



3.8 *HAND-ARM VIBRATION*

Guidance and Procedures

This document is intended to provide guidance and support to Managers, Supervisors and employees on the standards to be applied to minimise the health risks that are associated with the use of vibratory tools and equipment.

The Council recognises that where the risk cannot be avoided then there is a need to reduce exposure to prolonged and regular use of high level vibration hand-held tools and hand guided equipment and that effective controls are required to minimise the risk of injury to employees.

Whilst accepting the need to continue and improve delivery of services, the Council agree that all reasonably practicable steps will be taken to achieve this risk avoidance and minimisation.

Definition

Hand Arm Vibration syndrome (HAVS) is a disorder which affects the blood vessels, nerves, muscles and joints of the hands and wrists and arms. If ignored the condition can become severely disabling and may cause long term health effects such as nerve damage, loss of sensation, pain and discomfort in the fingers hands arms and other areas of the body.

The best-known form is “Vibration White Finger” (VWF).

The symptoms of VWF are intermittent blanching or whiteness on the affected parts of the finger, which leads to a tingling sensation in the fingers, numbness, coldness, pain and loss of dexterity of the fingers.

Any person, who suspects that they may be suffering from any of these symptoms, **must** inform their immediate Manager without delay.

The Council has a moral and legal obligation to minimise the risk of exposure to its employees.

Summary of Legal Duties and Vibration Exposure Limits.

Employers and employees general duties under the Health & Safety at Work etc Act 1974 apply.

In addition, the Control of Vibration at Work Regulations came into force on the 6th July 2005 and give detailed guidance on how to comply with the requirements and what employers have been expected to do to control HAV's since 1994, replacing HAV (HSG 88, 1994).

Managers must apply the guidance in this document to;

- Ensure the health and safety of employees
- Assess the risks from vibration
- Adopt hierarchy of measures to achieve control – eliminate at source, or reduce to lowest level reasonably practicable
- Provide information, instruction and training for employees
- Provide and maintain a programme of planned preventative health surveillance.

<http://www.hse.gov.uk/pubns/indg175.pdf> provides a link to the HSE leaflet and should provide Managers and Supervisors with sufficient information to ensure a good understanding of controlling vibration risks while at work.

Key Principles – Hierarchy of Risk Control.

Operational Managers should adopt the following methods for reducing risk of vibration in order of effectiveness:

- Consider the avoidance of using tools that may produce harmful levels of vibration. This elimination of harmful equipment should be carried out at the planning stage where scheme designers and operational managers should consider alternative mechanisation or alternative, vibration free processes and systems of work. For example, replacing flagged pavement areas with a flexible coating which would eliminate the need to use hand held vibratory cutting tools during installation and maintenance. However, the significant risks from introducing alternative work methods must be considered and assessed.
- If the use of vibratory equipment cannot be avoided then consideration of vibration levels of plant and hand held equipment must be taken at the procurement stage. This selection process should ensure that all equipment has been properly rated and presents the least possible risk of vibration rates to the potential user. Lifelong costs of plant and equipment should be considered to ensure that the tools and accessories can be maintained or replaced when necessary.
- Ensure there is a programme in place to replace old, damaged and harmful power tools with suitable, modern, efficient, ergonomic, vibration reduced types. All equipment should be regularly reviewed and audited to ensure inefficient tools are discarded and quarantined/scrapped.
- Selection of appropriate consumables (e.g. better balanced and fitted grinding wheels, cutting blades and drill bits) and replace them at regular intervals. This will ensure that the point of contact is as efficient as possible and bearings are correctly balanced to minimise distortion.

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- Reduce user's exposure (trigger time) to vibration through planning and job rotation.
 - Ensure suitable and sufficient assessments of risk from vibration are undertaken and reviewed regularly by a competent person
 - Ensure that there is a schedule in place for the appropriate repairs, testing, retesting and maintenance of equipment by an accredited competent person(s) and in accordance with the manufacturer's recommendations.
 - Ensure that there is a quarantine system in place where defective equipment is withdrawn from use and conspicuously labelled to prevent use until repairs are carried out.
 - Promote health awareness campaigns in the workplace which would include how operators can pre warm and maintain heat in their hands and fingers before using vibratory tools especially during inclement weather.
 - Provide employees with adequate training, information and instruction on safe use of vibratory equipment and the potential risks to health in the event of miss-use and not following the exposure timeline guidance.
 - Provide appropriate health surveillance from our Occupational Health Unit who manage the HAV health surveillance programme.
 - Provide appropriate PPE
 - Consider disciplinary measures should operatives not follow the above risk control measures.

As stated above, the most effective way to control risks from vibration is to design out or re-design work processes, so that employees are not exposed to the risks from vibration at all.

Managers should try to plan working methods to avoid exposing employees to vibration. In doing so, ensure that any new methods do not introduce any other significant health and safety risks.

Look to avoid or minimise the need for operations and equipment which exposes employees to excessive levels of vibration.

Risk Assessment.

This guidance and associated links together with knowledge of local working procedures should enable managers to identify tasks which present vibratory risks into a suitable and sufficient vibration risk assessment for their service area. A suitable and sufficient risk assessment is one where;

- All tasks which present a risk from HAV's are identified.
- The type of equipment that is appropriate for the task is selected and used correctly.

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- The risk assessment identifies a soundly based estimate of employee's exposures and a comparison with the exposure action value (EAV) and the exposure limit value (ELV).
 - The unavoidable risks have been identified
 - Individuals who may be more at risk or more susceptible to risk have been identified
 - The assessment records the steps you plan to take to control and monitor the risks
 - Appropriate health surveillance is introduced for all affected employees

The purpose of your risk assessment is to;

- Identify where there is a risk to employees, so that you can produce an action plan for controlling exposure and manage the risk in accordance with the requirements of the Control of Vibration at Work Regulations.
- Determine your employee's daily vibration exposure with enough accuracy to establish who is likely to be exposed at or above the exposure action value or the exposure limit value.
- Identify any additional information which might be needed for the action plan, including how the work processes or work equipment can be replaced or modified to control vibration exposures, whether any special training is required, who should receive health surveillance and how it is applied.

Consider employees whose health is at particular risk, for example, those with a history of HAVs, musculoskeletal conditions affecting the arms, wrists or shoulders.

If an employee has any other pre existing condition which may affect the blood circulation (e.g. diabetes) you must take advice from our Occupational Health Unit regarding that person's fitness to work with vibratory tools.

Communicate information about vibration risks and control measures using the managers and employees HSE Guidance and this manual document.

Talk to your employees about HAVs during site visits, tool box talks and team briefs and encourage them to report symptoms.

Information, Instruction and Training

Employees at risk from HAVS, must be provided with information, instruction and training in order to raise awareness of the vibration risk control measures.

This will include encouragement for the reporting of symptoms. Managers and Supervisors will then take the appropriate action to minimise identified risks.

Employees **must** report;

- Unsuitable plant equipment and attachments
- Unsafe operational practices where vibration exposure could be avoided or minimised
- Numbness or tingling in the fingers
- Any difficulty in dexterity and handling small objects
- Episodes of fingers going white (blanching) then becoming red and painful on recovery (particularly in the cold and wet). During these attacks the fingers feel numb.
- Joint pain and stiffness in the hand and arm and reduced grip strength.

Managers and Supervisors can access the Health and Safety section for additional site specific assistance and guidance in controlling exposure to vibration.

What is Vibration Magnitude and where can I obtain figures?

Vibration magnitude is the level of vibration at the hand position on the tool handle. It is expressed as an acceleration value in metres per second squared (m/s²).

Manufacturers of tools and equipment have a legal duty to provide you with the equipment's vibration emission value.

However, many will be tested and declared under laboratory conditions and therefore underestimate that produced in real use. When contacting suppliers or manufacturers through procurement, managers should ask for values that represent real life use in circumstances that the tool will be used.

The vibration information that you use to estimate exposures should have been measured on tools similar to those in your work area and broadly similar operating conditions.

Consider factors such as;

- Type of equipment (road breaker, whacker plate)
- Power source (electric, pneumatic)
- Class of equipment (power rating, operating speed, size or weight)
- Any anti vibration features (suspended handles)

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- The task for which the equipment was used when the vibration was measured (e.g. breaking concrete, grinding steel).
 - The material being worked
 - Any accessories or inserted tools (type of chisel or grinding disc).

Assessing Exposure Time.

Once vibration magnitude is known or estimated you need to identify the amount of time for which an employee is exposed in a day. This is “contact time” with the tool, or “trigger time”, not the actual time spent in the workplace as much of this time may not involve use of the tool itself.

Careful monitoring of the log book entries must be carried out to ensure there is no sharp increase or large deviation from normal use of vibratory tools.

Managers should refer to the manual provided by our equipment assessor.

Recording and Calculation of Exposure.

All employees who use hand held vibratory tools will be required to formally complete a daily log book which will be used to record the

- number of minutes they have used any vibratory tool,
- the tool being used and
- the area/task where it has been used.

This log book will be handed in to their immediate supervisor who will ensure that all of the details are inputted on to the approved database.

The calculation will ensure that any exposure does not exceed the 2.5m/s² A (8) as laid down in the HSE Guidance.

The accumulated exposure rate will be calculated using the HSE measuring tool and the accumulative results will be made available to each operative.

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

The person inputting the data should be aware of any sharp increase of exposure levels and report any excessive use to the operational manager without delay.

Health Surveillance

The law is very specific about what is appropriate health surveillance, based on the assessment of risks to health, and has set out the following four basic criteria:

1. There is an identifiable disease or other identifiable adverse health outcome
2. The disease or health effect may be related to exposure
3. There is likelihood that the disease or health effect may occur
4. There are valid techniques for detecting indications of the disease or health effect

The purpose of health surveillance is to protect the health of employees, by early detection of adverse health effects that might be attributable to exposure to hazardous substances or other workplace hazards.

Health surveillance will assist with the evaluation of control measures, through the collection of measurements and data, with the aim of bringing about improvements in the working environment through the reduction of exposure of employees to hazards.

Regulation 7 of the Control of Vibration at Work Regulations 2005 requires employers to provide suitable health surveillance where the risk assessment indicates a risk to the workers health. Workers exposed in excess of the daily exposure action value of $2.5\text{m/s}^2 \text{ A(8)}$ should be under suitable health surveillance.

Health surveillance should be provided for;

- Employees who are likely to be regularly exposed above the daily exposure action value
- Employees likely to be occasionally exposed above the daily exposure action value where the risk assessment identifies that the frequency and severity of exposure may pose a risk to health.
- Employees who have a diagnosis of HAVs even when exposed below the daily exposure action level.

The purpose of health surveillance is to identify any vibration related conditions/diseases at an early stage and prevent progression and disability. It also serves as a monitoring tool to check the effectiveness of your vibration control measures.

All employees who are or are likely to be exposed to vibration at work will undergo a health surveillance programme including assessments conducted by our Occupational Health Unit (OHU) and referral to an Occupational Health Physician where necessary. This will include pre-employment and annual screening, irrespective of whether employees report symptoms.

Managers will ensure that they inform our OHU of all employees who use vibratory tools so that the following programme can be arranged and followed;

Timescale of Surveillance.

The Health and Safety Executive has introduced a tiered approach to health surveillance for HAVs which has 5 distinctive steps known as the tiered approach.

Tier 1

This applies to pre-employment screening or before exposure to HAV. Employees with pre-existing Carpal Tunnel Syndrome or Reynaud's Disease or other pre existing damage to the nerves or blood supply to the hands should not be exposed to HAV. Care should be taken with those who may be more prone to sensor neural damage such as peripheral neuropathy from Diabetes Mellitus.

A HAVS questionnaire is completed by new employees under the New Starter programme or for employees who may use vibratory tools for the first time through job transfer or retraining for example. The questionnaire is in confidence between the employee and the OHU practitioner. Employees with symptoms will be referred to our OH Physician who will determine whether the employee is fit to work with vibratory tools. This will provide the Council with up to date information regarding the new starter's present health status of the individual.

Employees who are suffering from HAVs should be considered for alternative duties to prevent their condition worsening.

This Tier 1 process will develop into the regular Tier 2 level, which all employees are requested to undertake.

Tier 2 Annual Screening.

Annual screening can be carried out by a designated 'competent person' who may not be medically qualified using a questionnaire that contains standard questions to assess the presence of symptoms that may be related to HAVS. The self administered HAVS questionnaire asks about certain symptoms. This function is currently carried out by our OHU.

<http://www.hse.gov.uk/vibration/hav/advicetoemployers/asquest.pdf>

Managers must ensure that these questionnaires are completed and returned to the OHU within the set deadlines. The records and database will be managed by our OHU.

If an employee answers "Yes" to any of the questions on the questionnaire this does not mean that HAVS has been identified, however, managers should consider alternative duties which will reduce exposure to vibration.

Any employee indicating symptoms should be referred for Tier 3 assessment.

Employees must report any symptoms that occur between the annual screening periods to their supervisor without delay.

Tier 3 Clinical Assessment.

This assessment is carried out by a qualified person, usually our Occupational Health Nurse. This stage of health surveillance should establish whether the symptoms are suggestive of a HAVS diagnosis and begin to exclude other potential causes.

At this stage, the employee must be referred to Tier 4 if the assessment shows indications of HAVS.

The assessment is not a full medical examination, but a targeted assessment directed at the vascular and neurological function in the hands and arms, together with a limited musculoskeletal examination including grip strength, manual dexterity tests and the completion of a questionnaire.

Tier 4 Formal Diagnosis.

An Occupational Health Doctor based assessment to exclude all other potential causes of symptoms and give a definite HAVS diagnosis.

The OHD will report the diagnosis to the employee and manager with appropriate advice and information regarding control and documentation of exposure and follow up arrangements and fitness to work recommendations.

When cases of HAVS and Carpal Tunnel syndrome associated with exposure to vibration are diagnosed by the OH Doctor, the Doctor will write to the employee and manager informing them of the diagnosis.

It is at this stage that the Manager has the statutory responsibility to report the disease to the HSE using the reporting form F2508A.

<https://extranet.hse.gov.uk/lfserver/external/F2508AE>

Managers will receive details of the employee's fitness status;

- Fit/unfit/fit with restrictions for work with vibratory tools
- Advice on compliance with restrictions
- Date of next review
- If the employee has given consent, details of severity on the Stockholm Scale.

Where an employee is no longer fit then managers must arrange alternative work without exposure to HAVS.

If the employee is declared fit, but is suffering from HAVS arrangements must be made to reduce exposure taking into account any advice on restrictions from OHU. For example, reorganising the employees work duties to reduce exposure.

If any employee develops HAVS or more severe symptoms occur, then managers must review their risk assessments and where necessary take advice from the Occupational Health Unit and if necessary the Health and Safety Advisor.

Information for Employees.

What is hand-arm vibration?

Hand-arm vibration is vibration transmitted into your hands and arms when you use hand-held powered work equipment. Too much exposure to hand-arm vibration can cause hand-arm vibration syndrome (HAVS) and carpal tunnel syndrome.

What is hand-arm vibration syndrome?

- HAVS affects the nerves, blood vessels, muscles and joints of the hand, wrist and arm.
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Health & Safety Team, HR Services

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- It can become severely disabling if ignored.
 - It includes vibration white finger, which can cause severe pain in the affected fingers.

What is carpal tunnel syndrome?

Carpal tunnel syndrome is a nerve disorder which may involve pain, tingling, numbness and weakness in parts of the hand and can be caused by, among other things, exposure to vibration.

What are the early signs to look out for?

- Tingling and numbness in the fingers (which can cause sleep disturbance).
- Not being able to feel things with your fingers
- Loss of strength in your hands (you may be less able to pick up or hold heavy objects).
- In the cold and wet, the tips of your fingers going white then red and being painful on recovery (vibration white finger).

If you continue to use high-vibration tools these symptoms will probably get worse, for example:

- The numbness in your hands could become permanent and you won't be able to feel things at all;
- You will have difficulty picking up small objects such as screws or nails;
- The vibration white finger could happen more frequently and more of your fingers.

When am I at risk?

You are at risk if you regularly use hand-held or hand guided power tools and machines such as;

- Concrete breakers, concrete pokers;
- Sanders, grinders, disc cutters;
- Hammer drills;
- Chipping hammers;
- Chainsaws, brush cutters, hedge trimmers, powered mowers;
- Scabblers or needle guns.

You are also at risk if you hold workpieces which vibrate while being processed by powered machinery such as pedestal grinders.

How can I reduce the risks?

It is your employer's responsibility to protect you against HAVS and carpal tunnel syndrome, but you should help by asking your employer if your job could be done in a different way without using vibratory tools and machines. Additionally, any suggestions from operators how to eliminate or reduce exposure to vibration will be given serious consideration.

If this cannot happen;

- Ask to use suitable low-vibration tools.

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- Always use the right tool for each job (to do the job more quickly and efficiently will expose you to less hand-arm vibration).
 - Check tools before using them to ensure they have been properly maintained and repaired to avoid increased vibration caused by faults or general wear.
 - Make sure cutting tools are kept sharp so that they remain efficient.
 - Reduce the amount of time you use a tool in one go, by doing other jobs in between.
 - Avoid gripping or forcing a tool or work piece more than you have to.
 - Store tools so that they do not have very cold handles when next used.
 - Encourage good blood circulation by:
 - Keeping warm and dry (when necessary wear gloves, a hat, waterproofs and use heated pads if necessary).
 - Give up or cut down on smoking because smoking reduces blood flow.
 - Massaging and exercising your fingers during work breaks.

What else can I do?

- Learn to recognise the early signs and symptoms of HAVS.
- Report any symptoms promptly to your supervisor /manager or the person who carries out your health checks.
- Use any control measures your employer has put in place to reduce the risk of HAVS.
- Ask your Trade Union safety representative or employer representative for advice.

Help your employer to stop HAVS and carpal tunnel syndrome before they become a problem for you.

<http://www.hse.gov.uk/pubns/indg296.pdf>

How you can protect yourself.

The Council has a duty to protect you from HAVS, by

- avoiding the need to use vibratory tools,
- selecting low vibratory tools
- maintaining them
- training you in their correct use and
- limiting your use of certain tools.

You can help by:

- Completing your log books to accurately record the time you have spent on each tool at the end of each day;
- Ask for additional training in the correct use of tools and how to accurately record your exposure if necessary
- Report any excessive pain in your hands, wrists and arms to your supervisor.
- Ensure your supervisor records all of your complaints and reacts appropriately
- Attend your checkups at the Councils Occupational Health Unit.

Managers and Supervisors duties.

All managers and supervisors should familiarise themselves with this document and understand their operational duties to ensure that all operatives implicated are conforming and understand their requirements.

All managers and supervisors should attend the HAVS awareness training from our provider to ensure they are up to date with the various types of equipment and safe systems of work.

Managers and Supervisors should involve operatives at project planning stage as their onsite knowledge and experience of using the tools and equipment should assist in the selection, use and acceptability of the equipment in question.

Remember “Avoid the use of vibratory tools wherever possible as HAVS is irreversible”.