

Low Frequency Noise: Figures, Facts and Myths.

Results of a discourse between different stakeholders.

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Introduction

The number of questions and complaints related to Low Frequency Noise (LFN) is increasing. The Ministry of Spatial Planning and the Environment (the Netherlands) has therefore asked the National Institute for Public Health and the Environment (RIVM) to build on a knowledge base around the theme, within the framework of the Expertise Centre Noise. Various efforts have been undertaken to shed more light on this topic. Despite these efforts there are still many uncertainties and in many cases it is not possible to give a clear cut answer to the many questions regarding LFN sources, and their effects on people. In view of this it was considered timely to organize a symposium around LFN and hear what we can learn from people who have been working in the field for a long time and with different backgrounds.

Aim

The main aim of this event was to give an overview of the state of the art regarding exposure, effects, perceptions and (longer term) health effect and exchange facts and ideas. Thereby taking into account different positions from different stakeholders,

Method

We organized a two-day meeting and invited speakers with different backgrounds and knowledgeable in the field of LFN. Backgrounds were as different as scientists, public health workers, people concerned, civil servants, audiologists or medical doctors.

Results

A governmental research institute's perspective was on how to frame the issue of LFN (e.g., wicked problem, problem in progress) in order to address properly the problems associated, considering societal needs, governmental needs and how to deal with them in a scientific matter.

The NGO's perspective emphasized the importance of self-reported complaints from citizens on environmental nuisance in general and LFN in particular. They argued its value for prioritizing their actions and as potent signal for policy. Recognition of LFN complaints (and the complainants) was another important point made by the NGO's.

The (natural) science perspectives points out the distinct nature of LFN compared to higher frequency noise and its consequences for dealing with it. They also present a model of how to deal with LFN.

A public health perspective points out the importance of source identification in order to validate complaints brought to their attention by affected and concerned citizens. Also the question is raised how to deal with these complaints municipal health authorities? The audiologist's perspective is also on the recognition of complainants but also on the analysis of causes, for instance one in twenty people suffers from severe tinnitus.

Finally in the debate with the audience several questions came up like the one on numbers: how many people suffer from LFN?

Estimates of people suffering from LFN are in the range from 1 in ten thousand to 1 in hundred thousand. These numbers are

relatively low compared to the proportion of people severely annoyed by non-LFN. However the impact of LFN may be considered to be more severe.

The discussion is also on evidence and the nature of the evidence. A medical doctor claims that there is not enough scientific evidence on detrimental effects of LFN, while from an experiential point of view one of the concerned states that there is plenty of evidence in his neighborhood!

Last but not least: the topic of multi-disciplinarity of the 'problem' of LFN was raised. The NGO's noted: no matter how many disciplines you involve, please also involve the people concerned!

Discussion

Specific attention was given to questions from practice: Measuring LFN and assessing sources is quite difficult: what is necessary? Do we measure in the right way (dB(A) and dB(C))? Would a simple but robust protocol help, can it be developed? It appears that LFN can lead to nasty effects but what do we know about the effects: are these only biological or health effects. How many people are affected (prevalence), type of effects, seriousness of effects, distribution (time, place, person), How can we diminish (exposure to) noise in general and LFN in particular? Would an environmental hygiene perspective be helpful?

Sensitivity in particular to LFN was identified as a fairly well-known but hardly understood phenomenon

criteria for reducing emission levels of LFN, considering LFN when constructing regulations and adapting measurement protocols to better account for the low frequency noise part in the total sound spectrum.

Conclusion

Although opinions differed, sometimes even collided, the dialogue between participants was respectful. It was concluded that results from case-studies (even anecdotal) as well as population-based studies should be considered when dealing with LFN-problems. LFN is considered a local problem but because of its prevalence and impact it is becoming larger and larger. More research is needed to better understand the phenomenon of LFN and its impact (nature, severity and extend). Promising approaches in abating included ideas for product safety and comprised