

1) POLICY

University of Glasgow will put in place measures to protect employees from the risks of Hand Arm Vibration Syndrome (HAVS) and Whole Body Vibration.

These measures will include:

- Assessing the risks from vibration exposure
- Taking steps to reduce vibration exposure
- Taking into account vibration risks when purchasing or hiring equipment
- Providing training and information for employees on the risks from vibration and the measures in place to reduce these
- Providing health surveillance where the risk assessment shows that this is appropriate.

This will enable the University to satisfy its obligations under the Control of Vibration at Work Regulations 2005 and the Management of Health and Safety at Work Regulations 1999.

2) DEFINITIONS

Hand Arm Vibration (HAV): Mechanical vibration transmitted from work processes into an employee's hands and arms.

Whole Body Vibration (WBV): Mechanical vibration which is transmitted into the body when seated or standing, through the supporting surface.

Hand Held Equipment: pedestrian lawn mowers, hedge cutters, trimmers, and backpack blowers.

Exposure Action Value (EAV) – $2.5 \text{ m/s}^2 \text{ A(8)}$ (exposure averaged over a day)

Wherever exposure at or above this level occurs, actions (including health surveillance) are required to control the risk.

Exposure Limit Value (ELV) – $5 \text{ m/s}^2 \text{ A(8)}$ (exposure averaged over a day)

This is the maximum vibration exposure permitted for any individual on a single day.

Trigger time – it is the actual time an employee's hands are in contact with the equipment, not the overall time it takes to complete the job

3) EFFECTS OF VIBRATION INJURY

Employees whose hands are regularly exposed to vibration may suffer from symptoms due to pathological effects on the muscles, circulatory and nervous system, and other tissues of the hand and arm. Where they affect the hands or arms the symptoms are collectively known as hand-arm vibration syndrome (HAVS). HAVS symptoms may include the following components.

Neurological component

Neurological symptoms of HAVS include numbness and tingling in the fingers, and a reduced sense of touch and temperature. This nerve damage can be disabling, making it difficult to feel, and to work with, small objects.

Vascular component

Episodic finger blanching is the characteristic vascular sign. This is sometimes known as 'vibration white finger', 'dead finger' or 'dead hand'. The main trigger for the symptoms is exposure to the cold, for example being outdoors early on a winter's morning. The symptoms can also be triggered by localised or general body cooling in otherwise warm environments. Although vibration causes the condition, it does not precipitate the symptoms.

Muscular and soft tissue component

Employees may complain of joint pain and stiffness in the hand and arm. Grip strength can be reduced due to nerve and muscle damage. An individual employee suffering from HAVS may not experience the complete range of symptoms, for example symptoms related to the neurological component can be present in the absence of vascular problems and vice versa. Neurological symptoms generally appear earlier than finger blanching. Carpal tunnel syndrome, a disorder of the hand and arm giving rise to tingling, numbness, weakness, pain and night waking, can be caused by exposure to vibration.

The symptoms of HAVS are usually progressive with continuing exposure to vibration. There will be individual variation in the timing and rate of deterioration. The degree to which symptoms regress on removal from exposure to vibration is not known with any certainty and the condition may be irreversible.

Exposure to whole body vibration at low levels may aggravate existing back pain or other conditions whilst higher levels may cause symptoms to develop.

4) RISK ASSESSMENT

The purpose of the risk assessment is to enable managers to make a valid decision about the measures necessary to prevent or adequately control the exposure of employees to HAV or WBV. It also enables managers to demonstrate readily to others who may have an interest, e.g. employees, safety representatives and enforcement authorities that they have from the earliest opportunity considered the risks from vibration.

When conducting the assessment the following steps should be followed:

1. Identify all existing powered tools, equipment and machinery which potentially pose a risk of hand arm vibration or whole body vibration.
2. Review and observe the conditions under which such powered tools, equipment and machinery are used to obtain a true and representative appreciation of the nature of the work
3. Identify the maximum duration of their use ('trigger time' for HAVS or work time for WBV) in any working day, if necessary by keeping a log or using monitoring devices
4. Assess the vibration magnitude from each piece of equipment used. This information must be provided by the manufacturer, however, manufacturers' data will often come from testing under specific controlled conditions which are very different from normal working practices and therefore may significantly underestimate exposures in practice. Additional information from on-site measurement or from databases of vibration levels may be required.
5. Consider individual factors such as pre existing health conditions that may increase risk from vibration exposure for individual employees;
6. Ensure that employees use equipment correctly. Poor posture, technique etc. may increase vibration exposure from a particular activity by up to 50% compared to colleagues.
7. Contact Safety and Environmental Protection Services (SEPS) to discuss the most appropriate approach to managing vibration for your specific activities.

The risk assessment should identify the maximum trigger time, or usage time permissible for the equipment to ensure that exposure does not exceed the ELV. The risk assessment should detail the measures in place to reduce the risk from vibration exposure and where applicable may include an Action Plan indicating any further measures planned.

The vibration risk assessment can be a standalone document, or can be incorporated into task specific risk assessment document for a department or process where this is more appropriate

The risk assessment should be reviewed whenever there is a change in vibration exposure or otherwise at least every 2 years.

5) REDUCING RISK FROM VIBRATION EXPOSURE

Measures should be put in place to reduce vibration exposure to as low a level as is reasonably practicable – even if vibration levels are below the Exposure Action Value (EAV), consideration should be given as to whether further reduction is practical.

Wherever vibration levels may exceed the EAV, assistance should be sought from the SEPS to assist with risk assessment and reduction of vibration exposure.

Personal vibration exposure MUST NOT exceed the Exposure Limit Value (ELV) of 5m/s^2 . On very limited occasions, employers are allowed to average exposures over a week rather than over a day, but only in particular circumstances. This is primarily designed for where workers exceptionally need to carry out work causing uncommonly high vibration exposure in a single day, e.g. for emergency work. The main conditions are:

- that the person's exposure is usually below the exposure action value;
- that the risk is less than if the employee were exposed at the exposure limit value for the week.

This flexibility does not remove the duty on the employer to reduce the exposure so far as is reasonably practicable. Measures to reduce risks from vibration exposure may include: replacing tools and equipment with alternatives which produce lower magnitudes of vibration.

Purchasing Equipment

When purchasing equipment, suppliers must provide information about the vibration magnitudes their products are likely to create in normal use. This is a requirement of the Supply of Machinery (Safety) Regulations 2008. A purchasing specification should incorporate maximum vibration magnitudes and test procedures, which suppliers have to satisfy. Manufacturer's data must however be looked at with some caution as they may not necessarily be measurements of levels sustained when the equipment is put to your particular use.

When planning purchasing of equipment first consider other methods of work which can eliminate or reduce exposure to vibration including automation or mechanisation of work previously done with hand-operated or hand-fed machines.

Work Practices

It is important to ensure that work activities are designed to take into account ergonomic principles, and to

- encourage good posture and working techniques
- ensure correct selection of the most appropriate tools for the task.
- ensure that all equipment is properly maintained
- minimise time exposed to vibration e.g. regular breaks, job rotation etc
- provide suitable clothing to protect employees from cold and damp
- Provide suitable training and information for all those exposed to vibration

Training

Face to face training may be provided by competent person in the unit or can be arranged through SEPS. Alternatively training may be computer based or through the use of written information.

Where new staff are employed and are likely to be exposed to vibration levels in excess of the EAV, they should be made aware of the risks of vibration prior to first exposure, or at least within the first week of employment. This can be done at the same time as asking them to complete the initial health assessment form for return to Occupational Health. (see “Health Surveillance”)

In addition, all employees should be given appropriate training in the use of equipment. This should include periodic supervised practice to identify work practices which may increase risk such as poor postures, gripping equipment too tightly etc.

Training should include information on the following matters:

- The items of work equipment that pose vibration risks and their respective levels of risk
- How their personal daily exposures compare with the Exposure Action and Limit values (EAV and ELV)
- What symptoms of ill health they should look out for, to whom they should report them and how they should report them
- What control measures are in place to minimise risks
- What personal protective equipment is provided and when this should be used, e.g. the need to keep warm

- The training provided for operators, supervisors and managers in their respective roles to ensure control of exposure, e.g. through correct selection, use and maintenance of equipment or restriction of exposure times
- The health surveillance that is provided, how it will be carried out and why it is important, as well as the overall findings (in anonymous form)
- What employees' duties are; to:
 - follow instructions they are given on safe working practices;
 - report problems with their equipment such as unusually high vibration levels;
 - co-operate with the programme of control measures and health surveillance.

Maintenance of Equipment

In order to minimise the deterioration of equipment, items should be inspected and serviced on a regular basis. Advice from the suppliers/ manufacturers should be taken into account. There may be certain routine checks or preventative replacement of parts required, in which case these should be carried out at a set frequency.

Individual users must be made aware that if at any point they feel a machine performance has deteriorated in terms of vibration, they must report it at the earliest opportunity so that further investigations can be made.

Exposure Points System and Ready-reckoner

The Health and Safety Executive have produced a 'calculator' or ready-reckoner which will enable conversion of working times and vibration magnitudes into an overall exposure factor. This allows total exposure to be calculated for use of one or more piece of equipment in a single day. <http://www.hse.gov.uk/vibration/hav/vibrationcalc.htm>

The ready-reckoner covers a range of vibration levels up to 40 m/s² and a range of exposure times up to ten hours.

The exposures for different combinations of vibration magnitude and exposure time are given in exposure points instead of values in m/s² A(8). You may find the exposure points easier to work with than the A(8) values:

- Exposure points change directly proportional with time e.g. double the exposure time = double the number of points
- Exposure points can be added together, for example where a worker is exposed to two or more different sources of vibration in a day
- The Exposure Action Value (2.5 m/s² A(8)) is equal to 100 points
- The Exposure Limit Value (5 m/s² A(8)) is equal to 400 points

Where a person is exposed to more than one source of vibration (perhaps because they use two or more different tools or processes during the day) the exposure must initially be calculated separately for each one. This produces two or more partial vibration exposure points values. These partial exposures points values are added together to provide a total exposure points value for that employee. . **Seek guidance on completing these calculations from SEPS**

6) HEALTH SURVEILLANCE

Health surveillance is carried out by the Occupational Health Service and is mandatory for employees who are regularly exposed to vibration above the Exposure Action Value (EAV= 2.5 m/s^2)

Health surveillance is also offered to those exposed below the EAV if they are at increased risk e.g. if they report a pre-existing diagnosis of HAVS or any other condition of the hands, arms, wrists or shoulders, or any condition which affects circulation or nerve conduction such as diabetes, carpal tunnel syndrome etc.

Health surveillance will involve:

- Initial assessment prior to or very soon after first exposure. This will usually be by questionnaire, with face to face follow up where required.
- An annual assessment questionnaire sent out to certain individuals by Occupational Health
- Face to face review - This will be arranged if the questionnaire reveals symptoms or if an individual reports symptoms between health surveillance questionnaires, or every 3 years otherwise.
- All individual records are held confidentially as medical records. Where appropriate, summary results for groups of employees will be reported back to a manager to indicate the effectiveness of vibration control. Specific recommendations may be made to a manager where an individual employee requires alteration to their duties to protect against HAVS.

7) RESPONSIBILITIES

a) Head of Unit

- Where required, nominate a person(s) to develop and implement systems to achieve compliance with the vibration regulations within the department or section, and

ensure they have the necessary skills and competence. (This may be the local Safety Co-ordinator.)

- Support the nominated person(s) in implementing measures to comply with the vibration regulations
- Ensure all managers and employees within the department discharge their responsibilities in accordance with this policy and with local arrangements and procedures.

b) Managers and Supervisors

- Understand the scope and content of the vibration regulations where this is relevant to work in their area
- Ensure vibration factors are taken into account when hiring or purchasing new equipment
- Ensure that necessary vibration risk assessments have been undertaken for any equipment used by those in their charge
- Implement and enforce vibration control measures, in conjunction with the local safety coordinator
- Ensure employees are suitably trained in all aspects of operating equipment, including vibration control

c) Local Safety Coordinator (or other nominated person) (In conjunction with local managers.)

- Understand the scope and content of the vibration regulations
- Identify whether risk assessment is required within the department
- Ensure vibration factors are taken into consideration when purchasing new equipment
- Work with the SEPS and local managers to carry out vibration risk assessments if required
- Develop and implement vibration control measures where appropriate
- Ensure that individuals identified as being exposed to levels of vibration that are likely to exceed the EAV are identified to Occupational Health so that health surveillance can be carried out, if required.
- Ensure that new employees who are likely to be exposed to levels of vibration in excess of the EAV submit an initial questionnaire to Occupational Health within the first week of employment (or the first week of exposure)
- Provide training and information for those who may be exposed to vibration)

d) Employee

- Use all equipment provided in accordance with instruction
- Ensure any operator maintenance required is carried out.
- Report any identified fault or defect with equipment
- Report any defects or difficulties with vibrating equipment
- Report any symptoms of HAVS promptly to line manager or via local procedure
- Cooperate with any programme of health surveillance and training which is identified as necessary following risk assessment

e) Safety and Environmental and Protection Services

Support work on vibration risk assessment; in particular,

- Advise on arranging vibration measurement where appropriate
- Advise on the appropriate vibration control measures
- Liaise with Occupational Health service where a need for health surveillance has been identified.
- Provide/ arrange training for staff especially nominated persons to ensure they are competent to carry out the activities outlined in 3b above
- Audit compliance with this policy and the underpinning regulations

f) Occupational Health Service

- Provide health surveillance when required
- Give feedback and guidance on risk to individuals following health surveillance
- Feedback group results from health surveillance to the appropriate manager
- Advise the appropriate manager if there are restrictions on an individual's ability to work due to health risks

8) REFERENCES AND FURTHER READING

- 1) Hand Arm Vibration: The Control of Vibration at Work Regulations 2005. L140
- 2) Hand Arm Vibration Advice for Employees (Indg296 Rev2)
- 3) Management of Health and Safety at Work Regulations 1999
- 4) Supply of Machinery (Safety) Regulations 2008
- 5) Provision and Use of Work Equipment Regulations 1992