

# INFORMATION LEAFLET 003-0115

## Hand Arm Vibration Syndrome



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## Hand Arm Vibration Syndrome (HAVS)

### Guidance for Employers and Operatives

#### 1. What is HAVS?

Hand Arm Vibration Syndrome, or HAVS describes a group of diseases caused by exposure of the hands and arms to vibration from tools and equipment which vibrate, e.g. chainsaws and brush cutters. The relevant legislation is the **Control of Vibration at Work Regulations 2005**, for which more detail is available on the Health and Safety Executive (HSE) website here -

<http://www.hse.gov.uk/vibration/hav/regulations.htm>

HSE also have a dedicated page for Vibration here - <http://www.hse.gov.uk/vibration/index.htm>

A page which is specific to HAVS is here and contains lots of useful information and resources -

<http://www.hse.gov.uk/vibration/hav/index.htm>

The most common disease in the forestry sector is Reynaud's Syndrome, more commonly known as "**vibration white finger**", in which the circulation of blood, particularly in the hands, is adversely affected. Early symptoms include tingling and numbness in the fingers, usually after a work shift. If a chronic level of exposure is allowed to continue, the tips of the fingers go white, then the whole hand, resulting in a loss of grip and dexterity. Ultimately it may lead to more serious symptoms including discolouration and enlargement of fingers, with serious medical consequences possible. Exposure to vibration can have other effects such as damage to the sensory nerves, muscles, bones and joints.

#### 2. What do Employers, Employees and Self-employed people need to know and do?

Employers and those who commission work which involves the use of vibrating tools, such as chainsaws, have a duty of care to operatives, to make sure the effects of vibration are not damaging to health. Self-employed individuals need to be aware of the dangers of uncontrolled and/or prolonged exposure to vibration from chainsaws and other vibrating equipment and take steps to safeguard their own health. HSE produce a free downloadable leaflet for employees available here - <http://www.hse.gov.uk/pubns/indg296.htm>

Employers (and employees) require to have detailed arrangements in place to calculate the quantity of vibration exposure for each worker, and then to manage the exposure to ensure that stated levels from the regulations are not exceeded. Employers need to keep records of the tools and equipment that employees use and the steps taken to measure, manage and minimise the risks from vibration.

Detailed guidance for employers is available here - <http://www.hse.gov.uk/pubns/indg175.htm>



### 3. What about health surveillance, record keeping and diagnosis of HAVS?

If an employee is exposed to vibration at or above the “Exposure Action Level” (EAL) – see table and information below – then health surveillance is required. Health surveillance is also required for anyone who has received a diagnosis of HAVS.

It is possible to obtain specialist occupational health advice and surveillance for chainsaw workers, and there are a range of commercial providers who can carry out periodic health checks on people who use vibrating tools. This is common practice in many utility and construction firms, but not as common in the forestry industry. Many commercial occupational health providers will carry out health surveillance, create reports and recall employees based on the findings. A medical practitioner working for an occupational health provider, or a GP, can diagnose HAVS in a person based on a series of tests and questions.

If someone is diagnosed with HAVS, even at an early stage, then this is a notifiable disease under the **Reporting of Injuries, Diseases and Dangerous Occurrences (RIDDOR) Regulations** - <http://www.hse.gov.uk/riddor/index.htm> and the affected person then needs formal regular monitoring and a stricter regime of reducing or eliminating exposure to vibrating tools. Any employers who have an employee diagnosed with HAVS need to report it to HSE using RIDDOR and then obtain detailed specialist advice as to how to safeguard the employee’s health going forwards.

### 4. How is HAVS and Vibration best managed in the workplace day-to-day?

Employees need to include vibration as a hazard within risk assessments and systems and create a methodology for recognising the hazard and the risk and managing it effectively. HSE recommend the following hierarchy of controls to reduce effects of potentially damaging hand arm vibration

- 1 Alternative work methods  
Wherever possible using alternative methods which eliminate entirely the use of vibrating tools or limits and/or reduces their effect. In forestry this may be by using harvesters instead of motor-manual methods but this is not always possible or practical.
- 2 Equipment Selection  
Where possible choosing equipment with a low **vibration magnitude**. Alternatively or additionally choosing equipment that has additional mechanical aids to limit vibration effects (e.g. chainsaws with heated handles to improve blood circulation)
- 3 Purchasing Policy  
When replacing pieces of equipment employers should choose new ones which have low vibration emissions. The major manufacturers have put a lot of work into this area and there are now good resources available on their websites and in promotional literature and owner’s manuals.
- 4 Maintenance  
Ensure all pieces of equipment are regularly serviced and maintained as per the manufacturer’s recommendations.

It is especially important to maintain a sharp cutting edge on all cutting equipment and maintain the rotating elements that can become unbalanced due to wear. Sharp saws will have lower vibration magnitudes than blunt saws



## 5 Work Schedules - shorten usage times

The main manufacturers have undertaken studies into how much time their equipment is actually being used during a normal 8hr working day. For example, even when undertaking 'heavy logging' such as in timber harvesting, a chainsaw may only actually be emitting the full vibration load for **3.7hrs**. It is this figure, and the vibration magnitude **m/s<sup>2</sup>**, which is used to calculate the **Daily Exposure - A(8)m/s<sup>2</sup>**.

It is important to bear this in mind, when attempting to bring the **daily exposure** down to an acceptable level, by reducing the hours worked with any piece of vibrating equipment.

The **estimated daily exposure duration** figure is only an estimation, if an employer feels one of his team members may be going to be using a tool at its full vibration load for more time, during the course of a normal working day, he will need to look to lessen exposure time accordingly. This is best planned out in advance by setting a squad rota system or by spreading the vibrating tool use out over other working days. Employees should be aware of and understand the vibration exposures that they are being exposed to and cooperate with arrangements that the employer puts in place.

The HSE have an online calculator that can help calculate exposure to vibration. The calculator and guidance on its usage can be found here –

<http://www.hse.gov.uk/vibration/hav/vibrationcalc.htm>

In 2004 research was undertaken into use of chainsaws and the likely injuries, the final report can be read here - [http://www.hse.gov.uk/research/hsl\\_pdf/2004/hsl0413.pdf](http://www.hse.gov.uk/research/hsl_pdf/2004/hsl0413.pdf)

## 6 Clothing

Wearing gloves will have a very limiting effect on reducing vibration exposure but they can help to keep hands warm and dry, and therefore sustain good blood circulation.

## 5. How is Vibration exposure measured in detail?

This section should be read in conjunction with the HSE Leaflet for employers, Guidance Note 175 – see hyperlink above.

Employers need to make a list of all the pieces of vibrating equipment they have and then look up the standard data from the manufacturers. Where anticipated usage is likely to exceed the Exposure Action Level (EAL) then controls need to be put in place to bring the actual exposure below the level.

The table below shows an example list of standard equipment and

- respective **vibration magnitudes** measurements in terms of m/s<sup>2</sup>
- contact or 'trigger time' required to exceed the **Exposure Action Value (EVA)**, as set by the Regulations, at which point additional control measures are required to be brought into place to limit an individual's exposure
- the **estimated daily exposure duration** an individual could be subjected to during a normal working day,
- an example calculation of the associated **daily exposure** at the **estimated daily exposure duration**



The “traffic light” system is often used to give different equipment a banding for expected safe operation, including extra controls where required.

NB Multiple use of vibrating tools during a working day - using a number of different vibrating tools during a normal working day will have a cumulative effect in terms of an individual’s **daily exposure**. This must be borne in mind when planning a working day and/or a rota system.

It is possible to use “dosimeters” on equipment to gain measurements of vibration, but this can be problematic on chainsaws and other forestry equipment. Other measurement devices worn by the operator can detect “trigger time” to assist in calculations of actual exposure. Where employers are unsure of the techniques required to produce accurate exposure data they should seek specialist advice from a competent person.

Table showing the different categories of vibration coefficient and the legal thresholds – see HSE INDG 175, Hand Arm Vibration at Work, A brief Guide			
Colour Code	Vibration exposure over 8 hours A(8)		Additional requirements
	A(8) < 2.5m/s <sup>2</sup>	Daily vibration exposure is below the Exposure Action Level (EAL)	No need for further measures to reduce exposure, if manufacturer’s guidance and maintenance is followed. Workers with HAVS diagnosed will still require further controls/surveillance.
	A(8) = 2.5-5.0m/s <sup>2</sup>	Daily vibration over Exposure Action Level (EAL)	Increased risk for developing vibration related diseases for the operator. Controls to reduce exposure needed and health surveillance measures. Workers with HAVS diagnosed will still require further controls/surveillance.
	A(8) > 5.0m/s <sup>2</sup>	Daily vibration exposure exceeds the Exposure Limit Value (ELV)	The level of exposure that should not be exceeded during a normal working day



Example Risk Assessment Table to inform management of Vibration							
Hazard		Risk				Who could be harmed	Control Measures
Vibrating tool	Model	Vibration Magnitude – m/s <sup>2</sup>	Time to reach EAV 2.5m/s <sup>2</sup> A(8)	Estimated daily exposure duration	Daily Exposure A(8)m/s <sup>2</sup>		
Brush cutter	Husqvarna 343R	3.64	3hrs 46mins	e.g. 3hrs	2.2	Operatives	Competent operatives – Regular maintenance
	Husqvarna 323R	4.05	3hrs 3mins	e.g. 3hrs	2.5	Operatives	Competent operators – Regular maintenance
Chainsaw	Husqvarna 339XP	5.09	1hr 56mins	e.g. 3hrs	3.1	Operatives	Competent operators – Regular maintenance Reduce daily work time through supervision and rotation
	Husqvarna 357XP	4.22	2hrs 48mins	e.g. 3hrs	2.6	Operatives	Competent operators – Regular maintenance Reduce daily work time through supervision and rotation
	Husqvarna 395XP	11.74	0hrs 22mins	e.g. 1hr	4.2	Operatives	Competent operators – Regular maintenance Reduce daily work time through supervision and rotation
	Stihl MS260	4.1	2hrs 58mins	e.g. 3hrs	2.5	Operatives	Competent operators – Regular maintenance
	Stihl MS341	3.1	5hrs 12mins	e.g. 3hrs	1.9	Operatives	Competent operators – Regular maintenance
	Stihl MS361	3.6	3hrs 51mins	e.g. 3hrs	2.2	Operatives	Competent operators – Regular maintenance