

# Whitepaper – Workplace Vibration

Vibration exposure at work is split into two areas, hand-arm and whole body vibration.

## **Hand Arm Vibration (HAV)**

It is estimated that around five million workers are exposed to hand-arm vibration in the workplace. Two million of these workers are exposed to levels of vibration where there are clear risks of developing disease. Hand-arm vibration is vibration transmitted into your hands and arms when you use hand-held powered work equipment.

Regular exposure to HAV can give rise to permanent injuries such as:

- Damage to the blood circulation in the fingers (vibration white finger)
- Pain in the wrists (carpal tunnel syndrome)
- Pain or loss of sensation in the hands or fingers
- Loss of grip strength
- Tingling sensations (pins and needles)
- Loss of manual dexterity
- Loss of sense of temperature in the fingers.

## **Whole Body Vibration (WBV)**

Whole-body vibration is shaking or jolting of the human body through a supporting surface (usually a seat or the floor), for example when driving or riding on a vehicle along an unmade road, operating earthmoving machines or standing on a structure attached to a large, powerful, fixed machine which is impacting or vibrating.

Regular long term exposure to WBV is associated with back pain alongside other factors such as poor posture and heavy lifting. Employers should look out for WBV risks where any commercial/industrial/construction vehicles are driven regularly for most of the day.

Drivers of some mobile machines, including certain tractors, fork lift trucks and quarrying or earth-moving machinery, may be exposed to WBV and shocks, which are associated with back pain. If employers comply with appropriate legislation and follow guidance, it may be possible to reduce excesses of back pain from whole-body vibration. There are simple, non-technical and common sense measures which can be introduced to reduce exposure to vibration. The regulations introduce action and limit values for hand-arm and whole-body vibration.

## **Employer Responsibilities**

An employer who carries out work which is liable to expose any of his employees to risk from vibrations, shall make a suitable and sufficient assessment of the risk created by that work to the health and safety of those employees and the risk assessment shall identify the measures that need to be taken to meet the requirements of the Regulations.

An assessment of the vibration risk ensures that a valid decision accounting for the actual levels of exposure encountered is made. This determines what actions need to be taken to adequately control the exposure. Refer to relevant checklists in Guardian.

## Effective Risk Assessments

To carry out a suitable and sufficient risk assessment, you need to understand what the exposure limit values and exposure action values are in any given task.

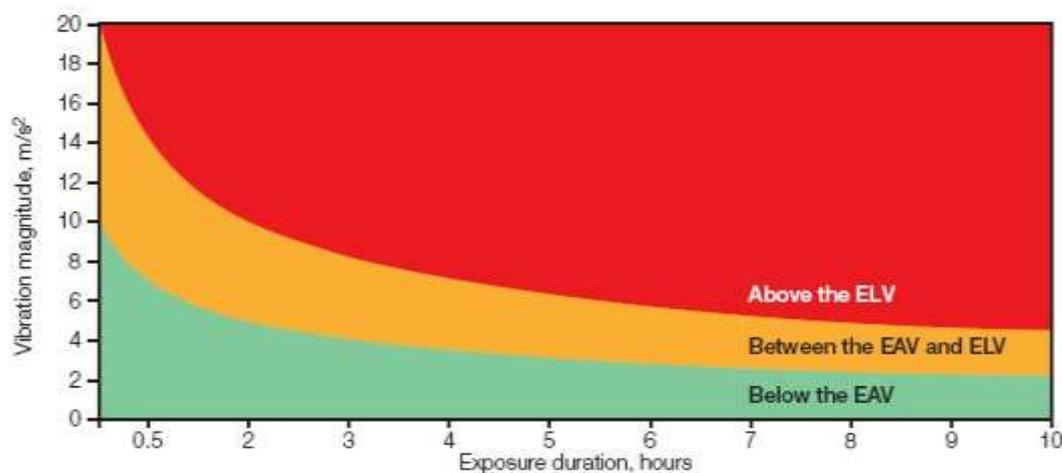
**The Exposure Limit Value (ELV)** is the maximum amount of vibration an employee may be exposed to in a single day.

The exposure limit value (ELV) is the maximum amount of vibration an employee may be exposed to on any single day. For hand-arm vibration the ELV is a daily exposure of  $5 \text{ m/s}^2 \text{ A}(8)$ . It represents a high risk above which employees should not be exposed

**The Exposure Action Value (EAV)** is a daily amount of exposure above which employers must take action to control exposure.

The exposure action value (EAV) is a daily amount of vibration exposure above which employers are required to take action to control exposure. The greater the exposure level, the greater the risk and the more action employers will need to take to reduce the risk. For hand-arm vibration the EAV is a daily exposure of  $2.5 \text{ m/s}^2 \text{ A}(8)$ .

**Figure 1:** How vibration level and duration affect exposure



With these levels in mind:

- Make a list of the processes and tools used within your organisation, which may involve regular exposure to vibration.
- Check equipment/vehicle handbooks (for each item identified) for any warnings or information regarding vibration. Check that the information is representative of the way in which your company uses the equipment. You must contact the manufacturer if you require further information.
- Make a list of all employees who use the relevant pieces of equipment, which jobs they do and note as accurately as possible how long their hands are in contact with the vibration source. Ask employees whether they have felt tingling in their fingers or suffered from pins and needles after using power tools or suffer from a bad back after driving off road vehicles. If yes then it is necessary to reduce their exposure, even if the measured/estimated exposure value is less than the daily exposure value.

d) Ask employees if they have developed any symptoms relating to Vibration. If symptoms are identified then health surveillance must be put into place for the affected operatives.

e) Ask employees who work with equipment/vehicles that have high vibration values whether there are any other problems regarding its usage, e.g. weight, awkward posture, difficulty when holding equipment.

f) From the information received, estimate the levels of exposure and group the activities by level of risk. Group your work activities according to whether they are high, medium or low risk. Plan your action to control risks for the employees at greatest risk first.

**Your rough groupings could be based on the following:**

#### **High Risk (above the ELV)**

Employees who regularly operate:

- Hammer action tools for more than about one hour per day; or
- Some rotary and other action tools for more than about four hours per day. Employees in this group are likely to be above the exposure limit value set out in the Regulations. The limit value could be exceeded in a much shorter time in some cases, especially where the tools are not the most suitable for the job.

#### **Medium Risk (above the EAV)**

Employees who regularly operate:

- Hammer action tools for more than about 15 minutes per day; or
  - Some rotary and other action tools for more than about one hour per day.
- Employees in this group are likely to be exposed above the exposure action value set out in the regulations.

**This information is provided for general reference purposes only. If you have a specific enquiry relating to this topic please contact Wirehouse on:**

**033 33 215 005 | [info@wirehouse-es.com](mailto:info@wirehouse-es.com)**

Workplace Vibration updated 09/07/2019