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## *NOISE*

Report on a WHO Coordination  
Meeting of Experts

Budapest, Hungary  
28–29 August 1997

## **TARGET 18**

### **POLICY ON ENVIRONMENT AND HEALTH**

*By the year 2000, all Member States should have developed, and be implementing, policies on the environment and health that ensure ecologically sustainable development, effective prevention and control of environmental health risks and equitable access to healthy environments.*

## **TARGET 19**

### **ENVIRONMENTAL HEALTH MANAGEMENT**

*By the year 2000, there should be effective management systems and resources in all Member States for putting policies on environment and health into practice.*

## **TARGET 24**

### **HUMAN ECOLOGY AND SETTLEMENTS**

*By the year 2000, cities, towns and rural communities throughout the Region should offer physical and social environments supportive to the health of their inhabitants.*

## **ABSTRACT**

Following the Helsinki Conference in June 1994, several programmes have been undertaken by the WHO Regional Office for Europe in reply to requests from Member States for help in implementing their policies on environment and health at both national and local levels. Among those programmes, the WHO pamphlet series for local authorities aims at providing local decision-makers with accessible and reliable information on various aspects of environment and health, so that they can quickly appraise their situation and take decisions more efficiently. The series is currently concerned with 10 themes, including noise, and under that theme 11 titles have been defined. The present meeting was organized, with the financial support of the Swiss Ministry of Health, to gather the authors of these documents together to design a clear table of contents, to ensure consistency and avoid duplication, and to take advantage of the experience of several specialists to make the pamphlets more comprehensive.

## **Keywords**

NOISE  
ENVIRONMENTAL HEALTH  
HEALTH POLICY  
EUROPE

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## **Introduction**

The meeting was opened by Dr Alan Pinter who represented the Hungarian authorities and more specifically the Director of the Institute of Public Health, unable to attend due to previous commitments.

The participants agreed to the provisional agenda and after introducing themselves, decided to ask the World Health Organization (WHO) representative to play the role of moderator. During the meeting, a whispered translation was offered to participants who preferred to work in French.

## **The pamphlet project**

Mr Bonnefoy introduced the WHO project aiming at the production of documents for the authorities.

This Office is currently developing a series of briefing pamphlets that are aimed at three different targets:

- local decision-makers with non-specific knowledge of EH issues;
- EH professionals;
- the general public through the use of these pamphlets by communication officers in local authorities or in major companies.

The objective is to produce 100 to 120 documents on all subjects that are covered by environment and health. There are 10 main themes:

- water
- air
- housing
- waste
- urban planning
- noise
- accidents
- radiation
- toxicology, and
- hygiene.

Each document is about 20–24 pages long. It follows the same structure in two parts: the first is aimed at laymen and explores historical and geographical issues, health effects, economic aspects, technical issues; it ends with two or three key recommendations on action to undertake in order to solve the problem. The second is more technical, and aimed at specialists. Each brochure is written by one of the best experts in the field, and reviewed by other experts of the European Region.

In order for the pamphlets to be easy to read, they are presented in a clear and simple way, and are largely illustrated. They make a helpful tool for local authorities to use when communicating with the media or the public at large.

It is the intention of WHO to translate these documents into as many languages of the European Region as possible. The majority of documents already existing have been produced in at least two languages, and the last document on “drinking-water disinfection” has even been produced in 20 European languages as well as Arabic.

The participants were extremely satisfied to see the efforts undertaken by WHO to translate difficult concepts into simple language with the clear objective of helping local authorities to take concrete measures to improve the local sound environment.

The structure of the series was discussed at length, and all participants agreed on producing the following set of documents:

- Noise and health
- Traffic noise
- The mayor, producer of noise (public noise in the city)
- Noise at school
- Noise in sport and leisure
- Isolation
- Measurement of noise
- A healthy soundscape
- Music and noise
- The mayor confronted to a complaint
- Neighbourhood noise

The titles of the documents are not final.

## Noise and health

by Professor Birgitta Berglund

This pamphlet has two main purposes:

- to introduce the various issues relating to noise and health as presented in the “community noise” document;
- to introduce all the other pamphlets of the noise series.

Professor Berglund presented a table of contents she suggested would fulfil these two objectives. She also acknowledged that people at local level are very little aware of the importance of noise for health. The table of contents could read as follows:

### **Noise and sound**

- history
- occupational noise versus community noise
- exposure.

### **Noise emission versus noise emission**

- various emission (aircraft, traffic, neighbourhood, etc.)
- control of emission is not enough
- integrated approach
- health effects.

### **Noise, health and sustainable development**

- noise does not accumulate: is it true?
- precautionary principle
- polluter-pays principle (the economic part of the pamphlet could be inserted there).

### **Situation in Europe**

- history
- trends
- complaints as an indicator
- long-term (yearly levels) versus short-term exposure.

### **Action to take**

- insist on behaviours
- EH impact assessment.

### **Various effects of noise**

- noise-induced hearing loss
- interference with speech communication
- sleep disturbance
- psychophysiological effects: (cardiovascular, immune system)
- mental health

- performance (language and reading acquisition)
- residential behaviour and annoyance
- vulnerable groups.

## **WHO position and regulations**

### **Recommendations:**

1. by environment
2. by effects
3. how to protect vulnerable groups (e.g. noise-impaired or deaf people).

The participants discussed this proposal and came to the following conclusions:

- the table of contents should now be finalized in order to avoid repetition;
- almost all necessary aspects are included except two points which need to be covered:
  - how this document introduces all the other documents in the series?
  - how to handle the issue of low frequency, vibration and infrasounds, especially the problems of air-conditioning and electrical transformers.
- The document should also show positive aspects of noise, which can be good for health (it helps to allow confidentiality, some sounds are pleasant, etc.);
- a box should be drafted to introduce the terminology, which is to be used in all the pamphlets. The group agreed that one should not use more than Hz (frequency), dBA, Lmax and Leq. Graphics and scales should help the reader visualize what these units represent.

## Public noise in the city

by Mr Daniele Bertoni and Mr Andrea Franchini

The local authorities are also bound to respect the regulations! And they are at the origin of many sources of noise:

- all activities linked to waste collection and city cleaning
- noise of major worksites
- fairs
- cars, buses and lorries in urban areas
- waste-water treatment plants
- road surfaces ...

The pamphlet should cover:

- the importance of communication to inform that noise may be produced
- the technical solutions
- noise impact assessment techniques (briefly)
- regulations
- typical noise emission values and objectives to be reached.

A short development on noise in city offices like ventilation systems, air-conditioning, etc. should be envisaged.

The recommendations should be straightforward.

The participants insisted on two aspects which according to them were not covered sufficiently in the proposals:

- noise and tourism
- consequences of noise on architecture and town planning.

These two subchapters could be written by specialized experts, in close cooperation with the authors of “a healthy soundscape” and will not be written by the initial authors.

Technically, the participants want to find a clear proposal regarding air-conditioning and fan noise, as well as sirens and more specifically noise which can be disturbing for some people.

## Noise in sport and leisure

by Mr Luis Conde Santos

The author showed a very complete presentation which was warmly welcomed by the participants. The major points to be covered in a pamphlet were well developed and an international approach was clearly envisaged.

Emerging issues were fully taken into account.

The author has insisted on the following aspects:

- there is a strong need for planning
- cohabitation is necessary
- impact assessment studies can reveal themselves a useful tool
- noise reduction and control can be necessary (the way to proceed is to be developed in the pamphlet)
- regulatory instruments such as licensing, timetable, etc. are useful.

There are good case studies proposed:

- grey areas in Norway
- Boulevard Pereire and tennis courts
- Belleville and children's noise.

The specific aspects linked to the fact that sport and leisure are usually healthy activities should not be counterbalanced by unhealthy side effects due to noise. In addition, the increasing number of noisy activities has been stressed by participants.

Again, planning is one of the key issues.

## Noise and school

by Dr Michel Vallet

Schools have not always been built where the sound environment was the most appropriate and planning special places for school should become a priority for local authorities.

The school is not only composed of classrooms, there is also the canteen, sport halls, swimming pools, language study laboratories, workshops, etc. and not all children are equal when faced with noise. Those with hearing impairments are an especially high-risk group.

- The very close environment of the school must be controlled and specially, in relation to road safety, the traffic of mopeds, cars, etc.
- The economic consequences of bad planning will be illustrated.
- A review of the effects on learning will be introduced (it has been said that as much as three months work per school year can be lost due to a noisy environment).
- Technical aspects will be covered, showing the key role of the architect.

Three concepts will be developed, not knowing at this stage whether it will be inserted in the core text or in the annexes:

- mask effects
- intelligibility
- reverberation time (cross-reference with noise insulation).

The participants added to this accepted proposal that one could say some more on noise levels and understanding of the text, man versus woman voice, etc.

Again, case studies and examples of good practices could be easy to find.

## Measurement of noise

by Mr Patrick Luquet

Although this pamphlet was initially designed to cover both noise measurement and noise insulation, after an extensive discussion, it has been agreed to split the document into two pamphlets. This will make the exercise slightly more costly, but the participants agreed that one document was not enough to cover all aspects.

The noise measurement document will then be structured as follows:

### **Introduction**

- measurement and acoustics
- historical aspects.

**Basic tools (statistical index):** to be kept as simple as possible, possibly developed in the technical annex.

### **What is a good measure?**

- duration
- background noise
- regulatory and technical requirements.

### **Instruments**

- reliability, accuracy, reproducibility
- standardization
- dedicated and PC-based.

### **Interpreting measurements**

#### **Goals of measurement**

- evaluation
- noise mapping (be very careful with this aspect).

### **Latest technologies**

In the annex, it is proposed to develop in more details the units, monitoring of noise levels, simulation software, etc.

The participants were of the opinion that more information should be given in order to:

- relate measure and health effect more closely
- distinguish clearly between indoor and outdoor noise.

## Insulation

This document should deal essentially with the following aspects:

- noise abatement
- insulation
- noise barrier.

The aspect of planning would belong to the pamphlet entitled “healthy soundscape” (see infra).

The following points were envisaged:

- transport changes
- tyres, cars
- tunnels
- police
- behaviours.

However, no final structure was given to the pamphlet and the participants asked WHO to contact Professor Tor Kihlman as potential author.

## Healthy soundscape by Mr Delage

The structure of the document would be as follows:

### What to do?

- freedom    to act  
                 to behave    diversity  
                                 identity  
                                 sharing  
                                 complexity
- respect    convenience  
                 quantity  
                 quality

### How to do?

- balanced    in time  
                 in space (town planning, architecture)
- protective    points of hearing  
                 access to hearing

### Conclusions

### Recommendations

- listen to learn
- listen to understand    people  
                                 sources  
                                 spaces
- listen to act

The participants agreed to say that this sociological way of dealing with noise was very exciting and was going far beyond technology and dose-response effects. This document was really seen as supportive to all others.

## Music and noise Traffic and noise

As regard the approach to “Music and noise” proposed by Sergeant Lathion in his detailed table of contents, all participants agreed with the text and would be happy to comment it as soon as it is more finalized.

As regard “Traffic noise”, WHO has been advised to contact either Mr Triggeros (Madrid), Mr Chris Rice (Southampton, UK) or Mr Martin van der Berg (the Netherlands), any one of these experts being extremely competent in this field.

## Neighbourhood noise How to handle a noise complaint

These two documents were at an early stage of development but WHO should make all attempts to get them as soon as possible, the two subjects being of the highest relevance to local authorities.

As far as the “Neighbourhood noise” document is concerned, the participants advised WHO that the following points were appearing very regularly at the top of local agenda:

- pets
- impact noise
- air extractors
- heat pumps
- do it yourself activities.

The UK NEHAP deals quite nicely with this issue and could be a useful source of information.

## General issues

The WHO representative insisted again on two points which, according to him, were of the utmost importance for the success of such a project:

- respect of the process
- respect of the content.

The process can be summarized as follows:

- first detailed table of content approved by WHO
- first draft cleared by WHO
- second draft
- review
- third draft
- editing
- layout
- translation.

The contents include:

- introduction
- text
- technical annex
- iconography (pictures, graphics, etc.)
- references
- authorizations to reproduce pictures, texts or tables
- data from Eastern and Western Europe each time it is possible.

The authors recognized that this was a really severe constraint but acknowledged on the other hand that it would be the only way to allow this project to reach its final development.

WHO then gave further details. All participants were informed that the funding for the completion of the project was not fully secured and that all possibilities were to be explored on the basis of the following cost:

development of one document	US \$40 000
development of this document in any additional language	US \$9 000

A provisional timetable would allow to have the pamphlet “noise and health” in the English language ready for the Sydney ICBEN conference. This will be very tight but also very helpful as all the other documents very much depend on this one. The timetable provisionally proposed was:

mid-November 1997	final table of contents
15 January 1998	first draft
15 February 1998	WHO answers completed
15 April 1998	second draft
15 July 1998	end of review process
1 September 1998	final document edited
1 October 1998	layout finalized, ready for printing.

This table of contents is flexible but indicates the provisional duration of each step in the process if the content is OK at a very initial stage.

All participants acknowledged that this meeting had been very useful in helping them grasp the philosophy of the project and to better understand how all the documents were articulated. They all recognized that there is still a long way to go to secure both the technical and the financial input of the project but that it will be worth the effort.

WHO thanked all the participants for this extraordinary active and fruitful cooperation, and promised to make all efforts possible from its side to proceed as smoothly and efficiently as possible.

In annex to this report are the WHO provisional guidelines that all authors should follow.

The meeting was closed at 13.00 hours on Friday 29 August.

*Annex I*

**Final list of participants**

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