

# Update on research into HAV, WBV, and Noise in forestry and arboriculture

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# Hand-arm vibration syndrome (HAVS)

- Disrupted blood circulation (VWF)
  - Fingertips can develop gangrene if exposure continues
- Neurological damage
  - Clumsiness
- Bone and joint disorders
  - Fingers no longer straighten
  - Muscles weaken



# The new Vibration Regulations - employers' duties

- Ensure health and safety of employees
- Risk assessment
- A hierarchy of measures to achieve control
- Information, instruction and training for employees
- Health surveillance
- **Already expected for HAV since 1994, under general H&S legislation and HSE guidance on HAV (HSG88, 1994)**

## What's new?

- Exposure Action Value (EAV) **2.5 m/s<sup>2</sup> A(8)**
  - lower than the old HSE recommended action level
  - but still not a “safe” level of exposure
    - Good chainsaws reach the EAV after 2 hrs trigger time
      - Some chainsaws reach the EAV in less than ½ hr
- Exposure Limit Value (ELV) **5 m/s<sup>2</sup> A(8)**
  - higher than the old HSE recommended action level
    - Good chainsaws reach the ELV after 8 hrs trigger time
      - Some chainsaws reach ELV in less than 2 ½ hrs

## Control of exposure

- Change the process
  - eliminating or reducing vibration exposure at source;
  - often essential where exposures are very high.
- Select suitable (reduced-vibration) equipment
  - purchasing policies
- Operator training
- Maintenance of equipment
- Time limits, job rotation
  - exposure points system may help



## “Traffic lights” system – a warning

- Some tool suppliers and hirers have established a three colour system of tool classification:
  - **Green: use up to 8 hours** (before ELV likely to be exceeded)
  - **Amber: use up to 2 hours** (before ELV likely to be exceeded)
  - **Red: refer to supervisor**
- Construction industry enthusiastic
- HSE currently working with industry to improve quality of vibration data and accompanying guidance

## Health surveillance

- Required when the EAV is likely to be exceeded
  - or where risk assessment shows the need
- Important for HAVS because:
  - Some high exposures are unavoidable;
  - there is no effective personal protective equipment



## HSE's guidance

- New employees' pocket card
- New employers' leaflet
- New Handbook:  
*Hand-arm vibration: Control of Vibration at Work Regulations 2005. Guidance on Regulations*
- Plus existing video and case studies book



## Knowledge of HAV risks in forestry

- Current position summarised in FTN June 2005
  - Adequate basis for information sheet?
  - Need for research?
- Manufacturers' emission data
  - ISO/DTR 22521 not yet available
- Actual vibration emissions and likely exposures not well known
  - Improved knowledge of exposure unlikely to change approach to control



**Any questions on  
hand-arm vibration?**

## Control of Vibration at Work Regulations 2005: Exposure action and limit values for whole-body vibration

- Exposure Action Value (EAV): **0.5 m/s<sup>2</sup> A(8)**
  - many vehicle/mobile machinery users will need to consider WBV, but actions will often be simple good practice
- Exposure Limit Value (ELV): **1.15 m/s<sup>2</sup> A(8)**
  - challenge for *some* activities in *some* industries
- Transitional period for ELV to 2010 (2014 for agriculture & forestry) if not currently reasonably practicable to comply

## Back pain in drivers

- Many possible causes of back pain in drivers:
  - Poor design or adjustment of seating or controls
  - Poor driver posture
  - Long periods in seat
  - Manual handling of loads
  - Awkward access to/jumping from cab
  - **WBV, especially shocks & jolts**
  - Non-occupational causes



## Information on risks from WBV

- Manufacturers' information
  - Warning of WBV risk
  - Emission data: main purpose is to warn of risk and estimate workplace exposures
    - WBV differences between directly competing machines are usually small
- Forestry Industry/HSE information sheet:
  - Summary of good practice
    - Discussion of research findings expected Jan 06
    - Summary article to appear in FTN Dec 2005

## **Straightforward risk control actions**

- Driver behaviour:
  - slower, different route, avoiding rough ground, driving time limit;
  - driver skill, training, suspension seat adjustment
- A more suitable vehicle:
  - machine more suited to the terrain and task;
  - suitable seat and ergonomics of cab
- Maintenance:
  - machinery, tyre pressures, suspensions, seats;
  - roadways/operating surfaces

Note: Selection and maintenance of seats often poor

## HSE guidance on WBV

- Leaflet for employers
- Pocket card for employees
- Guidance on the Regulations and WBV
  - to be published late 2005
- Industry specific guidance for high exposure work
  - under development



## WBV in forestry

- Study of a small sample of machinery
  - Exposures usually above EAV but below ELV
  - But beware risk from shocks
    - Vibration Dose Value of  $17 \text{ m/s}^{1.75}$  provides a guide
- Ergonomics likely a bigger factor for back pain
- Industry working with HSE to produce guidance on good practice control of WBV exposures
- Employers' action on WBV in proportion with control of other causes of back pain

## 3 Forwarders

- Exposure:  $0.4 - 0.7 \text{ m/s}^2 \text{ A}(8)$  or  $8 - 12 \text{ VDV}$ 
  - Magnitude:  $0.4 - 0.7 \text{ m/s}^2$ . Duration: 8 hrs TBC



# 1 Harvester (excavator conversion)

- Exposure: 0.4 – 1.0 m/s<sup>2</sup> A(8) or 13 – 18 VDV
  - Magnitude: 0.4 – 1.0 m/s<sup>2</sup>. Duration: 8 hrs TBC



## 5 Harvesters (bespoke)

- Exposure: 0.4 – 1.2 m/s<sup>2</sup> A(8) or 10 – 23 VDV
  - Magnitude: 0.4 – 1.2 m/s<sup>2</sup>. Duration: 8 hrs TBC



# 1 Chipper

- Exposure:  $0.5 - 0.6 \text{ m/s}^2 \text{ A}(8)$  or  $9 - 11 \text{ VDV}$ 
  - Magnitude:  $0.5 - 0.6 \text{ m/s}^2$ . Duration: 8 hrs TBC



# 1 Excavator

- Exposure:  $0.7 - 1.0 \text{ m/s}^2 \text{ A}(8)$  or  $20 - 30 \text{ VDV}$ 
  - Magnitude:  $0.7 - 1.0 \text{ m/s}^2$ . Duration: 8 hrs TBC

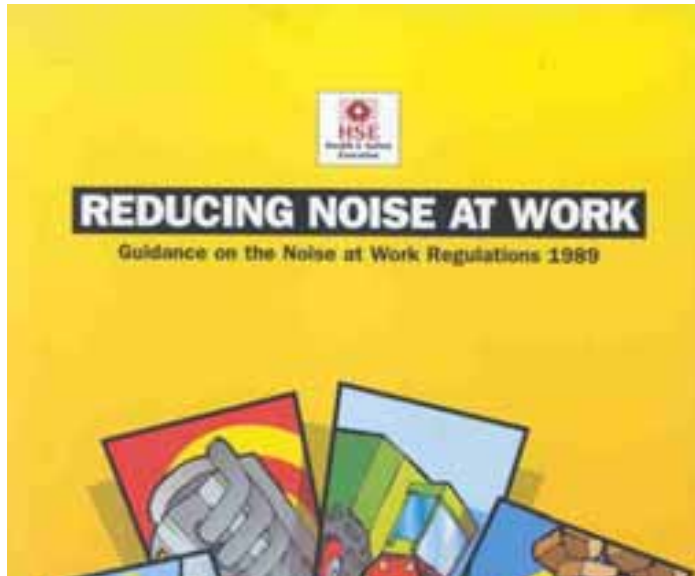


# Any questions on whole-body vibration?



[www.hse.gov.uk/vibration](http://www.hse.gov.uk/vibration)




# New Noise Regs – new guidance



## Noise at work

Advice for employers on the Control of Noise at Work Regulations 2005



 <p><b>Protect your hearing or lose it!</b></p> 	<p><b>What is the problem with noise?</b></p> <p>Noise is part of everyday life, but loud noise can damage your hearing. It can cause muffled sounds and even total deafness which is permanent and irreversible. Permanent deafness (ringing in the ears) can also be caused. The damage can be instant, for very loud or explosive noises, but generally it is gradual. By the time you notice it, it is probably too late.</p> <p><b>Is there a noise problem where I work?</b></p> <p>Probably, if you can answer 'yes' to any of these questions about the noise where you work:</p> <ul style="list-style-type: none"> <li>Do you work in a noisy industry, eg construction, demolition or road repair, woodworking, plastics processing, engineering, textile manufacture, general fabrication, forging, pressing or stamping, paper or board making, casting or bottling, foundries?</li> </ul>	<p><b>What do I have to look out for?</b></p> <p>Hearing protection such as earmuffs and earplugs is your last line of defence against damage, so check the following:</p> <p><b>Earmuffs</b> Make sure they totally cover your ears, fit tightly and there are no gaps around the seals. Don't let hair, jewellery, glasses, hats etc interfere with the seal. Try and keep the seals and the inside clean. Don't stretch the headband too much – make sure it keeps its tension.</p> <p><b>Earplugs</b> They can be difficult to fit properly – practise fitting them and get help if you are having trouble. Often they can look like they are fitted properly, but they may not be giving you much protection. Clean your hands before you fit earplugs, and don't share them. Some types you use only once, others can be re-used and also washed – make sure you know which type you have.</p> <p><b>Ear/inserts/bags</b> Follow the same advice as for earplugs and make sure any headband keeps its tension.</p> 
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## New Regulations, new emphasis

### Away from...

- Noise assessment as the end point
- Excessive quantification of exposure
- Reliance on hearing protection

### Towards

- Control of noise risks
- Managed through risk assessment and prioritised action plans

### With

- New HSE guidance to encourage rapid risk identification and decision making

# New Action & Limit Values

for daily exposure and peak noise

- Lower Exposure Action Values
  - $L_{EP,d}$  of 80 dB,  $L_{Cpeak}$  of 135 dB
- Upper Exposure Action Values
  - $L_{EP,d}$  of 85 dB,  $L_{Cpeak}$  of 137 dB
- Exposure Limit Values
  - $L_{EP,d}$  of 87 dB,  $L_{Cpeak}$  of 140 dB
    - Can take account of hearing protection

## Control of risks and exposure

- General duty under regulations to reduce risks to the lowest level reasonably practicable
- Aim for noise control by technical and organisational means
- Apply good practice, industry standards, known solutions (regardless of exposure, but so far as is reasonably practicable)

## Ear protection

- Reliance on hearing protectors, when above 85 dB, acceptable only;
  - For residual risk when all reasonable measures to reduce noise exposures have been put in place
    - Likely the case for powered hand-tools in forestry
  - To deal with the immediate risks, until such time as programme of control measures has been developed and put in to place.
- Hearing protectors to reduce the noise at the ear (beneath ear protectors) to below 87 dB
  - Demanding, e.g. for chainsaws at ~ 100 dB
- Ear protection must be available at 80 dB

## Planned noise research in forestry

- Noise emissions/exposures for mobile and hand-held machinery used in forestry are high but not well quantified
  - Improved knowledge of exposure unlikely to change approaches to control
  - Need for research?
- Summary planned for FTN Mar 06
- Study of noise from chippers
  - Funding agreed in principle
  - Tender in draft

**Thank you for  
listening**

**Any questions on  
noise**



[www.hse.gov.uk/vibration](http://www.hse.gov.uk/vibration)

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