inter.noise 2000
The 29th International Congress and Exhibition on Noise Control Engineering
27-30 August 2000, Nice, FRANCE

I-INCE Classification: 0.7

ADVICES TO PLANNERS AND PUBLIC SERVANTS ON HOW TO DEAL WITH NOISE CONFLICTS

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Keywords:
HANDBOOK, NOISE CONFLICT, PLANNING, ADVICE

ABSTRACT
A Norwegian noise control handbook has been made to help local planners and health officers react in a relevant way to the real noise conflicts and ignore the unimportant ones. A source specific part of the book identify distances and situations where a noise conflict will occur, and list possible measures to avoid the conflicts. A case-specific part of the book have checklists to avoid basic pitfalls. A guide shows how to use the general Health Service Act for noise abatement purposes when other regulations fails. The book was first made 10 years ago − under contract from the governmental Environmental Protection Agency − and was supplied free to every local community in Norway. There has been a certain demand for a new book, and a revised version is made this year.

1 - INTRODUCTION

Except for cases involving road traffic noise, local planners and health officers in a small community only sporadically handle cases where acoustical noise is an existing or potential problem. It is a problem that noise conflicts often are not discovered and responded to at an early stage, but are permitted to survive until the plan is realized.
A Norwegian handbook has been made to help officers react in a relevant way to the real noise conflicts and ignore the unimportant ones. The book was first made 10 years ago [1] − under contract from the governmental Environmental Protection Agency − and was supplied free to every local community in Norway. A revised version of the book is made this year.
The main objective of the book has been to advice the unexperienced official in the question: do I have a noise problem? − yes/ may be/ no. For the more experienced, a lot of information is presented, all together systematically connected to noise source or type of case.

2 - NOISE CONFLICTS BY SOURCE

27 different types of noise sources are described by the following six elements:

- the typical dimension of the noise problem: typical conflict area, noise characteristics,
- problem prevention: minimum distances where criteria levels will be fulfilled, possible counter-measures,
- noise criterias or requirements,
- calculation methods and necessary input for a professional acoustic clarification,
- details: history, examples, statistics,
- practical literature.

The noise sources comprise transport sources, industry, energy installations, shooting ranges, sport, amusements and a variety of technical installations. 4 examples:
Does the medium sized road represent a noise problem to a planned small development? This is a frequently asked question from the typical user of the book. Take the example of a road carrying 3000 vehicles a day at urban speed: the traffic-distance diagram tells the user that the 50 m distance in the plan will not fulfill the relevant criterias for all topographies, and the plan should be accompanied by a noise description. Further, the text will tell that the situation could possibly require some special considerations compared to a plan at a non-noise site, for instance restrictions to where the outdoor living spaces could be located.
Will the proposed public outdoor skateboard installation be a problem for the surroundings, is another question. Such installations will often be used late at night. In open terrain, there may be a noise conflict for the surrounding dwellings out to about 200 m even if the installations are made from concrete. A smaller distance requires effective barriers, and is only possible in certain topographies.
Can a wind turbine park be sited next to a housing area? The Norwegian noise regulation on wind turbines is not fixed at the moment of writing, but above an immission level of 35 dBA (for a standard wind reference of 8 m/s at 10 m height) the noise has to be considered. For a small park of 4 MW total power, this could mean that if the distance from the nearest turbine to the housing is less than 1000 m, a noise documentation has to be made.
Will the new, local shooting range introduce an unacceptable noise load on the suroundings? (Norway has got more than 1000 local, civil shooting ranges, some of the old ones giving serious noise impacts. New ranges, better separated from the housing are constantly built). Typical noise-footprint of a shooting range is shown in the book. If the range has below 65.000 shots/year, the noise limit is 65 dBA (Impulse) for nearby dwellings. In open land this means for example that perpendicular to the direction of shooting, the situation is considered acceptable if the distance to the nearest house is above 1400 m. Barriers (topography) and vegetation could reduce this distance.

3 - CHECKLIST BY TYPE OF CASE

For larger noise conflicts from transport and industry, the environmental protection is well organized through impact analyses. For local conflicts or smaller cases, the situation is not so satisfactory. The book has checklists on development plans and building cases to avoid pitfalls. The checklists are combinations of questions and advices.
Examples in general, short form:

- does your plan contain known noise conflicts?
- are noise sensitive areas and noise producing sites in your plan well separated?
- are there important sensitive areas or noise sources outside but too close to your area?
- in case of conflicts, have alternative solutions been considered?
- is the noise situation documented in a relevant way?
- are the countermeasures and assumptions in the noise description relevant?

In case of noise-complaints from neighbors, the ckecklists contains elements on:

- receiving the complaint (where, how and when is the person bothered. For sporadic events, ask the complainer to write a log for a couple of weeks)
- information from your own office (map, archive materials, simple calculations)
- dialogue with the responsible for the noise source (always start with a positive attitude: is this a misunderstanding or a lack of information? Do you consider this a problem? What can you do about it? Many cases are solved at this level by good communication).
- field survey (gives first hand information, but is also important to clear up misunderstandings and in signalling seriousness to the parties. Solutions may be found at the spot).
- documentation of the noise situation (calculations, preliminary or decisive measurements)
- assessment of the noise situation

- decision on corrections or abatement strategy

In addition, the contents of a local program for traffic noise abatement, mainly related to facade insulation, is described.

4 - HOW TO USE THE HEALTH SERVICE ACT FOR NOISE ABATEMENT

Most noise regulations in Norway are connected to the Planning and Building Act or the Pollution Act. As a kind of safety net − where other regulations fails, the Municipality Health Service Act may be used for environmental health protection in general − and thus for noise protection in particular. If the noise impact represents a risk of injury to health, the local health authority may demand the noise-producing activity to be corrected. Correction in most cases means noise reduction or reduced operational time. Although the more definition of "injury to health" in Norwegian environmental medicine is very broad and includes "social disturbances", the Health Service Act is difficult to use for noise abatement purposes. The health reason for the correction must be clearly stated, or it must be shown that health injury is a likely result of the noise impact. In addition, the practical and economical consequences of the correction must be reasonably well related to the health benefit. As a matter of consistency, the noise abatement corrections made using the Health Service Act should be reasonably in line with corrections made from other laws. If the situation is a general one, does not cover special, sensitive groups or does not include a more disturbing combination of other environmental factors, the corrections should not be much more restrictive than those given by other national regulations. The Health Service Act shall not rule over the other laws. In spite of these extensive limitations, the Health Service Act could and should be used in some situations, and the book try to identify them, for instance:

- large technical installations in small size industry, for instance wood industry. These situations are in practice often not discovered by the regional environmental authority, nor are they covered by building regulations. The officials are adviced to react to installations closer than a distance of 120 m (with a typical installation power level of 105 dBA, this correspond to a noise level of just over 50 dBA, which is the daytime equivalent level criterion for industrial noise).

- landing and take-off sites for helicopter sight-seeing. Some operators move their sites every second or third day to keep the number of operations below 25 − which is the minimum number for a 3 month period to be covered by the national aircraft noise regulations. But they still operate from a limited area, and their flying and ground operations are heard for a long period.

For both examples, the correction can be made with reference to existing regulations, which is then extended into the new case. A documentation on noise immission will be necessary in both cases. The need for health reasoning is limited, but must clearly be connected to the helicopter case.

5 - BASIC INFORMATION AND ADVICES ON WHERE AND WHO

The book have some basic information on acoustics and vibration, effects of noise, the most important remedial actions against noise and the most relevant laws and regulations. References on where to find supplementary, practical information is given. A very important source is the publications from the Norwegian Building Institute, where methods, solutions, material selections and details are shown also for acoustic constructions.

A simple guide for preliminary noise measurement is given. The guide has strong warnings against decisive measurement made by nonprofessionals, and have reference on where to get noise documentations from measurements or calculations.

Unfortunately, a lot of noise measurements are made by untrained people − measurements that may have no value and at worst could confuse or delay a reasonable mode of treatment.

A review is given on how the noise impact can reduce the freedom to develop an area or design a building. At high noise levels few traditional planned houses can be made. To secure at least a minimum of low-noise outdoor living space and indoor climate, the possible building structure is strongly restricted in type, orienting and technical details

6 - TRAINING WITH PARTICIPANTS OWN CASES

In some communities the first version of the book was introduced with a one day course. The participants were invited to hand in some of their own cases in advance, to get them reviewed at the course with reference to the book. This procedure obviously motivated the officers to go into the matter and to use the book.

REFERENCES

1. **S.Solberg**, *Støyhåndbok for saksbehandling i kommunene*, Statens forurensningstilsyn, 1990