



# Bad vibrations

Complying with the Control of Noise and Vibration at Work Regulations demands a new look at some interesting technology – and the regulations. Dr Tom Shelley reports

Now that both the Control of Noise and Control of Vibration at Work Regulations are well and truly in force (April 2006 and July 2005 respectively), plant engineers that haven't yet done so, need to ensure that their areas of responsibility comply.

The legislation is directed in particular at work in noisy environments and/or involving regular use of hand tools and equipment. Occupational deafness and hand-arm vibration (HAV) are the obvious concerns: both can be seriously debilitating and the law was enacted at least in part because of recognition that each is preventable.

As a quick reminder of the scale of the issues, HSE last year estimated that more than 1.1 million employees were still at risk from high levels of noise, while about 1.7 million were being exposed to HAV hazards. The figure for drivers at risk from so-called 'whole body vibration' was much more modest at some 20,000, but still significant.

HSE insists that there are simple and cost-effective ways to control these risks, and is publicly committed to eliminating new cases of noise-induced hearing damage by 2030 and HAV syndrome by 2015. Its website makes it clear that HSE is also determined to achieve 90% compliance by 2010.

More immediately, HSE is concerning itself with increasing awareness of hazards and mitigation

good practice – and persuading manufacturers, employers, workers and so on to take action to enable them to meet its 2010 target. Which is why, for the last year, the executive has been focused on HAV and, since April, on noise in industries including construction, foundries and heavy fabrication, machinery and equipment manufacture, automotive, rubber, plastics and shipbuilding.

#### HSE campaign

We're talking about everything from 'working with manufacturers' to focus attention on their duties under the Supply of Machinery (Safety) Regulations 1992, and employers' duties under the Control of Vibration at Work Regulations 2005, to providing information for employers to assist with risk assessments. HSE also says it will be inspecting equipment and plant suppliers to assess compliance, both in manufacture and in terms of the information they supply to product users.

All well and good, but, as usual, matters are far from clear cut, with requirements to meet vibration limits, for example, clouded by problems of measurement, exactly which standards should be conformed to, and claims and counter-claims from purveyors of competing technologies.

At May's Safety and Health Expo 2007 at the NEC, for example, the Castle Pro-DX Exciteo Human Vibration Meter was demonstrated on

Speedy Hire's stand – with Vince Allen, sales manager for Castle Group, showing how to use the meter coupled to an accelerometer, taped to the handle of a lawn mower. Fine, but what about testing for vibrations using sensors attached to the person, as with the HAVSence White Finger Dosimeter (Plant Engineer, July/August 2006)?

The reality is that equipment to measure vibration experienced by an operator is still not available. Martin Thompson, of Cambridge-based Mecon, which has been working with HAVSence inventor Dan Parman, says: "We have completed the commercial design and are close to completing the commercial version of the docking station." But he adds: "We are in the latter throes of discussion with a very big client who is interested in marketing the device and possibly manufacturing it. The hope is to have this on the market within six months."

### Interpreting standards

When it comes, says Parman, the device will be Intrinsically Safe to Zone 0 for classified hazardous areas, and he believes it will be usable in everything from mines to offshore environments.

As for standards, Mark Turnbull, group health, safety and environmental manager for Speedy Support Services, says the situation is far from satisfactory. He points out that the MCG (Major Contractors Group) will currently not allow equipment on site, unless vibration has been approved by OPERC (the Off highway Plant and Equipment Research Centre). However, its HAV test centre in Dudley, founded by Dr David Edwards at Loughborough University, works to the EN 5349 standard – while the European Power Tool Association is using EN 60745 and trying to convince MCG that's just as effective.

OPERC's Edwards says: "Manufacturers have come a long way to improve the test codes to which they measure the performance of their tools to meet the requirements of the Supply of Machinery Regulations – and this should be commended. However, it remains evident that manufacturer data is limited to new tools and the only way to develop an adequate risk assessment is to use a real-life test, as in EN 5349. The emphasis here is not on tool performance, but human exposure to the risk."

And Turnbull adds: "OPERC tests find that readings are often two or three times higher in real life than manufacturers' dominant axis readings." Either way, the result, according to Becky Thompson of Five Sides Industrial Vibration Management and Control Systems in Leicester, is that "People are not taking it seriously at the present time".

Five sides offers vibration consultancy and power tool timers in a range of electric and pneumatic versions to enable easy monitoring of

daily usage, dose calculation and preventive maintenance scheduling.

Meanwhile, the situation with regard to noise hazard reduction is much clearer. In most cases, noise exposure can be managed by ear protectors – although even this is not always straightforward. Tim Booth of EAR, part of Aearo Technologies, says that, while EC legislation requires employers to provide hearing protection where noise exceeds 80dB, if that reduces sound levels to below 70dB, the result can be sensory deprivation and problems for wearers in hearing danger signals.


EAR and Peltor, another Aearo company, have patented a simple £250 sound level indicator that works with a colour coding system to enable users to choose the right level of sound protection. The meter sits at an employee's workstation, runs until it has stabilised and the green, yellow or red lights indicate which colour coded products should be used. The meter is accurate to 1dB and has to be restarted between measurements.

The current position is that, at noise levels below 85dB, workers do not have to wear hearing protection, but employers must make it available – code green. Then from 83dB(A) to 93dB(A), hearing protection is compulsory and products are coded yellow. For higher levels, products are coded red and come in various specifications, according to sound power level and frequency. And note that colour and styling do matter. There is no point in providing protective equipment if the workforce doesn't want to be seen dead wearing it.

### Protection and measurement

For long-term personal use, however, several companies make ear protectors that are personally moulded for each individual. AtSource QX in Louth, for example, makes Protecthear plugs designed to filter out high frequencies more than low, so they give good protection, while allowing users still to hear speech. It also makes Speakhear, which provides for radio earphones.

Another making personally moulded earplugs is Emtec Laboratories in Shrewsbury: motorcyclists, shooting enthusiasts and musicians, not just industrial workers, use its Noisebreakers.

As for noise meters, although there are many, with varying degrees of sophistication, from different manufacturers, most require significant knowledge in terms of interpreting their results. However, the simplest solution has to be the Oi-Noise, invented by Jane Jemmett. This is a pocket-sized 80dB noise source, designed to be given to workers. It costs just £17.50 and, as she says, "If they can't hear it, they have a problem". 

## Technical pointers

- The HSE's noise and vibration inspection campaign continues. HSE says: "Inspectors will expect to see evidence of the elimination of vibration risks or of their reduction to the lowest reasonably practicable level. Where vibration risks remain, inspectors will be looking for evidence that the risks are being managed adequately and that suitable health surveillance is in place"

- Plenty of personal noise dose meters are available. Cirrus Research, for example, has an Intrinsically Safe noise badge. The CR:110AIS DoseBadge is tamper proof and read via an infrared link at the end of the day. Approvals include: ATEX, EEX and IECEx: EEX ia IIC T4, Ex ia IIC T4, Ex ia I and Ex ia I. They also carry a South African Bureau of Standards certification: Ex ia IIC T4 and Ex ia I No. SABS MS/05-370

