

Bad Vibrations

John Ross, former Course Manager and Master Greenkeeper, is now working to improve health and safety in the turf management industry. This month he turns his attention to the common ailment of Hand Arm Vibration Syndrome – which is actually classed as a disease

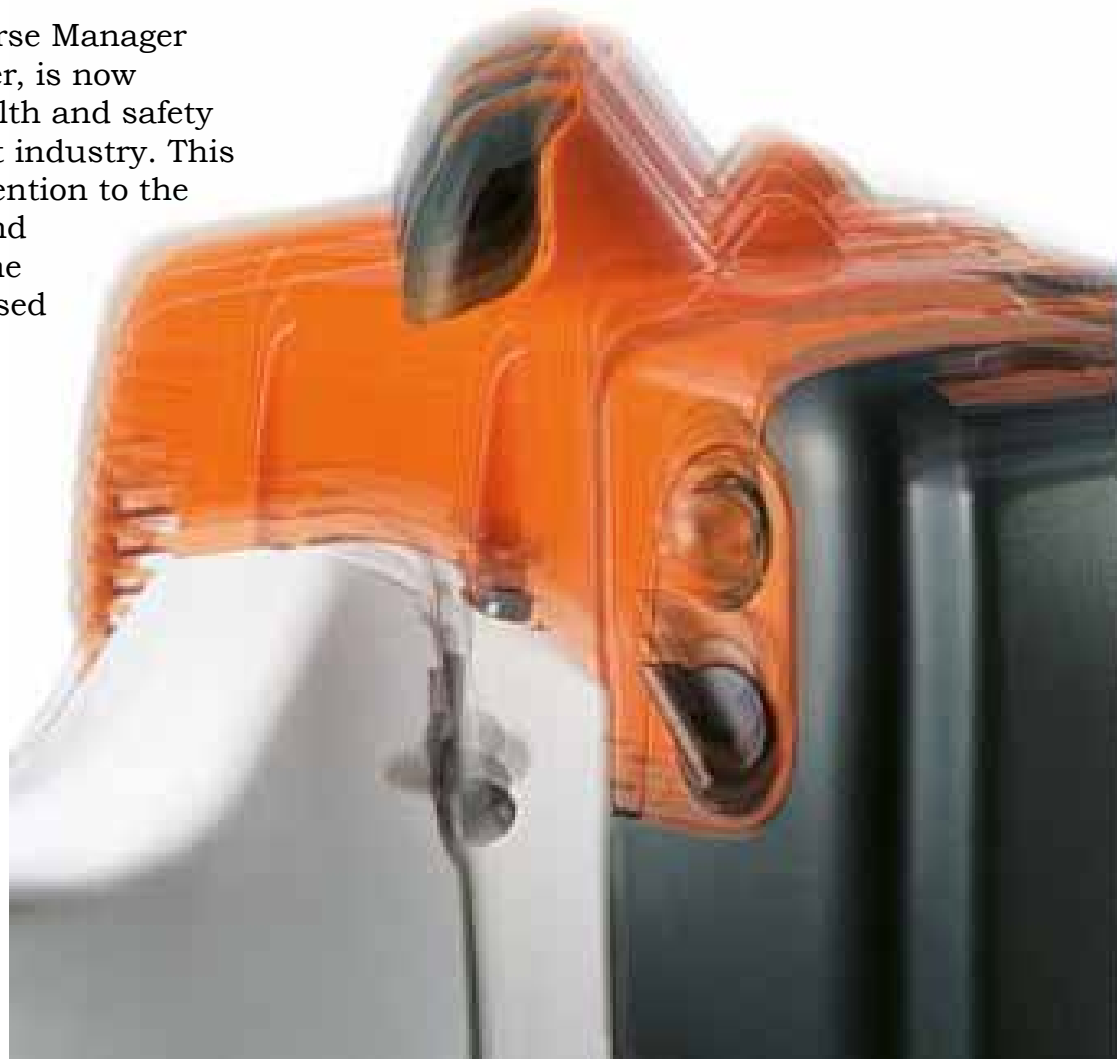
The effects of vibration causing ill health and injury in the workplace are clearly understood. So much so that Hand Arm Vibration Syndrome (HAVS) has been listed as a prescribed disease in the UK since 1985 and is covered in RIDDOR2013(8) as being an occupational disease.

Its occurrence must be recorded by the person designated responsible for managing health and safety in the workplace and reported to the HSE.

So what is HAVS, how do we recognise it and how do we manage in order to prevent it?

HAVS is caused by the continuous use of vibrating machinery and affects nerves, muscles, joints and blood vessels. Symptoms appear in the vascular system which involves the tips of fingers going white (blanching), or the neurological system, which includes numbness and tingling of the fingers and a reduced sense of temperature or touch. Attacks in the early stages of the condition are not continuous and you do not have to be using vibrating equipment for the symptoms to manifest despite the fact they have been caused by that equipment, simply working in cold conditions is enough to trigger the symptoms.

When this occurs and the cold body subsequently warms back up an exaggerated return blood flow can occur that will lead to a throbbing of the fingers and the fingers going red and feeling extremely painful. HAVS will be triggered by conditions that have resulted in reduced blood circulation – and this includes smoking which causes small blood vessels to narrow and can exacerbate the symptoms.



If exposure to vibration continues then the symptoms will spread further up the hand and can even affect the thumb, sufferers will experience joint pain (Carpel Tunnel Syndrome) reduced muscle strength and permanent nerve damage. In turf management the equipment that can lead to HAVS is hand held power tools and hand guided power tools. HAVS does not appear overnight, it is a chronic condition that studies have suggested may take up to ten years to develop. Once it has developed it cannot currently be cured.

Managing HAVS

Exposure to vibration is regulated, and these regulations place a duty on the employer to either eliminate vibration at source, or to lower exposure to as low as is reasonably practicable. What eliminate at source means is taking

physical contact with the vibrating equipment out of the task (using a remote control) or do not undertake the task (does that bank really need strimming?)

However where it cannot be eliminated (yes that bank does need strimming!) eliminate at source means introduce organisational and technical procedures appropriate to the activity and to apply MHSWR1999 (4) The Principles of Prevention.

So what do the regulations say?

As vibration is a workplace hazard, any employer exposing their staff to vibration must conduct a vibration risk assessment. Like any risk assessment it is a tool that enables the manager to record what controls are in place, whether they are sufficient or not, and if any improvements needed. The risk

about the author



John Ross MG

John Ross is a Master Greenkeeper and was a Course Manager for 20 years. After taking redundancy in 2010 he studied for a degree in Health and Safety and is now a member of the Institution of Occupational Safety and Health. He established 'Compliant Grounds' in January 2013 with the intent of providing a qualified competent service to the golf industry - www.compliantgrounds.co.uk

Catch John's 'Accident Causation' seminar at BIGGA's South East Regional Conference on Tuesday 19 November!



EAV

- In applying the principles of prevention the employer should:
- Find other working methods which eliminate or reduce exposure
 - Take account of the work to be done
 - Choose equipment that reduces vibration exposure and replace equipment that is vibrating excessively
 - Ensure equipment is maintained in accordance with the manufacturers' recommendations
 - Provide employees with instruction on HAVS and what's being done to minimise exposure
 - Limit the duration and magnitude of exposure with work schedules and rest periods
 - Provide clothing to protect from the cold and the damp
 - Implement a programme of health surveillance (in its simplest form this means regularly asking staff if any symptoms exist)

ELV

- Reduce exposure to below the limit value immediately
- Identify the reasons for that limit being exceeded and modify measures to prevent it being exceeded again

HSE Vibration Exposure Points Calculator

Vibration M/S ²	3	4	5	6	7	8	9	10	12	15
Points per hour	18	32	50	72	98	130	160	200	290	450

100 points a day = Exposure Action Value
400 Points a day = Exposure Limit Value

way of doing this using a points system introduced by the HSE. Points are awarded to a vibration magnitude per hour, if the points tally for the day reaches 100 you have reached the Exposure Action Value and must take action, if the point tally reaches 400 you have hit the Exposure Limit Value that exposure cannot exceed.

Using the **HSE Vibration Exposure Points Calculator** we can see that equipment with a vibration magnitude of 5 M/S² can be used for eight hours before the ELV is reached 50X8=400 exposure points.

I know from experience as a Course Manager, that much equipment greenkeepers and groundsmen use reaches the EAV, and some reaches the ELV, so we need to know what the duty of the employer is when those levels are reached. Those duties are shown in the table inset right (EAV):

Managing vibration is relatively easy once exposure levels have been established. The easiest way to do this is to put a timeframe on how long a piece of equipment can be used for, take into consideration breaks and rest periods and rotate tasks amongst the team all to ensure that points exposure on the HSE calculator remains below 400.

When purchasing equipment consider the vibration magnitude as part of your purchasing policy and buy the most suitable piece of equipment for the task but with the lowest exposure levels.

Inform your staff about HAVS and what the symptoms are, and tell them to report to you immediately if any symptoms are experienced and maintain equipment and ensure that it is set up correctly.

assessment should determine who is exposed, the magnitude of exposure and the duration of exposure for all equipment. It should also identify vulnerable workers (those with early symptoms of HAVS) and young workers with developing bodies who are more susceptible to Musculo Skeletal Disorder.

You cannot manage what you cannot measure' is a well-known adage. Vibration can be measured because it is an oscillation around a fixed point and is measured like noise, in amplitude (the extent of oscillation) and frequency (how often it occurs).

In mechanical terms the measurement is expressed in Metres per second sq (M/S²), knowing the vibrating levels of machinery is the starting point to implementing procedures.

The amount of vibration you can be exposed to is subject to CVWR05 (4) Exposure Action Values (EAV) and Exposure Limit Values (ELV). The EAV is the amount of vibration over which the employer has to take action. The ELV is the maximum amount of vibration an employee

can be exposed to in a day, these are both measured over an eight hour working period so is referenced as (A8). Unlike the regulations for noise Personal Protective Equipment is given no consideration.

Those values are an EAV of 2.5 M/S² (A8) and an ELV of 5 M/S² (A8). The data for these levels is provided by the manufacturers of the equipment and is published within the operators' manual. We must bear in mind that this is a measurement taken as factory new, and that equipment deteriorates, gets damaged, and is not always maintained as it should be.

The measurement provided by the manufacturer also does not consider wear and tear, service requirements, damaged parts, or blunt blades - all of which add to the vibration exposure. This means that any employer exposing employees to vibration also has a duty to measure to determine actual vibration levels.

Once vibration levels are established it is easy to put in place procedures that keep exposure levels below the ELV, the easiest

