

PRACTICAL EDUCATION TO CHANGE ATTITUDES TO NOISE

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1.INTRODUCTION

The way people react to noise is very complex and subjective. So many things change perceptions and attitudes to noise e.g. loudness and nature of noise, and its social context, where and when, and not least what the receiver is doing at the time. The general attitudes to health & safety must be added to these factors. The problems of developing the appropriate culture in the workplace make attitudes to noise even more difficult, particularly as it is the most common industrial health hazard.

2.NOISE EXPOSURE OF WORKERS

The Noise at Work Regulations [1] bring objective criteria, in terms of doses for assessing exposure, which have been in force for some six years. Much is known about reducing noise emissions from machinery and equipment, and protecting people from excessive doses of noise energy. Very comprehensive literature is available for example at the yearly Inter.noise congresses, as well as in regular professional journals and magazines.

Yet in the UK alone it is estimated that some 850,000 people are still subjected to the 1st action level of the Regulations, and about 330,000 exposed to the 2nd action level [2]. It is also very evident that insurance claims for noise induced hearing loss are rapidly increasing and are by far the most dominant feature of industrial injury/occupational disease claims [3].

Although no firm evidence is available [2], the overall perception is of no great change in workplace noise exposure. Heavy industry usually associated with high noise has declined. However the constant drive for automation and for increased productivity/efficiency is introducing more complex machinery, driven ever faster so increasing noise emissions, typically high speed processing and packing machinery for products of all kinds. This is tending to offset any benefit from noise reduction measures, but perhaps at least workplace noise levels are not being driven even higher!?

Many people are subjected to high daily noise exposure, and although there is usually much that can be done to alleviate the problem, in the majority of cases it is not happening. The prevailing attitude is one of a very low priority issue even though the damaging consequences of noise are often well known.

3.NOISE AS A LOW PRIORITY

A Health & Safety Executive report "Attitudes to Noise as an Occupational Hazard" [4] concludes that there is an inconsistency between the knowledge that noise can damage hearing and:-

- a) the acceptance of noise as inevitable part of a job, with consequent deafness as a normal likely occurrence
- b) the perception of noise as being different from, and less serious than, other health and safety hazards

"A further key problem..... is that exposure has no immediate effect; damage is delayed and is invisible." ".... management too see noise as different to other health and safety issues; it is not life threatening , there is no immediate evidence of damage" [4].

The whole issue of the lack of evidence and the invisibility of noise is a major problem. We live in a very visual world (seeing is believing!) and tighter monetary policies demand evidence before action and expenditure. We take sound so much for granted and this largely explains the stigma about deafness in society. Compare the action that could be expected with smoke in the workplace as opposed to noise.

In a typical workplace where a whole multitude of noise sources add together to produce the overall noise level, combining on the dB scale means that reducing any one will usually not be noticeable. Hence noise reduction is not straight forward and is often given up. Noise is seen as inevitable so pushing it down the list of priorities.

The other major issue is the way social factors influence attitudes "peoples actions are profoundly affected by their social context" [4]. These actions are formed by outside experiences of sound and noise, in particular noise often carries a "macho" image.

For example the commonly held view that large powerful machines must be noisy, yet your modern car is a total contradiction of that statement. Motor cycles only become noisy when their silencers are modified. The inevitable excessively loud music of discos and bands. The "Proud to be Loud" movement, and the Sound Challenge Association which gives regular prizes for the loudest car audio systems - sound reproduction equipment which far exceeds the value of the car! Guns and target shooting etc. yet electronic equivalent systems with no noise have little acceptance.

The "macho" image about noise is embedded deeply in our culture and very much influences the acceptance of, and low priority attitudes towards, noise in the workplace.

The recent International Noise Awareness Day (24 April 1996) is yet another manifestation of the problem.

4. CHANGING ATTITUDES TO NOISE

Because of all these influences on attitudes to noise, a major effort is required to change commonly held perceptions, a greater effort than for other health and safety issues. Undoubtedly the way forward is high quality education and training; "many workers who had received training spontaneously reported that it had changed their attitude and behaviour towards noise"; "rules enforced on the shop floor by supervisors and backed up by training" [4].

The Regulations [1] bring obligations that "every employer shall provide adequate information, instruction and training". This of course can vary from talks, leaflets, posters, films, videos and recordings to properly structured training sessions with live presentations. Because of the entrenched attitudes about noise the latter have been found to be the only real way forward. With proper explanation and demonstration of key information, and workers involvement, attitudes can be totally changed to result in very positive consistent action about excessive noise exposure.

5. EDUCATION/TRAINING PROGRAMME

The whole emphasis is on a practical approach suitable for all levels of workers and their managers. A carefully structured programme has been developed to progressively raise awareness and completely change attitudes to the subject. The main practical active elements of the programme are as follows:-

- a) **The ear**; effectively imparting an understanding/feel for the incredible nature of hearing; how it makes all our science and technology look insignificant. Demonstrations of:-
 - i) **Loudness steps** of 2,3,10,20,30 dB to emphasize significance of dB scale, especially 3 dB doubling/halving of energy and relating it to noise reduction for a multitude of sources in a typical workplace.
 - ii) **Audio frequency range** and audience reaction; it is surprising how many workers (young as well as old) cannot hear 10kHz.
- b) **Different types of noise sources** & audience reaction to them
- c) **Ear damage criteria** e.g. 90dB(A) for 8 hours; short burst of 90 dB(A) in audience from machinery and music to make point; hammer blow to simulate and measure peak action level.
- d) **Audiometer** to demonstrate plots of typical noise induced damage
- e) **Live simulation of damage** as defined by Department of Social Security; demonstration, audio and visual (real time dB v frequency scales) with white noise, music, and speech - remote workers talking to each other vividly demonstrate the effect - combine with back ground music to show difficulty of understanding and general implications of deafness.
- f) **Live demonstration of personal protectors**; dummy head and ears fitted with microphones which are exposed to machine noise with and without protectors as fitted by workers; attenuation performance displayed on real time displays; major practical factors of bad fitting and leakage clearly demonstrated.

Bound illustrated notes back up this practical approach.

6. EXPERIENCE OF DELIVERING PROGRAMME

The "Awareness of Noise and Damage to Hearing" presentation has been delivered to many hundreds of industrial personnel right across the UK, and delegates from abroad. Typical reactions have been:-

- a) from workers - we didn't know/understand, a consequent large demand for protectors, and the use of quieter working methods
- b) from middle managers - commitment to take the necessary action to protect workers and reduce noise
- c) from senior managers - allocation of the required resources.

Undoubtedly it is the interactive presentation of loss of hearing (workers not being able to understand one another) that clinches the issue and totally changes previous perceptions. They are then receptive to using good quality personal protective equipment in a proper manner. In addition they will then make a significant contribution to reducing noise by quieter working methods which are often well known and/or improvised by workers who are very familiar with particular machines or processes.

This awareness approach is equally applicable to motivate technical staff. The presentation is used as an essential prerequisite to effective practical education in noise reduction techniques as described in a previous paper [5].

7. CONCLUSIONS

Operating this programme has again positively confirmed the essential role of action learning as discussed in an earlier Inter.noise paper [5] on reducing noise at source.

The HSE report [4] suggests that "....could produce off the shelf training packages". Although these would help it is strongly felt that on their own they would not necessarily produce the desired result. Having developed and delivered the programme over some 10 years, experience shows that there is no substitute for live simulation of ear damage and active involvement of personnel.

Such are the difficulties of overcoming entrenched and commonly held views in society about the invisible experience of noise, that radical training is required. Add to this the association of noise with strength and machismo and it is little wonder that training sessions with practical interactive participation are a necessity. Certainly very sceptical workers have been won round by such training methods much to the surprise of their managers.

References

- [1] Noise at Work Regulations 1989; H.M.S.O. ISBN 011 8855123
- [2] Health and Safety Executive, Bootle; Statistics 1995
- [3] Loss Prevention Council, Borehamwood, Herts; Statistics 1995
- [4] Attitudes towards Noise as an Occupational Hazard; HSE Contract Research Report No. 54/1993; H.M.S.O. ISBN 011 8821288
- [5] Bull D G, Quality Practical Education to Reduce Noise at Source, Inter.noise 92 Proceedings; ISBN 0931784239