

# **Proceedings of the Institute of Acoustics**

## **LACK OF SOUND INSULATION IN HOUSES**

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### **1. INTRODUCTION**

Building materials put together in a certain way become houses. Once the builder's task is finished, and the house becomes a home, the new occupier(s) will have a number of pre-conceived ideas. They will generally expect to eat, wash, sleep, entertain and relax with a degree of comfort and privacy.

When we think of privacy we tend to think of visual privacy. We would not expect to live a "goldfish-bowl" type of existence where we had no visual privacy from our neighbours. Similarly, there is an expectation of audible privacy. The difference is that a house would be obviously deficient were it to be made of materials which gave no visual privacy, whereas buildings with separating walls and floors which are audibly 'transparent', do not appear to be any different from other properties with good sound insulation. A builder would soon go out of business if he tried to sell properties with see-through walls and floors. However without proper controls, increased profits can be made by ignoring specifications and standards of workmanship designed to provide adequate sound insulation.

A lack of audible privacy can be stressful on two accounts. Firstly, it is stressful because of the annoyance at being continually subjected to noise from your neighbour and secondly (and perhaps this is sometimes not appreciated) it is also stressful because you yourself cannot live a normal life without having an audience of neighbours.

### **2. THE RECOGNITION OF A PROBLEM**

Is there really a problem, and if so, how widespread is it?

The Avon, Gloucestershire and Somerset Environmental Monitoring Committee gave evidence <sup>[1]</sup> to the effect that in 1984, domestic noise complaints comprised 61% of all noise complaints. Recent statistical evidence from the BRE <sup>[2]</sup> suggests that our neighbours are the most widespread source of noise disturbance, with 15% of people bothered,

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compared to traffic and aircraft at 10% and 7% respectively. The Batho Report <sup>[1]</sup> tells us that the IEHO has reported a five-fold increase in the number of domestic noise complaints in the 10yrs from 1978 to 1988.

But what about Scotland?

If we look at the REHIS reports we find the following:-

*Table 1. Domestic Noise Complaints as % of Total*

1982	23%
1984	20%
1986	26%
1988	23%

Does this mean that in Scotland we are more considerate to, and tolerant of, our neighbours? Perhaps it is that we have been more effective at enforcing minimum sound insulation standards under the Building Regulations?

Before we pat ourselves too hard on the back, perhaps we should take a closer look at some of the available statistics. BRE research work <sup>[2]</sup> suggests that by far the majority of domestic noise complaints will be as a result of noise from amplified music (34%) and dogs barking (33%). Because of the Civic Government (Scotland) Act 1982, Sections 49 and 54, many such complaints may never reach the EHO in Scotland and therefore the REHIS statistics. It cannot, therefore, be positively stated that poor sound insulation is the major reason for the high percentage of domestic complaints reported by the IEHO, nor that the relatively low incidence of domestic complaints recorded in Scotland necessarily reflects the true picture of our neighbourhood noise problems. I am convinced however that a significant number of noise complaints have been avoided by certain authorities in Scotland actively pursuing a policy of carrying out regular sound insulation tests on new-build and sub-divided residential development.

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In trying to get an indication of the extent to which sound insulation is a problem, we should note that the BRE<sup>[2]</sup> also found that in attached dwellings, the internal and not external noise sources are most annoying. It should also be borne in mind that the majority of complaints arise from sources which could be significantly reduced by good sound insulation.

### 3. WHY BOTHER?

But why get involved? Certain properties have always had poor sound insulation and we didn't do anything about it before! And anyway, many properties were built prior to Building Regulation requirements for adequate sound insulation so it would be unreasonable to expect them to be upgraded now. ... In any event if it bothers them that much, they can always take a private action!

There is something to be said for these points of view. For the EHO it certainly would be the easy option. It has to be remembered, however, that:-

- (a) there is a statutory duty to investigate and abate noise nuisances,
- (b) because of changing standards, lifestyles, and expectations, what was accepted in the past may not be acceptable now,
- (c) successful private actions have been taken in the past, a significant number of which have been against local authorities who have refused to deal with problems in their own housing stock, and,
- (d) a legal remedy should not only be limited to those who can afford to take a private action.

### 4. CHANGING STANDARDS/LIFESTYLES/EXPECTATIONS

Why is it that for those who experience both internally transmitted neighbour noise, and the everyday external neighbourhood noise sources we all experience, eg. traffic, industry, etc., it is the noise from the neighbour through the wall or floor which is more annoying.

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Lifestyles have changed. Many homes now have powerful tape and disc sound reproduction equipment; TV's with all night music channels; electronic keyboards; and domestic appliances like dishwashers and washing machines are encouraged to run at night on white meter electricity. In addition to our homes being noisier, perhaps we have a wider circle of friends and consequently have less to do with our immediate neighbours than previous generations had. It may therefore be that we are now less considerate to, and less tolerant of, our neighbours. Neighbours' expectations may also have changed. They expect to be able to make full use of all their modern gadgetry and appliances, and at the same time be insulated from the noise of their neighbours'.

If people are less tolerant or more noise-sensitive than before, then should we be saying that the law of nuisance does not provide a remedy for a population who are increasingly sensitive? I would suggest that although the well established and refined common law precepts of nuisance will continue to apply, it must be recognised that limits of acceptability and tolerance levels will change as circumstances change. So EHOs must be ready to fulfil their statutory obligations by ensuring that the standards and criteria which are applied, reflect the reasonable persons response to noise in the nineties.

### 5. GOVERNMENT INTENTIONS AND THE NOISE REVIEW

"But the chief cause of concern is neighbourhood noise".

"To reduce the extent of noise pollution at source, the Government will .... improve the requirements for sound insulation in the Building Regulations, ...."

These are quotations from "This Common Inheritance", the Government's White Paper on the Environment <sup>[4]</sup>.

The statement that the requirements for sound insulation would be improved was misleading. It is just that the same requirements will be extended to flat conversions. This extended application has been the situation in Scotland for some time now and therefore cannot be seen as an improvement. What should be heavily criticised, is the recent change in the Building Standards (Scotland) Regulations 1990 which brings them into line with the Regulations in England and Wales. Whereas it was recognised in the 1981-87 Regulations that it was quite proper to carryout sound insulation tests to assess standards of workmanship, the new Regulations attempt to specifically exclude this for specified (deemed to satisfy) constructions. This is an extremely retrograde step as I am confident that the main reason the sound insulation test failure rate in Edinburgh has

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dropped dramatically, is because the builder now knows that his work will be tested. Extensive powers of entry, inspection and testing are given to a building control authority under Section 18 of the Building (Scotland) Act 1959 and on this basis, it is our intention to carry on testing all constructions, and to defend our actions in the courts <sup>[5]</sup>.

The Batho Report <sup>[3]</sup> recognises that regular testing is already taking place and operating successfully. It also makes the case for the development and introduction of a "simple test" and thereafter, for all buildings to be tested. The suggested use of the simple test is that it should act as an indicator to whether a full test is necessary. This sounds like the ideal situation, however, I have reservations about this arrangement for two reasons. Firstly, the accuracy of the test results will have to be similar to the full test, or its use as an indicator will be discredited. A significantly lower level of accuracy may result in a large number of unnecessary full tests having to be carried out to verify borderline results. Secondly, the carrying out of even a simple test on every newly formed separating wall or floor, will require an incredible commitment in terms of manpower, and therefore costs, to a building authority.

If, however, only a sample of floors and walls are to be tested, then one is using the test as much as general deterrent to bad workmanship, as to obtaining a test result for any individual partition. In this instance it may as well be a full test which is carried out as it does not need to be repeated.

In Edinburgh, it has been found that the present level of testing, using the full test, is sufficient for the purpose of ensuring adequate levels of sound insulation are provided.

### 6. THE BUILDING REGULATIONS

What is a lack of sound insulation? The answer to this question is not straightforward and will vary depending upon the circumstances. The Building Regulations themselves now have two yardsticks - ie. the 'mean' and the 'individual' performance requirements. It may be that even when a partition meets these requirements, the occupier finds the level of sound insulation lacking. The general level of background noise will also have an effect on the level at which noise from a neighbour will become intrusive. Different countries also have a variety of standards which reflect their own ideas as to what constitutes a lack of sound insulation. In arriving at a standard, it goes without saying that the rating method should correlate well with subjective assessments of the insulation. This unfortunately is not always the case, particularly for impact sound <sup>[6]</sup>.

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### 7. PLANNING CONDITIONS

Although the Building Regulations are the primary method of preventing sound insulation problems, it has been established for some time now, that sound insulation requirements are possible as planning conditions. In 1986 the London Borough of Newham<sup>(7)</sup> achieved a decision in the High Court which set an important precedent. It was held that the planning authority were justified in attaching conditions which prevented developments being carried out in a manner which would be likely to give rise to complaints, and therefore more onerous requirements under other powers at a later stage. The court agreed that it would be more onerous for the developer to be required by a noise abatement notice to install sound insulation at a later date.

Having this principle established now introduces the possibility that higher levels of sound insulation may be required for certain types of development. Perhaps those which result in residential uses sharing a common partition with noisy commercial uses, eg. pubs or restaurant kitchens.

### 8. LACK OF SOUND INSULATION - A STATUTORY NUISANCE?

Can the lack of sound insulation itself, constitute a statutory nuisance? Surely it is the noise that is the nuisance, not the building fabric.

Following a complaint an assessment has to be made as to whether the noise levels being experienced are excessive. It is perfectly possible for there to be no noise nuisance in a property with very poor sound insulation - the neighbours may be single with no husband/wife or children to shout at, have no TV or stereo, read a lot, and go to bed at the same time. Conversely, there may be a noise nuisance in a property with very good insulation. Usually because of inconsiderate and unreasonable behaviour.

So how much noise should be tolerated from a neighbour? There is no definitive answer to that, suffice to say that complaints have to be investigated, an assessment made, and a decision taken as to whether a nuisance exists.

It is suggested that an assessment report could include:-

- the recorded noise levels, preferably in the form of a labelled time-history graphic trace, and the associated statistical parameters, eg.  $L_1$ ,  $L_{10}$  and  $L_{90}$ .

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- the general noise climate and associated noise levels recorded in a similar fashion, but in the absence of the neighbour noise.
- written notes taken during the survey period which record the subjective reaction to the intruding noises.
- a written submission by the complainant, recording the situation over a number of weeks.

On the basis of this, and any other relevant information it is possible to obtain, a decision has to be made as to whether there is a nuisance, ie. would a reasonable person's response be that the noise was "materially interfering" with the "comfortable and healthful enjoyment" of his house <sup>(8)</sup>.

If it is concluded that there is a nuisance, then it remains to be decided who the "person responsible" is. This requires some sort of assessment of the relative contributions to the overall problem of (a) any unreasonable or excessive behaviour, and (b) the lack of sound insulation. Deciding that defective sound insulation is the problem, means that a noise abatement notice will have to be served on the person(s) responsible for the defective partition(s).

There is now ample precedent for defective sound insulation to be treated as a statutory noise nuisance in *Sampson -v- Hodson-Pressinger* and another <sup>(9)</sup>; *Pain and Pain -v- Southwark LBC* <sup>(10)</sup>; and more recently, *Southwark LBC -v- Ince* and another <sup>(11)</sup>.

The latter was an appeal by Southwark against a court order to abate a noise nuisance resulting from a lack of sound insulation in recently converted council flats. The noise was from a nearby road and railway and it was held that:-

the flats were not adequately insulated to exclude the noise,

it was the local authority by whose act, default or sufferance the nuisance had arisen and continued to exist, and

if the flats had been properly constructed and adequately insulated, but noise still penetrated and interfered with the occupants' enjoyment of the flats, that would have been a separate issue.

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What is interesting in this case is that the council tenants raised their action under the Public Health Act 1936 (and not S.59 of the Control of Pollution Act). The 1936 Act has now been repealed by the Environmental Protection Act 1990.

As it seems that statutory notices will have to be served by local authorities, requiring that defective partitions be remedied, this introduces a dilemma in relation to Council houses. The Control of Pollution Act does not allow any discretion on the part of the local authority, to take account of the age or ownership of the properties involved, and therefore once nuisance has been established, Notices must be served.

The following is a suggested complaints procedure which was adopted by Edinburgh District Council in 1986.

Complaint received re noise through separating wall or floor;

assessment by survey from complainant's house, and issue noise complaint record form;

if not possible to establish nuisance within reasonable number of visits; give advise re S.59 action;

if nuisance due to unreasonable behaviour; serve S.58 Notice on neighbour concerned;

if sound insulation thought to be deficient; carry out sound insulation test;

if sound insulation is deficient [ie. fails to meet a certain predetermined standard, eg. the 'Individual' performance standards in the Building Regulations]; serve S.58 Notice on the person(s) responsible for the deficient partition;

following remedial works and/or modified behaviour; situation re-assessed to ensure nuisance abated.

In conclusion, it is suggested that:-

- (a) changing lifestyles and expectations are creating problems where few existed before;



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- (b) the lack of sound insulation is not as big a problem in Scotland as it is in England and Wales, due mainly to a policy of more regular testing, and the difference (up to now) in the scope of the Building Regulations;
- (c) the Governments introduction of the Building Standards (Scotland) Regulations 1990 have done nothing to improve the sound insulation requirements in Scotland, in fact they attempt to prevent testing for workmanship which is a serious, retrograde step;
- (d) the enforcement of Building Regulations and planning conditions is not sufficient to deal with the problem of poor sound insulation and therefore noise nuisance procedures will have to be used; and finally,
- (e) a policy should be adopted by each local authority, outlining their procedure for responding to complaints regarding the lack of sound insulation in separating partitions.

## 9. REFERENCES

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- [11] *Southwark LBC -v- Ince and Another* (12th April 1989) QBDC