EU Vibration and Noise Directives - Implications

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Noise & Vibration
Controlling Hand-arm Vibration (HAV) at work

HSE guidance and expectations
Hand-arm Vibration Syndrome (HAVS)

- White finger and gangrene
- Clumsiness
- Crooked fingers and weak muscles

- PREVENTABLE
Exposure criteria

- **Exposure Action Value (EAV)** $2.5 \text{ m/s}^2 A(8)$
  - lower than the old HSE recommended action level
  - but still not a “safe” level of exposure

- **Exposure Limit Value (ELV)** $5 \text{ m/s}^2 A(8)$
  - higher than the old HSE recommended action level
  - a difficult challenge in some jobs (e.g. masons)
  - should prevent the worst exposures
  - transitional arrangements until 2010, but only where not reasonably practicable to comply
Rules of thumb – using good tools

• Rotary tools
  – EAV exceeded within 1 hour
  – ELV exceeded within 4 hours
  • Some older tools exceed ELV within 1 hour

• Percussive tools
  – EAV exceeded within ¼ hour
  – ELV exceeded within 1 hour
  • Some older tools exceed ELV within 2 or 3 minutes

• Note: These are ‘trigger times’
Managing HAV risk

• 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
  – Consider exposure points system

• Health surveillance
Health surveillance

• Required when the EAV is likely to be exceeded
  – or where risk assessment shows the need
  – Should prevent progression …..

• Important for HAVS because:
  – Some high exposures are unavoidable;
  – there is no effective personal protective equipment
HSE’s guidance on HAV

- New employees’ pocket card
- New employers’ leaflet
- New Handbook:
  *Hand-arm vibration: Control of Vibration at Work Regulations 2005. Guidance on Regulations (L140)*
- Plus existing video and case studies book
HAV – Implications for quarries

• Not a huge problem except, for example:
  – Hand drilling
  – Stone masons shops
• Maintenance crews may be at risk
  – Some risk from engineering activities
  – Powered hand tools
    • Nut runners, Grinders, Etc.
Controlling Noise at Work

HSE guidance and expectations
Effects of noise exposure

- Hearing loss
- Tinnitus
- Other hearing problems (e.g. localisation of sounds)
- Safety risks
  - warning signals
  - essential communications
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
Our Challenge

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 ‘tools’ and guidance to encourage rapid risk identification and decision making
Managing noise risk

• Investigate and implement good practice and industry standards for control of noise
• Minimise risks (sfairp) for all employees
• Ensure legal limits are not exceeded
• Use ear protection to control residual risks
• Provide information, instruction and training
  – get workers and their representatives involved
• Use health surveillance to ensure control measures are preventing hearing damage
Noise Control - Examples

- Problem: Internal cab noise of 95 dB. Vehicles have long working life.
- Solution: Damping pads to resonant surfaces, sound barrier mat to floor and engine bulkhead, line cab with absorptive foam
- Result: 11 dB reduction
  - Below 85 dB
  - Above 80 dB
HSE’s guidance on noise

- New employees’ pocket card
- New employers’ leaflet
Noise - Implications for quarries

• Identify people covered by new lower 80dB action level
  – Operators of mobile machinery
• Additional engineering noise control at workstations in mobile and static plant
• More mandatory use of ear protection
  – Wider availability of ear protection > 80 dB
  – Operators of mobile machinery > 85 dB
• More rigorous health surveillance (audiometry)
• Comply with 87dB and peak 140dB limits
  – Using ear protection as necessary
Controlling Whole-body Vibration (WBV) at work

HSE guidance and expectations
An holistic approach to back pain

- WBV is not the only source of back pain
- Check sources and prioritise controls
  - Is WBV aggravating existing back injuries?
  - Assess posture, access or sitting for long periods
  - Assess manual handling of loads
  - Monitor health and analyse for trends and source
Exposure criteria for WBV

• Exposure Action Value (EAV): $0.5 \text{ m/s}^2 A(8)$
  – many vehicle/mobile machinery users will need to consider WBV, but actions will often be simple good practice

• Exposure Limit Value (ELV): $1.15 \text{ m/s}^2 A(8)$
  – An issue for some activities in quarrying
  – Transitional period for ELV to 2010 if not currently reasonably practicable to comply

• Guidance criterion for risk: $17 \text{ m/s}^{1.75}$
  – International consensus on clear risk from WBV
WBV in Quarries

• Exposure > EAV likely for quarry machinery
• Exposure > ELV for poor practice
  – virtually all quarry machinery
• Exposures < ELV with skilled operators
• Exposures > ELV seem rare in practice
  • but dozer ripping can be at ELV with good practice
• ISO/PD TR 25398 covers quarry machinery
  – National body enquiry closed 8 Mar 06
Information Sheet – WBV in quarries

- WBV emission and exposure data collected for quarry machinery
- Split into 4 categories:
  - Precautionary measures advisory
    - Exposure < EAV and shocks not significant.
    - Voluntary low cost control measures.
  - Precautionary measures mandatory
    - Exposure > EAV but shocks not significant.
    - Low cost control measures reasonably practicable.
  - Control measures essential
    - Exposures greatly above EAV and/or shocks significant.
    - VDV > 17 m/s$^{1.75}$ – Risk of WBV/shocks causing back pain.
  - Restriction of exposure mandatory
    - Exposure duration limitation to assure compliance with ELV
Information Sheet – WBV in quarries

• Precautionary measures advisory
  – Static rock crushers; Drilling rigs

• Precautionary measures mandatory
  – Excavators > 25 t; Road haulage vehicles, e.g. 8 wheeled tipper trucks; Mobile crushers

• Control measures essential
  – Excavators < 25 t; Rigid Dumpers; Wheeled loaders (stock or face); Telescopic handlers; Articulated Dumpers; Graders

• Restriction of exposure mandatory
  – Dozers – especially ripping; Articulated Dumpers on uneven surfaces; Scrapers
HSE’s guidance on WBV

- Employees’ pocket card
- Employers’ leaflet for
- Guidance on the Regulations and WBV (L141)

- Industry specific guidance for high exposure work
  – Quarries Information Sheet
WBV – Implications for quarries

• Operators trained in risks and controls
• (Suspension) seat in good condition
  – Defective/insufficient dampers cause shock
    • Replace several times during seat’s life
    – Seats replaced several times in life of machine
• Ground condition adequate for machinery using it
  – Regular grading
• Modify speed and route to avoid excessive WBV
For more information

www.hse.gov.uk/vibration
www.hse.gov.uk/noise

Thank you