IIAC Information Note
Noise Induced Hearing Loss and work with nailing and stapling guns

September 2016

Background and methods of inquiry

Hearing Loss is common in the general population, especially as people age, and as a result it is difficult to establish a link between work in a particularly noisy job and the condition of noise-induced hearing loss (NIHL).

The legal framework makes it clear that compensation through the Industrial Injuries Disablement Benefit Scheme should only be paid for a disease if a link to employment can be established or presumed with reasonable certainty. To make additions to the list of exposures eligible for Prescribed Disease (PD) A10 (occupational deafness – referred to as NIHL in modern scientific terms), the Industrial Injuries Advisory Council (IIAC) generally seeks evidence that workers have been exposed to noise levels over 98 dB(A) averaged over an 8-hour working day.

In 2016 the Council received an MP's enquiry regarding whether work entailing use of nailing and stapling guns should be added to the list of 'prescribed' occupations eligible to claim PD A10.

Fastener driving tools (nailing and stapling guns) have a wide range of applications, from pallet making to upholstery and picture framing; they come in a wide range of sizes and specifications; and are fired at a daily frequency that varies hugely (e.g. from 500 'driving' operations per day for a large tool to 20 operations per second for a small tool). IIAC sought evidence on noise exposure, to the extent of 98 dB(A) averaged over an 8-hour working day, in relation to use of fastener driving tools. A search was made of the published peer-reviewed research literature and other relevant published information. The Council also issued a call for evidence and consulted with the Health and Safety Executive's Principal Specialist Inspector for Noise and Vibration.

Evidence

In the event, only one relevant piece of evidence came to light – an investigation conducted by HSE's Health and Safety Laboratory (HSL) (Contract Research Report RR 625, 2008). Noise emission levels were measured on a sample of 11 new non-electrically powered tools supplied by manufacturers (six nailers, three staplers, one bradder and one corrugated fastener). Tools were chosen based on information from the Power Fastenings Association on best-selling tool types and tested on a work piece of sawn pinewood using the largest possible fastener. Current noise emission tests were applied, as specified in British Standard (BS) EN 12549:1999. Measurements were made under standard laboratory conditions. Field conditions were also simulated, by employing tools in pallet repair, upholstery, pallet manufacture and simulated tacking and fixing. A series of technical measures were provided.

Findings were related to the $L_{EP,d}$ specified in the Noise at Work Regulations in relation to hearing protection, rather than the threshold for prescription. Correspondence with HSE's specialist inspector, however, has established that exposures from some of the tested tools might reach $\geq$98 dB $L_{EP,d}$ in extensive use, requiring for example the firing of some 6,300 to 25,000 shots per 8-hour day or 13 to 52 shots per minute for 8 hours at a time (or pro-rata, 17-69/min for 6 hours or 26-104/min for 4 hours).

A number of uncertainties have also been identified. In particular:

1) There is little or no information on how representative the tested tools were of non-electrically powered fastener driving tools in use nationally. Beyond the 11 non-electrically powered tools tested, no other data were found from published sources or evidence known to the HSE.
2) No data were provided for electrically powered fastener driving tools, and no further information was found on this.
3) No data were identified on noise levels arising from earlier generations of fastener driving tools.
4) Noise levels vary considerably in the field – e.g. between tools, between operations (e.g. patterns of firing and actuation), and according the materials into which staples and nails are sunk. Risk of NIHL is thought to relate to the average sound intensity on a logarithmic scale where 3dB of difference represents a doubling of intensity. In the HSL report differences between tools and tasks in simulated field conditions amounted to about 15 dB, corresponding to a 32-fold variation in sound intensity.
5) In practice, there is likely also to be considerable variation in the number of times workers fire nailing and stapling guns. The Council has found no empirical data on typical usage patterns and frequencies (e.g. how likely users would be to fire 6,300 to 25,000 shots/day over extended and sustained periods).

Conclusions

While HSL's report gives an indication that extensive and sustained use of nailing and stapling guns might sometimes lead to noise levels comparable to those for other tools already prescribed (the prescription threshold), it remains unclear how often and in what circumstances this might happen. At present, the wording of the exposure element of a prescription schedule for this tool would therefore be conjectural.

A further consideration is that at present PD A10 is defined in terms of a list of tools whose durations of use are unspecified. For nailing and stapling guns it would appear necessary to specify a pattern of use, and this in turn necessitates a means of corroborating that sufficient exposures have occurred.

On balance, given the various uncertainties, the Council has decided against adding nailing and stapling guns to the list of qualifying exposures for benefit under the terms of PD A10.

Further evidence is always welcomed, however, especially that on patterns of use and levels of noise exposure arising from fastener driving tools. To be usable, all data should be expressed in dB(A) and averaged over an 8-hour working day. Details can be sent to the Council's Secretariat at any time (IIAC Secretariat, Caxton House, Tothill Street, London, SW1H 9NA. 0207 449 5618. iiac@dwp.gsi.gov.uk).

Prevention

The Control of Noise at Work Regulations 2005 requires employers to prevent or reduce risks to health and safety from exposure to noise at work. The HSE has produced practical guidance to help employers identify whether they have a noise problem in the workplace, and if so, how to carry out a risk assessments to decide what action is needed to protect their employees.

Risk assessments should identify where in the workplace there may be a risk from noise and who is likely to be affected. They should contain estimates of employees' noise exposure and identify appropriate noise-control measures and hearing protection. Consideration should be given to whether any employees need to be provided with health surveillance, and whether any are at particular risk. Employers should provide employees with appropriate information and training. In turn, employees are required to co-operate with employers in implementing measures to control exposure.

Further information about controlling noise exposure at work is available on the HSE website at: http://www.hse.gov.uk/noise/index.htm.