TITLE - IS THE UK NOISE ACT 1996 AN EFFECTIVE MEANS OF LIMITING DISTURBANCE DUE TO NOISE IN DWELLINGS AT NIGHT?

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Abstract
In the United Kingdom (UK) the Noise Act 1996 was introduced specifically to deal with night-time noise affecting dwellings. Action can be taken under this legislation if the noise complained of exceeds, or is likely to exceed, the permitted level. Anecdotal evidence from Belfast City Council (BCC) officers has suggested that in many instances people have genuinely been disturbed by noise but the measured noise level has not exceeded the permitted level. This paper is based on a study which sought to investigate an appropriate method of assessment of disturbance due to night-time noise and to make recommendations for an appropriate standard. A representative sample of complaints about noise disturbance in dwellings at night was investigated. Complainants and investigating officers were required to give an annoyance rating for the noise complained of and measurements were taken. Based on the outcomes of this paper it was possible to conclude that the continued use of the existing assessment method under the legislation which involves noise level and level difference was more appropriate than introducing a new criteria based solely on level difference. However, in order to make the legislation more effective the minimum permitted level should be reduced from 35dB(A) to 30dB(A).

INTRODUCTION

In 2001 a UK wide noise survey, carried out by the National Society for Clean Air and Environmental Protection, asked local authorities what they thought were the main reasons for continued high levels of noise complaints. The joint top reasons given were ‘higher expectation of peace and quiet’ and ‘incompatible lifestyles with neighbours’. ‘Inadequate sound insulation’ was the third most popular reason given. [1] These findings suggest that current legislation may not be adequately addressing the problem of neighbour noise.

Noise is both a local and a global problem and governments have a responsibility to set up policies and legislation for controlling community noise. The European Union (EU) has acknowledged its responsibilities and has included noise issues within the Fifth Action Programme (1993-2000).

The UK has begun to develop and implement environmental noise policies. In November 2000 the Rural White Paper – 'Our Countryside: A Fair Deal for Rural England' proposed the development of a national ambient noise strategy in England but it did not address noise between neighbours. However, the consultation 'Towards a National Ambient Noise Strategy' which was launched in December 2001 sought respondents' views on the issue of local neighbour noise. The Department for Environment, Food and Rural Affairs (DEFRA) published a summary of responses to this consultation paper. 84% of respondents stated that more should be done to tackle the issue of neighbourhood noise. A significant number also expressed concern about the exclusion of neighbour noise from the strategy albeit one that focuses on ambient noise. [2]

'The Right to Peace and Quiet Campaign' was launched in May 1991 and it sought to raise awareness of the distress caused by neighbour noise problems. This campaign attracted a lot of media attention and eventually led to the Noise Act 1996 being introduced as a Private Members Bill.

The Act allows action to be taken for night-time noise disturbance in dwellings if the noise complained of exceeds, or is likely to exceed the permitted level. The permitted level is 35dB(A) in any case where the underlying noise level does not exceed 25dB(A) or 10dB(A) over the underlying level in all other cases.

If the level of noise witnessed warrants action by the local authority then a warning notice may be served on the noise makers. The warning notice must come into effect a minimum of ten minutes after it has been served. If the warning notice is not complied with, and a measurement confirms that the permitted level is still being exceeded, then a fixed penalty notice may be served.

Alternatively, instead of issuing a fixed penalty notice the investigating officer may seek a prosecution. A convicted offender will become liable to a fine not exceeding level three on the standard scale – currently £1000. In extreme circumstances consideration may be given to the seizure of noise making equipment after which the local authority may apply to the courts for a forfeiture order.

By using the Act it is therefore possible to obtain a swift remedy for noise disturbance within dwellings at night. However, none of these provisions can be used if the noise complained of does not exceed the permitted level, regardless of the disturbance being caused.

Anecdotal evidence from BCC officers has suggested that in many instances people have genuinely been disturbed by noise but the measured noise level has not exceeded the permitted level. In such cases it has not been possible for the Council to take formal action, under the Act, against the person making the noise.

When the Act was being drawn up one of the main factors in determining the minimum permitted level was guidance from the World Health Organisation (WHO) which recommended that a noise level of 35dB(A) or below was required for sleep.[3] Since the Act was introduced the WHO has issued new guidance based on further research which recommends a night-time standard of 30dB(A) and also recommends consideration of level difference when assessing noise nuisance.[4]

This paper is based on a study which sought to evaluate the effectiveness of the technical provisions contained within the Act in limiting disturbance due to noise in

dwellings at night. The aims of the study were to determine whether permitted level, as defined in the Act, was an appropriate standard for dealing with night-time noise disturbance and to determine if the current minimum permitted level remained appropriate and if not to recommend a new minimum permitted level.

METHODOLOGY

The sample frame for the purpose of the study was all complaints about night-time noise disturbance, in dwellings, made to BCC over a period of eight months. Only complaints where the complainant was willing to permit monitoring to be carried out within their home and to complete the questionnaire could be included within the sample. For each complaint within the sample a noise measurement was taken in accordance with the technical requirements of the Act. Further information was obtained by use of a questionnaire and survey form. The various sections of the questionnaire were completed by either the complaint or the investigating officer. The survey form which was completed by the investigating officer was designed to complement the questionnaire and to provide additional historical information about the noise disturbance. The information gathered from the questionnaire and survey form was used for the purpose of statistical analysis to assess the relationship between subjective assessment and measured noise level.

A total of sixty complaints were included within the sample. The complainants were required to state how annoying the noise was on a scale of one (slightly annoying) to five (extremely annoying). The complainants were also required to list the activities that the noise was interfering with and to provide information regarding their dwelling. Demographic information was also obtained. Investigating officers were required to give their opinion of how they thought the average person would rate the noise. The investigating officer's view provided an independent assessment of the noise and was used as an indication of whether or not the complainant was being realistic in their expectation of peace and quiet. The survey form provided details of the measurement taken for each complaint and the subsequent calculations.

RESULTS

92% of the complaints included within the sample related to noise disturbance arising from TV / radio / stereo noise. Although the annoyance rating scale ranged from one (slightly annoying) through to five (extremely annoying) all of the complainants ranked the noise that was affecting them as three, four or five.

For each complaint the investigating officer was required to give their opinion as to how annoying they thought the average person would find the noise complained of. The annoyance ratings given by the officers ranged from one through to five. Figure 1 illustrates how the opinions of the complainants and the investigating officers varied for annoyance rating.

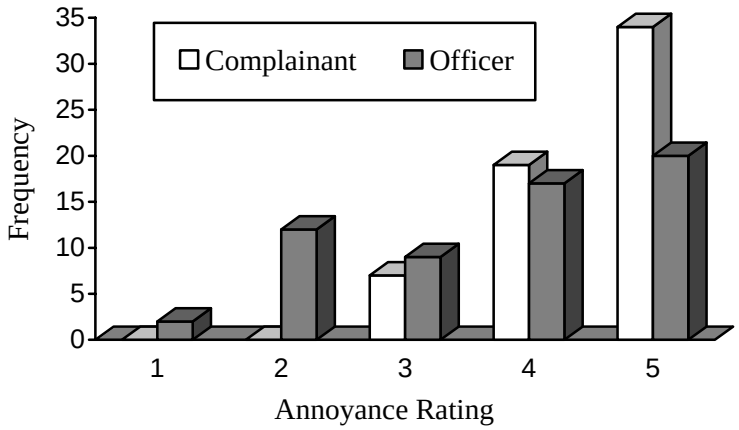

Figure 1 - Annoyance Ratings Given by Complainants and Investigating Officers

The main effect of the noise was interference to sleep. 98% of complainants and 77% of officers stated that the nature of the interference was sleep disturbance. In some cases complainants stated that the noise was interfering with a variety of activities.

Figure 2 illustrates that the investigating officers' opinions regarding interference were similar to those expressed by complainants. However, whilst all complainants said that the noise was causing interference, in 20% of cases the investigating officer was of the opinion that the noise would not cause interference to the listed activities.

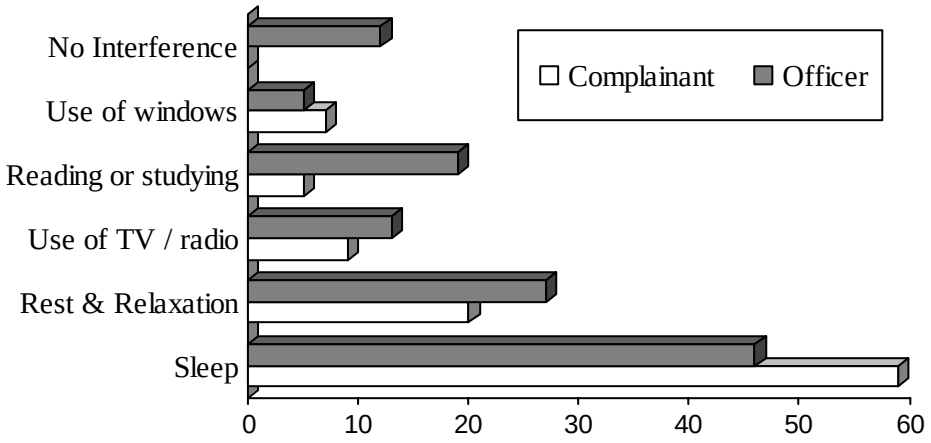

Figure 2 – Complainants' and Investigating Officers' Opinions of Interference

Noise differs from other pollutants because, as a form of transmitted energy rather than a substance, it does not have after effects on the environment. Noise can therefore only affect those within hearing distance of the source. The majority of complainants (58%) lived in terrace accommodation.

68% of the complainants were female. The majority (72%) of complainants were in the 18-34 years of age category. Only 23% of the complainants had children (under the age of 10) living in their house.

The measured noise levels that people complained about ranged from 24dB(A) - 48dB(A). Within the Act the minimum permitted level is currently 35dB(A) and no formal action can be taken under the Act for measured noise levels of less than 35dB(A), regardless of how disturbing the noise might be. Of the sixty complaints included in this study the measured noise level was greater than 35dB(A) in only 38% of the cases. This meant that for the other 62% council officers could not take any action under the Act.

For the complaints where the noise level was greater than 35dB(A), the permitted level was only exceeded in 32%. This meant that officers were only able to serve warning notices in 32% of the cases included in this study. The other 68% of complainants had to be told that although they were being disturbed by the noise, there was no formal action that the Council could take on their behalf under the Act.

During this study consideration was given to the use of level difference, as oppose to permitted level, in determining whether or not formal action should be taken regarding noise disturbance. The level difference (noise level – underlying noise level) was calculated for each complaint and a wide range of values was obtained. The minimum level difference obtained was 3dB(A) but it is questionable whether the human ear could detect such a small change and this value is also at odds with the UK method for rating industrial noise affecting mixed residential and industrial areas – British Standard 4142:1997. This standard is based on the principle that complaints are likely if the level difference is +10dB or more. The maximum level difference obtained in this study was 23dB(A). It should be noted here however that in the case of noise from music, the distinguishing feature of the noise is not necessarily the level difference, but special acoustic features such as tonal quality and repetitive bursts of sound.

A correlation coefficient of 1.0 indicates a good correlation between two factors. The correlation coefficient for complainants' annoyance rating and noise level was found to be 0.253 (Figure 3) which indicates a poor correlation. An even lower correlation coefficient (0.135) was found for level difference.

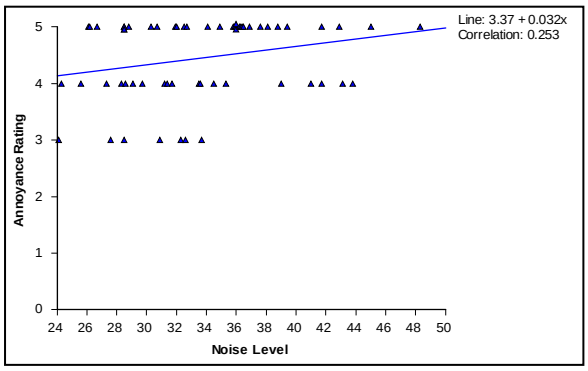

Figure 3 – Correlation Coefficient for Complainants' Annoyance Rating Versus Noise Level

On the other hand the correlation coefficient for the investigating officers' annoyance rating and noise level was 0.759 (Figure 4), indicating a good relationship. A similar correlation coefficient of 0.719 was obtained for level difference.

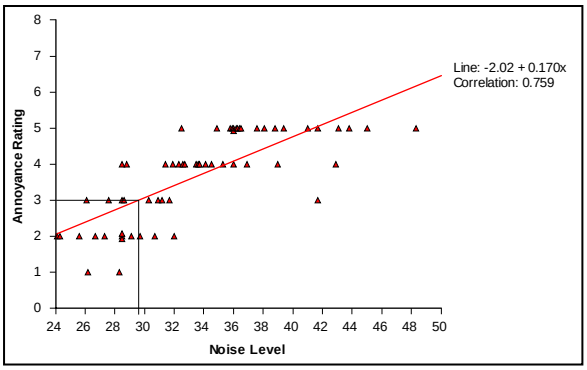

Figure 4 – Correlation Coefficient for Investigating Officers' Annoyance Rating Versus Noise Level

These results indicated that it was appropriate to continue to use the existing assessment method under the Act, which involves noise level and level difference. However, this study also sought to determine if the current minimum permitted level remained appropriate.

The annoyance ratings for this study varied from 1 (slightly annoying) through to 5 (extremely annoying). Therefore a noise with an annoyance rating of 3 (annoying) or above would be considered to be a problem. It can be seen in Figure 4 that by using the annoyance ratings provided by the investigating officers the line of best fit indicated that an annoyance rating of 3 relates to a noise level of 30 dB(A). The annoyance rating given by the investigating officers were used because they had a better correlation and were therefore considered more reliable that those provided by the complainants.

Based on the officers' opinions it could be suggested that for the average person a noise level of 30dB(A) and above would be annoying.

In Figure 4, a noise level of 35dB(A), which is the minimum permitted level under the Act, corresponds to an annoyance rating of 4 (between annoying and extremely annoying). This suggests that for the average person a noise level of 35dB(A) and above will cause a high level of annoyance.

DISCUSSION

Complainants often gave high annoyance ratings in situations where the investigating officer felt the noise level could only be considered slightly annoying. In discussions with officers they stated that such situations were typically those where a history of confrontation existed between the parties involved or where the disturbance was as a result of shouting / rows and the complainant was worried about what was happening.

As early as 1963 a report, by the UK Committee on the Problem of Noise, entitled 'Noise' and usually referred to as The Wilson Report noted that the annoyance produced by noise is often related to the information it conveys or the association or emotion it excites rather than to its actual intensity. [5] Jones also noted that the negative effects of noise dominate if the noise is perceived as unnecessary, those responsible appear unconcerned about its effects, the noise is believed to be harmful to health or the noise is associated with fear. [6]

Fields concludes that annoyance is related to a number of factors including the individual's noise sensitivity and the degree to which the person feels able to cope with the noise. [7] It is because of such factors that the complainant's annoyance rating can be unreliable and that is why the independent views of the investigating officer were sought.

The majority of complainants lived in terrace accommodation. This may have been because terrace accommodation comprises the majority (55%) of the housing stock in Belfast. (Cited by Gregg, 2000) [8] Within terrace accommodation the party wall between the dwellings is frequently a single brick thick. It has long been recognised that noise problems frequently occur as a result of poor sound insulation.

The majority of complainants (72%) were in the 18-34 years of age category. Possible reasons for this may have been that younger people have different expectations and are more concerned about the environment. Alternatively the reason may be that noise problems are more likely to exist where younger people are living because younger people are more likely to have stereos and to create noise.

Only 6% of complainants were over 54 years of age. This may have been because older people do not have the same expectation of peace and quiet as they have been used to higher levels of noise in the past. Or it could be because older people's hearing is not as good or that they are not as aware of their rights. It is also possible that older people were reluctant to take part in the study because it involved permitting BCC officers to monitor within their home late at night.

Only 23% of complainants had children under the age of 10 living in their house. Utley and Keighley found that persons with the youngest children are almost twice as likely to be disturbed by neighbour noise as those with no children.[9] However, in this study, the fact that parents would have to permit monitoring within their home may have dissuaded them from taking part in the study. Also the fact that 68% of complainants were in the 18-34 years of age category will have affected the likelihood of complainants being parents.

From the correlation coefficient graphs it was possible to conclude that noise level and level difference both showed a good correlation with the investigating officers' annoyance ratings. This indicates that the officers' abilities to assess noise annoyance are good. The correlation coefficients for complainants and investigating officers were slightly higher for noise level than for level difference. This is possibly because people who are being disturbed in this type of situation are concerned about the noise level they are being subjected to, regardless of what this is relative to the background level.

The results indicated that it was appropriate to continue to use the existing assessment method under the Act, which involves noise level and level difference.

As stated previously, the guidance contained in the 1980 WHO document Environmental Health Criteria 12 - Noise was one of the main considerations in the setting of the minimum permitted level of 35dB(A).[3] However, since the introduction of the Act the WHO has reviewed further research that has been carried out regarding noise and its effects. As a result the WHO publication Guidelines for Community Noise 1999 now recommends that a reduced night-time standard of 30dB(A) is required to preserve the restorative process of sleep.[4] The evidence from this study would indicate that annoyance can occur at noise levels between 30dB(A) and 35dB(A). On this basis it is appropriate to recommend that the minimum permitted level be reduced from 35dB(A) to 30dB(A). This concurs with the figure contained in the WHO publication Guidelines for Community Noise 1999.

CONCLUSION

This study of complaints about night-time noise disturbance has indicated that annoyance is related to both absolute noise level and level difference. Based on the outcomes of this study it was possible to conclude that within the UK the use of a permitted level should be retained within the Noise Act 1996. However, in order to make the Act more effective in limiting disturbance due to noise in dwellings at night the minimum permitted level be reduced from 35dB(A) to 30dB(A).

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