Code of Practice on Sound Levels in Discotheques

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The Draft Code of Practice on Sound Levels in Discotheques was published in 1987. Since that time the Code has been criticised in certain quarters as being ill founded, lacking consultation with the industry, too expensive for the industry to adopt and inappropriate, as a means of control, for inclusion in licencing conditions issued by local authorities. As author of the Code,it is appropriate for me to comment on some of the issues raised and to put them in perspective both in light of conditions existing at the time when the code was produced and on the basis of more recent evidence.

Historical Perspective

The code was developed as a result of the work conducted at Leeds by myself and others on the estimation of possible hearing damage arising from exposure to high sound levels at discotheques. The report on that work was published in 1979[2]. The work indicated that some 0.025% of attenders would achieve the 'low fence' of hearing disability with an average of loss of 30dB at 1,2 & 3kHz. This figure was subsequently revised upwards to 0.25% as a result of discussions with other workers in the field. In round figures, on the basis of the evidence obtained, this suggested that some 1000 person per year might reach the 'low fence' and, overall, a total of some 40-50000 at any one time in the population at large. These estimate were considered to be upper limits because of the method of calculation. However, they were based on the strict Burns and Robinson damage risk criteria which gives lower numbers at risk than the more 'relaxed' BS5330[1].

Throughout the report the tentative nature of the estimate of whole population exposure was stressed although the sample population exposure holds good and, to my knowledge, has never been effectively challenged.

In the conclusions to the report it was made clear that the level of risk was considered small and that any attempt to introduce legislation would be both unnecessary and impracticable. The report did, however, recommend the introduction of a Code of Practice. That recommendation was accepted by The Noise Advisory Council and in May 1980 I was asked to prepare a draft for consultation. The initial intention was to produce a condensed version of the Disco report and a comprehensive Code covering all aspects of Discotheque operations, including sound levels inside and outside the building and other features such as lighting and lasers etc(DOE's intentions not mine!).

The first Draft of the Code was produced in 1981 which coincided with the demise of the Noise Advisory Council and work was suspended pending a review. Work on the Code recommenced in 1982 and the Draft Code was circulated to some 48 interested organisations covering the industry, government departments, local authorities, instrument manufacturers, public bodies and private individuals. The circulation

was undertaken by DOE and resulted in 24 replies. The trade(Which included the major operators) responded through the Association of Ballrooms Ltd and other replies were received from AMA, ADC, ACC, BRE, DOE, IEHO, and from several private companies and individuals including consultants. The substance of the replies was that;

(a) the trade thought, while the proposed limit of 100dB(A) was acceptable, the proposals were too expensive and too technical,

(b) while the LA's and IEHO considered 90dB(A) or 96dB(A) would be more appropriate and that Code could only be effectively applied through legislation and wanted a more simplified and less technical document. LA's and IEHO also considered that reference to external noise levels, ie nuisance, were inappropriate in such a Code.

The final draft was produced in 1984[1] taking on-board many of the comments raised in the consultation replies. Attempts were made to simplify the measurement procedure but once a sound level limit is given it is useless unless a procedure for measuring it is specified and once you attempt to specify a procedure it is impossible to avoid technical detail. On the technical issue advice and guidance was provided by NPL and BRE. It also follows that if you give a procedure then it is reasonable to give advice on how best that procedure might be implemented, the equipment needed to achieve sound results and what records should be kept.

Observations on the Code and its Application

One of the most important aspects of the debate on the Code is that the three basic principles on which the Code is based have not been challenged. They are;

(a) that the sound levels should be limited to around 100dB(A),

(b) that rest areas, where the sound levels are 15d(AB) below those on the dance floor, should be provided, and

(c) that information on sound levels and risks should be given to attenders.

Given that these three elements can be achieved then I am satisfied that the risks to attenders will be minimised.

However, it is clear that there are still some concerns relating to the Code which refer specifically to, the overall need for the Code, the problems of monitoring the sound levels, the costs of equipment and the application of the Code in relation to statutory law. Let me now look at these issues in turn.

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[1] Although the work on the Code was completed in 1984, for reasons unknown to the author, the Code was not published until late 1986.

Is there a need for the Code?

What is clear is that young people like loud music although the evidence from our work in discos showed that as the noise levels increased above 100dB L_{Aeq}, the percentage of attenders who thought the noise levels too loud increased(19% of attenders at levels above 102 dB L_{Aeq}). What is equally clear is that few attenders are aware of risks involved as, beyond a few signs of Tinnitus and some apparent temporary shift, there is no evidence to the individual of any long term effects. The overall evidence of possible damage is based on estimates using existing Damage Risk Criteria(DRC) studies, Bickerdike and Gregory 1980[2], and Audiometric studies on attenders and performers[3]. Both these methods have serious drawbacks which are well recognised particularly in relation to estimating the seriousness of the problem and how many people are likely to be effected.

Our estimates of numbers at risk indicated that around 1000 people per year might achieve the 'low fence' of hearing handicap resulting in a total of some 40/50,000(around one in a thousand of total population) of such persons in the population at any one time. (This cumulative effect has been ignored by critics of the work) The principal criticism[2] which has been levelled at this study suggests that the numbers at risk have been exaggerated by a factor of between three and seven times. The tentative nature of these estimates were well recognised at the time although I am not convinced that the error is as great as suggested.

Direct studies on the effect of exposure on hearing levels are, in my view inconclusive. The reported studies are based on small numbers and the problem of effective control when undertaking audiometric measurements make large scale studies impracticable. Moreover, most of the reported studies have been undertaken on children or young adults when it would be more appropriate to be looking at the people who have completed their exposure, ie the 30/40 year old's. Probably the greatest area of uncertainty is in the application of industrial DRC's to problem of leisure noise in general. Some evidence[4] suggests that, because of the variation in, and rest periods between, exposure, intermittent noise exposure such as attendance at discotheques might not be as damaging as continuous industrial exposure.

If direct evidence is lacking there is some indirect evidence which suggests some cause for concern. Many industries now undertake pre-employment audiometry as a matter of routine. Examination of some of this data[5], which shows significant dips at 6kHz that are not explained by artifacts in the data or the procedures(Walford), indicates that some young people are already suffering some degree of handicap. From the same source, what we also know, is that young people undertake a range of noisy activities but by far the most common is attending discos and listening to loud music. There is no proof that this exposure is the cause of the problem (nor, for that matter, does it disprove it) as there are other noise sources involved and other issues such as disease, drugs and genetic factors. However, what we do know is that high noise dose levels do cause permanent threshold shifts, disability and handicap, hence, we can at least assume that loud music is a contributor to the problem.

Clearly, there is a need for more research to attribute proportionate risk to each of the contributory factors. This is a major task and will require considerable time and effort. In the meantime what we should do is to take the responsible line and err on the side of caution until the evidence is conclusive. It would, therefore, seem sensible to give advice to the trade in the form of a Code and to attenders in the form of guidance on the risks and sensible exposure. What that advice and guidance should be and how it should be applied is a matter of judgement. In my view the current Code is an appropriate response to the current understanding of the problem.

Monitoring of the Sound Levels

If there is general agreement that a level of around 100dB L_{Aeq} is an appropriate exposure over the duration of an evening's event then it must follow, if over exposure is to be avoided, that the sound levels must be monitored in some manner. It is not possible for even the most experienced individual to estimate within +3dB the absolute level of a varying signal such as music. Moreover, evidence has shown[3] that sound levels increase over the duration of the evening. This together with the known temporary shift which will occur makes it impossible for the operator to know what the absolute levels are unless (s)he has instrumentation to assist him(er). This must either be built into the sound system in the form of control settings and meters or be a free standing measurement system. Either of these methods are acceptable in the Code.

What should be made clear is that it is the sound level which is important not the method of measurement. The procedures given in the Code are for guidance only and operators can use whatever methods they like, providing the specified sound levels are not exceeded. There is always some difficulty in specifying procedures, they are technical matters and the industry ought to have the necessary expertise to understand and implement them. It is no excuse to say they are too complicated. The industry has technical support staff for the on-site sound and lighting systems who are often better equipped and experienced than other areas of industry who may well have to undertake sound measurements for noise control purposes. If procedures are not provided then operators complain that guidance is lacking and if they are provided they are criticised for being too technical, too complicated, too brief etc etc., particularly by those who have a vested interest in doing nothing anyway. In my view, management cannot claim to be acting responsibly unless they can demonstrate they have appropriate control of the sound levels. This also raises the issue of being seen to act responsibly through the keeping of records and the displaying of the sound levels to attenders.

Cost of Monitoring Equipment

Much is made, by the opponents of the Code, of the costs to be incurred by operators in providing monitoring equipment. Permanent equipment is only required by the Code were premises are open on more than two occasions per week. This generally restricts such requirements to the larger commercial premises. It would not apply to the 'one-off' event and generally not to youth groups although I firmly believe that Leaders should be asking for sound level checks

either by the operator or the Local Authority. Despite protestations to the contrary equipment is available at reasonable cost. What is 'reasonable' will depend on the operator. In large commercial discos the total investment, as opposed to the investment on sound equipment alone, may well be several hundreds of thousands of pounds and fully automated systems costing, currently, £1.5/2,000(Manufacturers estimates) will be less than 1% of the total. For the smaller operator the cost can be reduced(£5/700) at the expense of operator time whereas for mobile operators, only those who have regular bookings at the same premises on more than two occasions per week would need to provide equipment. It should also be noted that the Code does not preclude the use of the non-integrating SLM providing an appropriate allowance is made for the difference between the median level, as measured by the non-integrating SLM, and L_{eq} in a fluctuating signal such as music.

Manufacturers have assured me that specific equipment can be made available or modifications to existing models can be undertaken to cover most requirements if the demand is there but the range of existing equipment is generally adequate to cover most circumstances.

Application of the Code to Statutory Law

Most Codes are of a technical nature (see COP on Construction Site Noise and HSE's COP on Reducing the Exposure of Employed Persons to Noise) hence, they are far too difficult to be embodied in any statutory instrument. The purpose of any Code of Practice is to be advisory. That is to say that it should set out what is considered to be good practice in the subject which is covered by the Code. In some case COP's may acquire a statutory role, as in the case of COP's approved under sec 16 of the Health & Safety at Work Act but in most cases they remain as guides to best practice which may, or may not, be taken into account in any relevant Court action.

Contrary to some views, the proposed '..Noise at Work Regulations'[6] are unlikely to effect the sound levels experienced by attenders. Attenders will not tolerate, and it is unreasonable to expect, sound levels limited to 90dB L_{Aeq}. Employers can apply for exemption certificates for either the premises or persons to allow higher limits providing the overall weekly dose for employees is not exceeded. I expect that operators will be making such applications, hence, the sound levels to attenders will be largely unaffected. However, much will depend on the enforcing authority as conditions may be attached to such exemptions. In such circumstances a 100dB L_{Aeq} limit might well be imposed. If that is the case then how, where and when this limit is to be measured will have to be specified!!

Whether the Code should be included in any Conditions attached to Licenses under the Local Government(Miscellaneous Provisions) Act is a matter of judgement for the local authority and the Licencing Justices. In my view, it should generally not be included. Indeed, para 2.11 on page 6 of the Code makes this quite clear. I would prefer to see Conditions in Licenses which address the main issues in the Code such as;

(a) 'The sound level at the nearest point in the premises to a fully operational loudspeaker to which the public are allowed to approach shall not exceed 100dB L_{Aeq} over the duration of the performance', and

(b) 'Where possible, at least 25% of the available public floor area of the premises shall have a sound level, from the music played in the premises, not exceeding 85dB L_{Aeq}'. Where this is not possible the level in (a) above should not exceed 95dB L_{Aeq}, and

(c) 'From time to time, as directed by the local authority, the management of the premises shall issue/provide attenders with appropriate information on risks to hearing approved/provided by the local authority'

Only where these Conditions are flagrantly broken should the full weight of the Code be applied to the premises. Evidence for this may come from attenders or from the LA's general knowledge of their district. It should be unnecessary to develop a regular monitoring system but the occasional visit might be made using the dose meter procedure suggested in the Code. LA's should let the operators demonstrate their willingness to act in a responsible manner before action is taken and then it should be directed at those who are deliberately acting irresponsibly. It is nonsense to suggest that every club, pub and village hall will require monitoring but it is the local authority's clear duty, as the body responsible for the protection of health in their district, to be aware of potential dangers and problem and take sensible remedial action. This should be directed at premises which pose the greatest risk and through programmes designed to raise awareness of the problem in young people.

For anyone who cares to read the conclusions of our original report[2] they will find that education of young people and raising general awareness was considered equally as important as the Code. It is in this respect, I believe, that local authorities have the biggest role to play. In the current climate of Health for All and Healthy Cities here is a direct opportunity to have a positive influence on the health of at least one section of the community, the disco attender.

Postscript

Codes of Practice are not immutable. The current Code relates to conditions and practices between 1981/84 and, whilst I have received little by way of direct criticism of the content or intentions of the Code, there may well be a need to review the Code in the light of current experience. To this end the Noise Council has set up a working group to examine the problem and I have been invited to serve as a member of that group.

References

1. BS 5330:1976 Estimating the Risk of Hearing Handicap due to Noise Exposure. BSI London

2. Bickerdike J, and Gregory A, An Evaluation of Hearing Damage Risk to Attenders at Discotheques, Leeds Polytechnic 1980

3. Many papers - See MRC IHR Damage to Hearing Arising from Leisure Noise; a Review of the Literature, HSE 1985

4. Ward W.D. (1983) Noise Induced Hearing Loss; Research since 1978, Proc 4th Int. Cong. Noise as a Public Health Problem, Turin

5. Walford R.E. Personal Communication re pre-employment audiograms and noisy activities

6. Proposed Prevention of Damage to Hearing from Noise at Work Regulations 198-, See Consultative Document Draft Proposals for Regulations and Guidance HSC 1987.