



EU Physical Agents (Vibration) Directive

Dr Tom Gunston, Centre for Human Sciences

tpgunston@QinetiQ.com

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EU Physical Agents Vibration Directive

EU Physical Agents Vibration Directive (1)

- Becomes part of UK legislation in July 2005
- Two 'categories' of vibration: whole-body and hand-arm
- Based on ISO 2631-1
- Comprises two daily levels of WBV exposure A(8 hr eq):
 - **Exposure Action Value (EAV)** of $0.5 \text{ m/s}^2 \text{ r.m.s}$
 - **Exposure Limit Value (ELV)** of $1.15 \text{ m/s}^2 \text{ r.m.s}$ **which it will be illegal to exceed**

A(8) Calculation

An 8 hour energy equivalent exposure can be calculated as follows

$$A(8) = \alpha_w \left[\frac{t}{8} \right]^{\frac{1}{2}}$$

Where t is the exposure time in hours to the weighted r.m.s. acceleration magnitude of α_w

For partial exposures, a total A(8) exposure can be calculated as follows:

$$A(8) = \left[A_1(8)^2 + A_2(8)^2 + A_3(8)^2 + A_4(8)^2 \right]^{\frac{1}{2}}$$

EU Physical Agents Vibration Directive (2)

- Transitional periods are provided where it is not possible to reduce exposure below the ELV using current technology/work practices
- Transitional periods mean that ELV may not apply until
 - 2010 for platforms in use before July 2007
 - 2014 for agricultural machinery
- However, these should not be perceived as target time limit
 - legislation should be met as soon as possible
- ELV will apply with immediate effect to all platforms provided after July 2007

Employer requirements (1)

- Employers who carry out work which may expose any employees to risk of WBV shall undertake risk assessment:
 - observation of specific work practices
 - probable or, if necessary, specific measurement of WBV in light of EAV and ELV including that experienced in rest periods
 - effects of WBV exposure on employees at risk (health surveillance)
 - effects of WBV on workplace and work equipment
 - availability of mitigation measures to reduce exposure
 - specific working conditions, e.g. low temperatures

Health surveillance

- No direct link between WBV and back injury/pain
 - hence difficult for specific, formal, health surveillance
- Health monitoring approach
 - important to identify employees at greater risk
 - e.g. those with established problem, young people
 - reporting, monitoring and investigation of symptoms
 - capture early reports of back pain, neck/shoulder pain, gastrointestinal problems
 - act upon reports at earliest opportunity for both individual and all others at risk
 - may comprise annual questionnaire

Employer requirements (2)

- Even if EAV isn't exceeded there is a general duty to minimise risk
 - especially for occasional exposure to high magnitude shocks
 - hence value of calculating the VDV measure and other shock indicators (e.g. crest factors, peak) in addition to A(8)

Employer requirements (3)

- If risk assessment indicates that **EAV is exceeded**, employer shall comply with duty to reduce **WBV exposure to minimum** and ensure **ELV is not exceeded**
- Programme of measures including:
 - info and training of employees
 - platform (and road) maintenance
 - choice of platform/equipment which is ergonomic and produces minimum WBV
 - ergonomic design and use of workplaces and work stations
 - limitation of exposure times and intensity
 - appropriate work-rest schedules and clothing
 - health surveillance (“health monitoring”)

Employer requirements (4)

- If risk assessment indicates near ELV, risk will be high and employer will need to
 - be more precise in WBV exposure assessment
 - know exact risk (more importantly, that exposure is below ELV)
 - to aid selection of mitigation measures
 - judgement of practicalities of reducing risk
 - means to manage the problem
 - take significant action to reduce exposure

Employer requirements (5)

- If risk assessment indicates that ELV is exceeded, employer shall immediately
 - take action to reduce exposure to below the ELV
 - identify reason for ELV being exceeded
 - amend action plan to prevent reoccurrence
- Transitional period where available technology would not successfully reduce WBV exposure
- If compliance is still not possible for very good reasons then a case for exemption must be made

Example data



RIB trial, Dec 04



- Primary objective assessment of suspension seats
- Also carried out runs to obtain data for EU Directive
- Data shown from the floor and the standard jockey seat

RIB Data

Sea State	Average Speed	Minutes to EAV (floor)	Minutes to ELV (floor)	Minutes to EAV (seat)	Minutes to ELV (seat)
0	10	731	3867	814	4308
0	20	1285	6797	1538	8134
0	30	1716	9076	2048	10382
2-3	10	154	813	128	676
2-3	20	40	211	32	171
2-3	30	11	59	9	47
3.5-5.5	10	221	1170	250	1323
3.5-5.5	20	35	184	36	189
3.5-5.5	30	9	49	9	47

RIB Data

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Summary

Summary (1)

- The ELV is a legal daily exposure limit
- Employer requirements:
 - if below EAV, general duty to minimise risk, especially for occasional exposure to high magnitude shocks
 - if at EAV, or between EAV and ELV, instigate programme of risk reduction measures relative to scale of risk
 - if near/at/over ELV more specific WBV assessment required
 - ELV can be exceeded in transition period if no effective mitigation measures are available

Summary (2)

- At end of transition period, or sooner if possible, ELV will apply
 - employer **MUST** ensure ELV not exceeded
- QinetiQ specific recommendations
 - ensure both A(8) and VDV calculated in addition to peak and crest factors
 - aid identification of shock exposure
 - careful design of any trial to ensure potential mitigation measures included in the assessment
 - save time and money

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