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WILL THE NEW CONTROL OF VIBRATION AT WORK REGULATIONS SHAKE UP THE SYSTEM?

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1 INTRODUCTION

Statistics from the UK Health and Safety Executive (HSE) show that by the late 1990s over 4 million workers were exposed to Hand Arm Vibration (HAV) at work. Of these, 1.2 million were exposed above prevailing action levels. Additionally, some 300,000 workers had been diagnosed with the associated condition, Hand Arm Vibration Syndrome (HAVS), with 36,000 at severe levels of injury.

In comparison, QBE's UK employers' liability (EL) portfolio, reported almost 3,500 outstanding HAVS claims, having reserves of over £27m in 2004. This was against a backdrop of increasing numbers of new claims, with settlement costs expected to reach over £4m by year-end 2005 and a small but significant number of claims estimated at over £50k each.

Some employers believe that the new Control of Vibration at Work Regulations 2005 introduce all-new duties to protect employees from exposure to vibration at work. In reality however, the new legislation effectively exchanges implicit requirements with explicit duties on employers.

This paper discusses the principal requirements of the new regulations from a claims perspective and considers how this change could impact the way future HAVS claims are settled. It explores a Risk Managed approach to ensure future vibration exposure is lower, resulting in fewer cases of HAVS, whilst concurrently looking at steps the employer can take to improve claims defensibility; the adoption of which will present their business more favourably to employers' liability insurers.

2 HAND ARM VIBRATION (HAVS) AND HAND ARM VIBRATION SYNDROME (HAVS)

2.1 Exposure to Hand Arm Vibration (HAV)

Exposure to HAV will arise in tasks where vibration is transmitted to the body. It is commonly associated with hand-held power tools, hand-guided equipment and tasks involving the holding of materials or work pieces that are being presented for machining. Its associated condition, HAVS, was traditionally associated with the heavier manufacturing trades where high levels of vibration transmission, such as historically found in hand-held grinders and riveting guns were experienced.

Since HAVS is a function of the frequency of a vibration producing task, the magnitude of the vibration levels generated and the individual's personal susceptibility, the potential for the syndrome is now recognised in tasks once considered marginal, such as those utilising hand-held orbital sanders, strimmers, ratchet guns, and so on. Date of knowledge and hence, the date after which it is deemed that steps to prevent injury ought to have been taken, should be important to employers, who will need to ensure they are not retrospectively penalised for failing to keep abreast of associated developments in safety standards.

2.2 Injuries associated with exposure to HAV

Exposure to HAV can lead to damage to the structure and tissue of the hands, eventually leading to HAVS and is usually grouped into 5 types of disorder:

Vascular	Neurological	Bone & Joints
Muscle	Other, such as, headaches, sleeplessness	

Symptoms may include:

- Impaired circulation causing painful blanching attacks to the affected fingers (vibration white finger, dead finger), often triggered by cold or wet conditions
- Reduced sense of touch and temperature
- Numbness and tingling
- Stiffness of the joints
- Reduced grip strength and manual dexterity
- Carpal tunnel syndrome

A HAVS sufferer may experience some, but not necessarily all, of the range of symptoms.

3 PERSONAL INJURY CLAIMS OVERVIEW

3.1 Civil Claims Structure

For a HAVS claim to succeed, the following liability test would normally need to be satisfied:

Is the claimant owed a duty of care & is the defendant in breach of that duty & did the breach cause the injury of which the claimant complains?

It is highly likely that in most employer/employee situations, a duty of care is owed. If so, the allegations surrounding the claim would be fully investigated and an assessment made of the employer's compliance with all relevant legislation, guidelines and standards. Where a breach of duty is established, medical records and evidence taken with the history of symptoms will be paramount in establishing a causal link between exposure and injury.

3.2 HAVS Claims Awards

The Stockholm Neurological Scale is used to medically determine the severity of a HAVS injury and similarly, in valuing HAVS claims. Whilst average settlements may not appear to be particularly high, seeing typical injury damages - pain, suffering, loss of amenity (PSLA) - in the order of £500 to £5,000, such claims are rarely an isolated case. It is not uncommon to see multiple claims arising from several employees, with a significant aggregate impact overall. Claimants' legal expenses can also be a major proportion of the total award, impacting further on insurance costs to the employer.

In extreme cases, the total cost of a single claim can be significant, particularly where the condition is accentuated, involving a relatively young employee who has developed to an advanced stage of HAVS. Here, it is the claimant's projected financial loss together with legal fees, rather than the PSLA award, that make up the bulk of the claim. An example of this type of financial loss may be:

Hypothetical claimant age 40, assessed as 3R5/3L5 2SN on the Stockholm scale	
Pain, suffering and loss of amenity	**£15,000**
Past loss of earnings, 1 year net	**£15,000**
Future loss of earnings (net wage by yrs of employment adjusted)	**£126,525**
Loss of congenial employment	**£5,000**

Pension loss	**£10,000**
Care/services	**£30,000**
Costs	**£25,000**
Total	**£226,525**

3.3 Short Tail or Long Tail?

The recent judgement in *Brookes v South Yorkshire PTE & others,* changed the protocol for apportioning HAVS damages between different culpable insurers, from a l*ong* tail condition, (apportioned over a period of career exposure), to a short tail condition. Effectively, HAVS is now compensatable only for those periods of negligent HAV exposure following manifestation of the injury and any subsequent deterioration. The logic is in the speculation that had the claimant's exposure stopped before onset of symptoms, then compensatable injury would not have arisen.

To the claimant, this probably makes little, if any, difference since the amount of compensation is not being questioned. The employer may also at first regard this as a mere claims-handling technicality. However, its effect on underwriting is that strategically, those industries with ongoing HAV exposures may become less attractive, since future claims will inevitably have damages apportioned over a shorter timescale, resulting in future insurers picking up a larger share of the claim. Equally, insurers who have moved away from the HAV-related sectors in the last five years may not be tempted back, knowing that their financial exposure from HAVS is much higher than before. The underwriting alternative in both cases may be for a higher premium to be charged for industries where HAV exposure is ongoing. This is certainly not good news for those businesses, particularly in the manufacturing sector, who rely on a competitive underwriting market in order to maintain a viable presence in the UK. Consequently employers need to be alert to the market's appetite for this insurance risk.

4 VIBRATION LEGISLATION:

4.1 The Current Situation

The employer is already required, legislatively, to prevent HAVS injuries, though not explicitly, via:

- The Health and Safety at Work etc Act
  - General duties of employers, employees and equipment suppliers
- The Management of Health and Safety at Work Regulations
  - Risk assessment, health surveillance, employee competence and training
- The Provision and Use of Work Equipment Regulations
  - Suitability and maintenance, operator competence, information and training
- The Workplace (Health, Safety and Welfare) Regulations
  - Safe working environment
- The Supply of Machinery (Safety) Regulations
  - Safe by design, safe use instructions, provision of vibration level information
- The Reporting of Injuries, Disease and Dangerous Occurrences Regulations
  - Report cases of vibration white finger
- The Safety Representatives and Safety Committee Regulations
  - Consult with employees

This legislation, together with established technical standards and supporting guidance will continue to apply, being also the basis upon which HAVS claims are currently assessed. The new regulations introduce additional explicit duties and thus, new avenues for breach of statutory duty are available to claimants.

4.2 The Control of Vibration at Work Regulations 2005

EU member states have until 6 July 2005 to introduce the regulations and, from a claims-impact perspective, the principal elements are:

4.2.1 Introduction of an Exposure Action Value (EAV)

This is the level of daily exposure that, if exceeded, specific action is required to reduce the risk. A value of 2.5m/s^2 normalised to a working day of 8 hours duration is applied. However, there are no established safe levels for vibration exposure and as such, the EAV of 2.5m/s^2 does **NOT** constitute a safe exposure level. Similarly, HAVS claims can still be successful even below this level.

4.2.2 Introduction of Exposure Limit Value (ELV)

This is the level of daily exposure that must not be exceeded. A value of 5.0m/s^2 normalised to a working day of 8 hours duration is applied.

4.2.3 Calculation of Equivalent Daily Dose

Average daily exposure, normalised to 8 hours and termed A(8), was calculated historically by measuring vibration magnitudes in three orthogonal axes, but selecting the higher, dominant axis value. The new regulations require that vibration is measured taking into account the values of all three axes, with the resulting vector sum value being used to express A(8). Both values have m/s^2 units, but the vector sum calculation is greater by a factor of between 1.0 and 1.8, representing a significant reduction in vibration levels that are considered acceptable.

Additionally, the regulations permit for weekly averaging where HAV exposure is infrequent or sporadic. Whilst a sensible option, this does not justify exposure to unacceptably high vibration levels on the basis that, over time, the daily average will be below 2.5m/s^2, particularly given the comment above regarding the relative “safety” of this value. From a risk management perspective, where weekly averaging is adopted, a much lower EAV target ought to be adopted, with 1.5m/s^2 or less being a preferred value for some insurers.

4.2.4 Risk Assessments

The employer is required to carry out suitable and sufficient risk assessments, and then implement appropriate controls to eliminate or control vibration to the lowest level practicable below the EAV.

4.2.5 Health Surveillance

Provide health surveillance to those at risk.

4.2.6 Information & Training

Affected employees to be provided with relevant information, instruction and training.

4.2.7 Equipment Safety Standards and New Legislation

To allow employers time to upgrade or replace non-conforming equipment, a transitional period permits equipment first supplied prior to 6 July 2007 until 6 July 2010 to meet the new standards,

but only where technological and organisational improvement is impractical. In the civil courts, this would be unlikely to present an adequate defence against associated personal injury claims.

5 RISK MANAGEMENT STRATEGIES – BACK TO BASICS?

Hierarchical risk management strategies should always first consider elimination, then alternatively, a combination of substitution and reduction measures. Similarly, initiatives to eliminate HAV-related processes at source would be the preferred option, though in many instances, the need for some process involving HAV is unavoidable, meaning employers should manage the risks accordingly.

To prevent HAVS and to concurrently ensure a framework for successfully defending associated Personal Injury claims in the future, a management system is required that delivers:

- Risk assessments that are suitable and sufficient
- Systems of work that minimise exposure
- Employees who are properly trained in HAVS risk control
- Work equipment that is suitable for the task and properly maintained
- Health monitoring for those at risk
- Effective record-keeping systems to retain evidence

5.1 Risk Assessments

The regulations and associated guidance explore what is deemed to be 'suitable and sufficient' to satisfy the legislation and thus, the criminal courts. For determining A(8) values, exposure levels could be calculated using data available from manufacturers or other generic work equipment databases, or alternatively, via a technical field assessment of the work equipment in use.

From a civil perspective, the employer needs to satisfy the court that a claimant's exposure was not excessive in the specific work activities undertaken, implying that technical risk assessments are needed to establish accurate, field-condition exposure values. Furthermore, periodic reassessment is required to validate the original. Considering the various activities, tools, employee numbers and different materials involved, delivering risk assessments to satisfy the civil courts can be quite onerous. It is also evident that adequate resource and project management is necessary, without which, defending future claims could well be a non-starter. In recognising that different standards apply in criminal law and civil law, employers need to ensure that assumed A(8) exposure values accurately reflect true conditions in the workplace. Similarly, an A(8) value 2.5 m/s^2 is not a safe exposure level and employers should target a lower value, with 1.5m/s^2 or less being preferred.

5.2 Record Keeping

A common failing when attempting to defend historical claims is in the lack of available documentation. In order to defend future claims, an evidence-based approach will be critical, particularly given the time lag between initial exposure and the claim being made. This is particularly true when the process is no longer undertaken by the business. Employers need to look at how comprehensively they record relevant information, which could be beneficial in defending future claims, and ensure that it is archived in a retrievable manner.

5.3 Safe System Of Work (SSOW)

The purpose of a SSOW is to identify a task methodology that ensures a consistent and safe approach is adopted such that A(8) values are always at a minimum and in any case, maintained below the EAV. From a claims-defence viewpoint, documented SSOWs can be vital for demonstrating that a formal procedure exists and forms part of task-specific training.

In preparing a SSOW, employers need to consider where variations may affect overall exposure levels. The SSOW itself will depend on the specifics of the task in question, making it difficult to prescribe against all the possible permutations involved, though will probably relate to ensuring:

- Selection of the correct equipment for the task
- Selection of the correct tool for the material being worked on
- Tool maintenance
- Accurate total exposure values, assessed via reliable cycle time and repetition frequencies
- Accurate assessment of the effect of multiple tasks, using varying tools and trigger times

A review of each aspect of the work activity should assess how it can impact, positively and negatively, on the A(8) value. Once understood, a system of work can be devised that ensures all personnel under all conditions will be able to undertake the task in relative safety.

5.4 Time-Restricted Control

Restricting operators' trigger times, for instance by job rotation, is a method often adopted where high-vibration tasks are deemed unavoidable. In defending an associated claim, the employer would still need to show how that particular element of the work had been managed. A SSOW therefore needs to consider not only how to restrict trigger times, but also how this is to be evidenced and archived.

In-line devices are available for power tools that monitor machine "on-time" and are certainly a step in the right direction, though not a solution in isolation. Their ability to measure trigger times with reasonable accuracy is arguably best used as a support tool for the technical risk assessment exercise, rather than monitoring daily usage per se. In time, it may be that integrated vibration management software solutions will be commercially viable for the open market.

Ultimately, ensuring the operator's A(8) level is maintained below 2.5 m/s^2 is challenging where high vibration tools are used. Consequently, employers should always consider a process re-design to minimise trigger time and concurrently replace non-compliant equipment with safer alternatives, thereby ensuring exposures are always below the EAV without the need for artificial task breaks.

5.5 Employee Training

From a claims defence perspective, it is vital that employers can prove employee competence and in particular that appropriate and relevant information, instruction and training has been delivered. This process should be supported with evidence of the nature of training provided and should also detail how competence achievement has been validated.

Gaps in the competence defence normally appear as allegations that the training was inadequate or insufficient, or that adequate training was given but competence was not attained, or that the training and competency were adequate but evidence supporting the process is flawed

The core elements of competence training for any primary workplace task should include:

- A reference to the task risk assessment and documented SSOW
- Explanation of the task hazards and risk, explaining the findings of technical surveys
- Explanation of controls needed to minimise risks as detailed in the SSOW
- Demonstration of the safe manner to undertake the task
- Validation of the trainee's understanding
- Validation of competence and authorisation to undertake the task
- On-the-job validation that the individual is carrying out the task as per the training

Aligning this model to HAV tasks, records need to validate the trainee's competence in relation to:

- Content of relevant procedural documentation, for instance risk assessment & SSOW
- Scheduling, trigger times and/or job rotation requirements
- Equipment suitability for a given task/material
- Correct methodology to minmise vibration generation
- Equipment maintenance & operators' duties
- Defect reporting mechanisms
- Health effects
- Recognition and reporting of symptoms
- Occupational health surveillance arrangements

5.6 Work Equipment Maintenance

A(8) values are used to determine the maximum period a given task can be undertaken in relative safety. Where the A(8) value is less than 2.5 m/s^2, employers may be tempted to interpret this as explicit justification to use the equipment for a full working shift, even though the new regulations require that vibration exposure is minimised. This assumed value was determined when the equipment was used in a particular state, but the condition of the equipment, and particularly the tool, can cause significant variation in the A(8) values recorded. This is particularly true where, for example, tools become imbalanced and worn. Additionally, individual operators will use the equipment in slightly different ways, generating different vibration levels during operation. If the declared A(8) value is to be credible, then it has to be shown that the equipment and tools used over a period of time were in a condition representative of the original (and subsequent) technical risk assessments. Ideally, a regime of routine condition-based monitoring and/or planned preventative maintenance schedules should be in place.

Records of equipment maintenance are similarly critical when assessing HAVS claims as these provide defendants with the basis for argument that exposure levels were unlikely to have fluctuated significantly from the declared A(8) value. Without robust equipment maintenance records, defending HAVS claims will be very difficult.

5.7 Frequency of the Technical Risk Assessments

Since the new regulations do not specifically stipulate the need for a technical risk assessment, then neither do they explicitly stipulate the technical reassessment period. A risk-managed approach would suggest that some re-validation of the original assessments is necessary, with an annual repeat assessment seeming logical. The frequency should ultimately be determined by a risk-based programme that is governed by, and can react quickly to changes in work patterns, equipment usage, trends in the A(8) value or incidents/deterioration of HAVS symptoms. Where factors are present that could adversely affect the declared A(8) value, then the reassessment should be undertaken on a more frequent basis and vice versa.

5.8 Health Surveillance

HAVS is a serious, debilitating condition that can eventually lead to the loss of hand function and may certainly affect employability. Where HAVS is identified at an early stage, reducing exposure is likely to delay further deterioration, so health surveillance is a critical component of the employer's reactive risk management system. It is also a specific requirement of the new regulations, whose supporting guidance identifies the categories for inclusion as:

- Employees exposed above the EAV
- Employees at risk due to a link between their exposure and HAVS
- Employee who have a diagnosis of HAVS (even when exposed below the EAV)

This suggests that health surveillance is not necessarily required where the A(8) is below the EAV, unless explicitly identified through the risk assessment process or reported symptoms – ie after symptoms have manifested. A risk managed approach however, would suggest that all personnel who are frequently exposed to HAV should be included in a risk-based health surveillance programme, enabling a subjective clinical assessment to be made. When defending claims, it is imperative that an employer can show all reasonable steps have been taken to prevent and detect the onset of HAVS, meaning health surveillance needs to be employer-driven, not employee-led.

Early assessment of newly exposed workers is also essential since susceptible individuals can develop symptoms in 6 months or less. An effective health surveillance programme needs to be established and operated by occupational health professionals who are suitably trained and competent in HAVS occupational health management. When health surveillance is required, it should be carried out:

- Pre-employment (or baseline assessment) and 6 months thereafter
- Pre-job change to HAV tasks; and
- Routinely on a minimum annual basis

6 CONCLUSIONS

Historical exposure to hand arm vibration has led to a significant increase in associated claims which are usually difficult to both assess and defend due, in many instances, to lack of data employers generated or retained from operations going back many years.

The Control of Vibration at Work Regulations 2005 places explicit duties on employers to assess and properly control the risk associated with exposure to vibration at work. The primary changes revolve around risk assessment and control, with the introduction of a new exposure action value and exposure limit value, together with a new method for determining the daily exposure value. Health surveillance is also an explicit requirement with defined criteria.

Compliance with the legislation will reduce the long-term incidence of HAVS, with a consequent reduction in associated claims once historical-related exposure claims have subsided. Where HAVS claims do arise, the key defences used by insurers will likely involve arguments based on information from one or more of the following sources:

- Technical risk assessments to demonstrate definitively that exposure was not excessive
- Maintenance records to indicate equipment was properly maintained, such that the A(8) did not fluctuate significantly
- Training records to adequately reflect the competence of the individual
- Health surveillance to react quickly to symptomology

Employers who comply with the new regulations and concurrently operate a risk management system to embrace these elements, will eventually see a reduction of HAVS claims and be much better placed to defend those that do arise. As a result, those organisations will be a more attractive proposition to the insurance market, and employers' liability insurers in particular.

7 AUTHOR BIOGRAPHY

Philip Bladon joined QBE as a Liability Risk Manager in 2003, having previously worked in the mining and the metals industries. The last 10 years has been spent working with insurers, where he has specialised in liability risk control, primarily in the high-hazard industries. Philip is a European Engineer, Chartered Mining Engineer, Member of IMMM and Chartered Member of IOSH.