capacity building workshops and trainings to increase knowledge of the Guidelines as well as tools, skills and resources for health risk assessment.
- Promoting pertinent research initiatives and shaping the research agenda, in part based on critical research recommendations and gaps identified in the Guidelines.
- Developing and updating guidelines and policies that influence national and international benchmarks and targets related to environmental noise.

- Working with other sectors to strengthen noise level monitoring and evaluation, particularly in the non-EU countries, for proper conduct of health risk assessment of environmental noise.

## **5. Assessment of the impact of the Guidelines**

Exposure-response relationships, as well as other recommendations that are being developed within the Guidelines project, should be incorporated into national health policies and the main related policy documents. They are aimed at being used for health impact and health risk assessment to identify health risks and potential benefits associated with policies and interventions related to environmental noise.

Firstly, population noise exposures should be monitored and assessed at national scale, at least in urban areas. Furthermore, information on trends in occurrence of noise related health outcomes considered in these Guidelines, such as annoyance or sleep disturbance, should be gathered. These monitoring activities should be performed on a regular basis in order to perform proper health risk assessment of noise.

## **6. Updating the guidelines**

The progress and pace in noise effects and health research has intensified over the last decade. This is partly related to growing transportation, demographic changes, densification and urbanisation, which have caused an increase in public perception and political awareness of the environmental noise problem. Noise exposure assessment has also improved due partly to European legislation, and this has provided useful data for the conduct of epidemiological studies on the health effects of environmental noise. Taking this into account, it is expected that the recommendations proposed in these Guidelines will remain valid for a period of about 10 years. WHO will monitor the development of the scientific advancements on noise and health research in order to inform any updated guidance on environmental noise.