

## VIBRATION EXPOSURE CALCULATOR

Jim Turnbull, Safety Practitioner and a GCMA Adviser, answers a question from the Helpline.

Secretary At Work: August 2010 *(reviewed October 2012)*

### Question:

Our Greens staff operate power tools that emit vibration almost every day. What are the risks and how can we prevent injury?

### Answer:

Exposure to vibration through the use of hand held or hand fed power tools can lead to serious injury and irreversible long term health effects. Vibration transmitted to the hands from chainsaws, strimmers, compaction plates, hammers drills and breakers etc can disrupt the blood flow to the hands and fingers leading to blanching (vibration white finger) and carpal tunnel syndrome. Symptoms include; numbness, pain, tingling, grip weakness and loss of dexterity.

The Control of Vibration at Work Regulations 2005 and associated guidance provide definitive information and advice on how to assess and control exposure. On July 6th 2010 the transitional period provided under regulation 3 ceased and employees duties were extended to ensure that a daily exposure limit value (ELV) is not exceeded.

### Assessing the risk

The simplest way to evaluate the potential risk to your employees is through the use of the HSE's online calculator:


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

This is an excellent tool that allows you calculate exposure without the need for complex formulas.

There are two critical factors to be aware of:

1. The daily exposure action value (EAV) is 2.5 m/s<sup>2</sup> A(8). This is the level of daily exposure above which you are required to take action to reduce exposure.
2. The daily exposure limit value (ELV) is 5 m/s<sup>2</sup> A(8). This is the maximum amount of vibration that an employee may be exposed to on any single day.

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## HAND-ARM VIBRATION EXPOSURE CALCULATOR

Version 3 June 2005

	Vibration magnitude m/s <sup>2</sup> r.m.s.	Exposure points per hour	Time to reach EAV 2.5 m/s <sup>2</sup> A (8)		Time to reach ELV 5 m/s <sup>2</sup> A (8)		Exposure duration		Partial exposure m/s <sup>2</sup> A (8)	Partial exposure points
			hours	minutes	hours	minutes	hours	minutes		
Chainsaw	3.6	26	3	51	15	26		15	0.6	6
Strimmer	4	32	3	8	12	30	1	30	1.7	48
Lawnmower	2.5	13	8	0	>24		2	15	1.3	28
Tool or process 4										
Tool or process 5										
Tool or process 6										

Instructions for use:

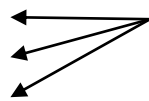
Enter vibration magnitudes and exposure durations in the white areas.  
 To calculate, press the Enter key, or move the cursor to a different cell.  
 The results are displayed in the yellow areas.  
 To clear all cells, click on the 'Reset' button.  
 For more information, click the HELP tab below.

Daily exposure m/s <sup>2</sup> A (8)	Total exposure points
2.3	83

### Using the calculator

We recommend that you download and save the spreadsheet to your computer.

Chainsaw
Strimmer
Lawnmower
Tool or process 4
Tool or process 5
Tool or process 6



In the first column enter the list of tools used during the working day, (to do this you may first need to turn off the workbook protection).

Record the make and model of the tools used for the assessment.

The use of up to 6 different tools can be assessed.

Vibration magnitude m/s <sup>2</sup> r.m.s.
3.6
4
2.5



Enter the vibration magnitude of the various tools in the second column.

This information is usually available from the manufacturer and will normally be considered sufficient to establish the potential level of risk.

However if you are using manufacturers supplied data it is important to remember that the tool must be well maintained and in good order.

