VS CoP001 - Code of Practice for management of significant risks from vibration

Section 1 Introduction and legislation

Hand arm vibration (HAV) and whole body vibration (WBV) are possible consequences from using equipment with a vibration hazard at work or in the home.

The Control of Vibration at Work Regulations 2005 govern the management of this hazard in the workplace. The Health and Safety Executive (HSE) have also produced two guidance documents to accompany these regulations, 'L140 Hand-arm vibration - The Control of Vibration at Work Regulations 2005' and 'L141 Whole-body vibration - The Control of Vibration at Work Regulations 2005' both of which are linked as a pdf at the end of this document in an appendix. The following document will outline the requirements of the Regulation and assist in completing a vibration exposure risk assessment. You should also read the aforementioned guidance documents L140 and L141 prior to attempting to complete the risk assessment, as these are extensive and useful on a practical level.

1.1 Exposure limits

There are limits of exposure to vibration for both HAVs and WBV, as follows:

HAVs

- Exposure action value (EAV) **2.5 m/s^{2}A(8)** averaged over an 8 hour period at which a number of actions are required
- Exposure limit value (ELV) **5 m/s^{2}A(8)** over an averaged 8 hour period to which the user is not allowed to be exposed

WBV

- Exposure action value (EAV) **0.5 m/s^{2}A(8)** averaged over an 8 hour period at which a number of actions are required, see below in guidance
- Exposure limit value (ELV) **1.15 m/s^{2}A(8)** over an averaged 8 hour period to which the user is not allowed to be exposed

1.2 Health effects

HAVs

According to HSE L140, page 43, symptoms include the following:

a) Neurological – numbness and tingling in the fingers and a reduced sense of touch, temperature and pain perception; symptoms lasting more than 20 minutes after vibration exposure are likely to be pathological. These effects can make it difficult to feel, and to work with, small objects.
b) Vascular – temporary reduction in blood circulation in the fingers with parts of the fingers becoming white (blanched). This effect is sometimes known as vibration white finger (VWF): the fingers feel numb when blanched. As blood circulation returns to

normal, either by itself or after rewarming the fingers, they can be throbbing, red and painful. Although vibration causes VWF, it usually does not bring on the white finger attacks. The main trigger is exposure to the cold, e.g. being outdoors during winter, or by cooling in otherwise warm environments. Initially, the tips of the fingers are affected but symptoms usually get worse and the effects spread along the finger towards the palm with continuing exposure. The thumb may also be affected. Rarely, in very advanced cases, blood circulation may be permanently reduced in the affected fingers.

c) Musculoskeletal – joint pain and stiffness in the hand and arm. Grip strength can be reduced.

WBV

In HSE L141, it highlights that the main health effect of someone exposed to WBV is back pain. However, it must be remembered that there are many other, and more likely, reasons for back pain including poor posture whilst sitting/operating controls, sitting still without changing positions for an extended period of time, manual handling or repeated movements such as jumping down from cabs.

Pre-existing conditions

Staff with pre-existing conditions, as follows, may be more sensitive to vibration:

a) Employees with existing HAVS or other diseases of the hands, arms, wrists or shoulders
b) Employees with diseases affecting blood circulation, e.g. primary Raynaud's, or nerve disorders affecting the hands or arms, e.g. carpal tunnel syndrome

Section 2 Organisation and management responsibilities

2.1 School/Deanery

2.1.1 Head of School/Deanery (or equivalent)

The Head of School/Deanery is responsible for the health and safety of the staff and students in their area (University H&S Policy and Framework). They must ensure that suitable arrangements are in place to implement this Code of Practice and that there is suitable monitoring arrangements to advise them that appropriate control measures are in place to reduce the risk to staff and students.

2.1.2 PI/Supervisor

It is the responsibility of the PI/Supervisor (henceforth, the title of 'Supervisor' includes any managerial position for the purposes of this CoP) to ensure the health and safety of staff under their supervision.

- ensure that suitable and sufficient risk assessments (RA) are in place to control the risk from vibration
- ensure all those possibly affected are aware of the outcome of this RA
- ensure any staff that are identified as requiring health screening or surveillance (HS) from that risk assessment are notified to the Occupational Health Service

prior to any exposure and that they attend their health surveillance appointment and that any outcomes of the HS are implemented
- ensure sufficient supervision of staff and record on the job training undertaken
- provide or ensure that training is provided in a timely manner

2.1.3 Staff

Staff have specific responsibilities as follows:

- read and understand the outcome of the risk assessment and any associated School protocols for the work
- undertake training provided on working safely with vibrating equipment
- complete and submit health screening form or attend health surveillance appointments (if required) and action any advice in conjunction with supervisor
- report to supervisor any health effect if suspected they are related to exposure to vibrating equipment
- follow all other safety protocols provided

2.1.4 School Safety Adviser/Manager

School Safety Advisers/Managers have the same core responsibilities as set out in the H&S Policy and Framework but may have additional responsibilities within their areas, but listed are the minimum:

- provide advice to PI/Supervisor/staff on risk assessment process and best available control measures
- ensure that a suitable audit system is in place to be used to monitor the implementation of the Code of Practice and provide a review to the Head of School/Deanery at suitable intervals
- provide or assist in providing local training as required following risk assessment
- raise any concerns and act as a link between Health and Safety Department and School/Department
- assist in the investigation of any suspected or confirmed cases of ill-health attributed to exposure to vibrating equipment

2.2 Corporate Health and Safety Department

2.2.1 Occupational Hygiene Unit

- Provide guidance and advice on control measures for staff using vibrating equipment
- Assist with organising vibration measurements, if applicable
- Assist the School Safety Adviser/Manager in investigating suspected or confirmed cases of ill-health if required

2.2.2 Occupational Health Service

- Manage the provision of an appropriate health screening and surveillance programme
- Issue Fit Notes to named local staff members in a timely manner
- Provide advice and guidance following HS on managing/limiting exposure (if required)

2.3 Risk assessment

A risk assessment should be undertaken which takes into account the following factors:

a) Identify which tasks could have an impact on or have a risk of HAVs or WBV
b) A reasonable estimation of exposure and a comparison with the ELV and EAV
c) Available risk controls
d) Identifying those at risk and those who may be more at risk, for example staff who already have HAVs
e) Identifying current control measures and which additional control measures that may be required if vibration needs to be reduced
f) Identify if health screening or surveillance is appropriate

It is also good practice to formulate an action plan on how you will implement these controls with manageable timescales and identified staff responsible for each task. Risk assessment template VRA1 (available as a Word template) can be used to undertake this risk assessment.

Guidance to support the risk assessment can be found in appendix 1 of this document and the HSE have also provided a checklist at https://www.hse.gov.uk/vibration/hav/advicetoemployers/index.htm#problem to ascertain if a risk assessment is required.

2.4 Training and Supervision

2.4.1 Training

All staff must be trained appropriately in how to safely undertake their jobs. This includes how to correctly use the equipment to reduce possible exposure to vibration.

If vibration is a risk, then employees must be informed of the outcome of the risk assessment, the controls which have been put in place to reduce the risk and the requirement to complete a health screening form or attend health surveillance (if appropriate). They should also be told which symptoms of vibration exposure to look out for and encouraged to report these to their manager to ensure that control measures are reviewed. They should also be encouraged to report issues with their equipment, for example if they feel that vibration levels have increased significantly.

2.4.2 Supervision

PI/Supervisors must monitor their staff and students for compliance in the use of

control measures, meeting training requirements, completion of health screening form or attendance at health surveillance appointments as per section 2.1.2 PI/Supervisor.

The level of supervision must also be appropriate, based on the competence level of the staff or student.

2.5 Health screening and surveillance

2.5.1 Health screening

Any staff who have pre-existing or ongoing health issues which could be affected by any vibration exposure must complete the vibration health screening form prior to any exposure. The risk assessment process, or key jobs hazards evaluation process at recruitment stage, should have identified any such staff. LINK to form to follow.

2.5.2 Health surveillance

HAVs

Health surveillance is required for those employees who are exposed at or above the EAV and also to those identified as particularly at risk for HAVs following the health screening above. Once these staff are identified, please contact the Occupational Health Service to discuss, occupational.health@ed.ac.uk.

WBV

Health surveillance is not appropriate for WBV as it fails to meet the criteria for the requirement for health surveillance. However, any staff exposed to WBV should be encouraged to report any instances of low back pain or increases in low back pain following a period of possible exposure. These symptoms should be reported to the manager.

2.5.3 Occupational disease

Certain occupational diseases are reportable to the HSE under RIDDOR. These include:

a) hand-arm vibration syndrome: where a person's work involves regular use of percussive or vibrating tools, or holding materials subject to percussive processes, or processes causing vibration;
b) carpal tunnel syndrome: where the person's work involves regular use of percussive or vibrating tools

This must be diagnosed by a doctor and will be notified to the Health and Safety Department by the Occupational Health Service following health surveillance.

2.6 Summary of key requirements

Role	Responsibility
Head of School/Deanery	ensure a system for risk assessments is in place

	ensure suitable monitoring of management is in place
PI/Supervisor	undertake or arrange for RA to be done
	ensure all applicable staff are aware of RA
	ensure staff are given suitable and sufficient training
	ensure they are identified to Occupational Health Service for health screening or surveillance
	supervise staff as appropriate
Staff	Follow all applicable safety protocols including using control measures as per risk assessments
	Complete health screening and/or attend health surveillance appointments and reporting symptoms to supervisor in a timely manner
	Undertake mandatory training
School Safety Adviser/Manager	assist School with risk assessments and audit systems
	Provide or assist in providing local training (if applicable)
	link between Health and Safety and School/Department

Appendix 1 – guidance on how to undertake a suitable and sufficient risk assessment

A template risk assessment is available at http://www.docs.csg.ed.ac.uk/Safety/ra/VRA1.docx and should be used in conjunction with the following guidance.

Guidance for risk assessment completion

a) Identify which tasks could have an impact on or have a risk of HAVs or WBV

The following tasks, when undertaken on a regular basis and over a large part of the day, could have an impact on HAVs or WBV. These are examples only and are not comprehensive.

HAVs

- Hand held powered machinery, such as hedge trimmers, chainsaws, power drills, angle grinders, etc.
- Hand fed machinery such as pedestal grinders or jigsaws
- Hand guided machinery such as mowers
- Further examples are given on page 65 of L140 (although this list is tabling vibration magnitude data, it also lists many typical jobs which could expose workers to vibration)

WBV

- Sit on mowers
- Equipment driven or operated which generally drives over un-tarmacked or very uneven road surfaces
- Further examples are given on page 30 or L141. However, there will likely be few occasions in the University where WBV is a significant hazard.

b) A reasonable estimation of exposure and a comparison with the ELV and EAV

Trigger time

In the first instance, simply watching an operative and recording how long they use a piece of equipment for over a shift/day (or as long or short as is required to get a representative overview of how they use the equipment) should give a reasonably accurate estimate of time spent. If their work day varies, you may need to observe over a few days to get an accurate estimation of time spent.

Vibration magnitude

Once you have an accurate estimation of time, you will need to gather the vibration magnitude data for each piece of equipment being used. This can usually be obtained from the manufacturer/supplier or there are various sources online, such as the Health and Safety Executive website which publishes a document called 'Vibration of Vibration Magnitude Data' which lists various common pieces of equipment and their likely vibration magnitude.

You must be sure that the vibration magnitude data is as accurate as it can be, for example, some manufacturers/suppliers data is based on laboratory tests not actually using the equipment as it would be in the work place which will likely underestimate the vibration magnitude. You should read L140 Part 2 (page 30) for HAVs and L141 Part 3 (in particular pages 31-35) for WBVs in detail before attempting to estimate the possible exposure.

There may also be a need to measure actual vibration magnitude on equipment as it is being used. This will only be likely if no vibration magnitude data is available from the manufacturer or other sources or if the piece of equipment is being used in a novel way and the data available cannot be used as a comparison. However, there are limitations to this measurement and data gathered, therefore this should only be considered once the above have been exhausted.

If in doubt, or if you feel actual vibration measurements may be required, contact the Occupational Hygiene Unit.

Ready reckoner

Once you have the above information, you can use a ready reckoner or the vibration calculator produced by the HSE, available online, to work out the possible exposure for HAVs.

If the exposure levels are well below the EAV (see bullets below), then you should record this and note down why no further actions may be required at this time. However, remember that risk should always be reduced as low as reasonably practicable therefore if there are simple changes which could reduce the risk even further, you should still implement those. Also, those staff at more risk, for example those already diagnosed with HAVs, may require a reduction, even if the exposure level is below the EAV.

If the exposure levels are close or above the EAV, then you must look at further control measures to implement. If exposure levels are above ELV levels, then you must discontinue the work immediately, and you cannot recommence until exposure levels are reduced below the ELV.
Using the ready reckoner will result in a numerical value being assigned. This will fall into one of the following categories, with indicated actions required:

- 400 points or more or 5 m/s^2 and above ELV – high priority, stop work as it currently stands and must reduce to below this to as low as practicable
- 100 to 399 points or above EAV 2.5 to 5 m/s^2 – medium priority and should reduce to as low as practicable
- less than 100 points or less than EAV 2.5 m/s^2 – low priority, likely no further action required although if you can reduce the level, then this should be implemented

c) Available risk controls

You should investigate if alternative low vibration equipment is available, or if different or specific ways of working are advised by the manufacturer to reduce exposure to vibration, and replace as necessary.

d) Identifying those at risk and those who may be more at risk, for example staff who already have HAVs

Identify all staff who regularly use the equipment being assessed. Ensure that any staff at particular risk, such as those with HAVs or other pre-existing or ongoing health issues which could be affected by vibration exposure, as follows:

a) Employees with existing HAVS or other diseases of the hands, arms, wrists or shoulders
b) Employees with diseases affecting blood circulation, e.g. primary Raynaud's, or nerve disorders affecting the hands or arms, e.g. carpal tunnel syndrome

and those who are pregnant or young workers, are also identified to ensure extra controls are put in place to reduce the risk to them. Certain work environments can also put staff at a higher risk, such as those which are very cold or wet or roads which are particularly uneven,

and these should also be identified. Highlight these staff members clearly on the risk assessment form or undertake a specific risk assessment for them.

e) Identifying current control measures and which control measures may be required if vibrations need to be reduced

You should list all controls currently in use to reduce the exposure levels, for example job rotation, or limiting amount of time using equipment. This should be noted on the risk assessment and how it reduces the risk.
Then identify any changes required to reduce the risk further. If these are simple, such as work rotation, then tool box talks etc. may suffice in passing this information on to staff. However, many changes may take time and an action plan should be put in place, with appropriate timescales and assigned actions, to ensure they are implemented.
Regulation 6 in L140 (for HAVs) and L141 (for WBV) gives many examples of how to control or reduce vibration exposure and should be read before completing this part of the risk assessment.

f) Identifying if health surveillance is required

If, after control have been implemented as above, the exposure is still at or just below the EAV, or there are staff at particular risk, then those staff should be added to the health surveillance programme managed by the Occupational Health Service, see section 2.5 Health Surveillance of the Code of Practice.

Maintenance

You should always have a maintenance regime in place for all equipment as this will assist in extending the life of the piece of equipment. As equipment becomes older, it often starts to vibrate more, therefore older equipment may pose a higher risk than new equipment and this must be taken into account in the risk assessment.

Review of risk assessment

The risk assessment should be reviewed on a regular basis. This may be annually, after an accident or incident, or if health surveillance has identified a possible issue in control measures following an increase in symptoms.

Further information and guidance

External guidance

The Health and Safety Executive have a specific section on their website on vibration. In this section, you will find leaflets which can be used to inform your staff of the risks, as well as helpful advice for you as the manager in how to reduce that risk.
http://www.hse.gov.uk/vibration/index.htm
HAVs
http://www.hse.gov.uk/vibration/hav/index.htm
http://www.hse.gov.uk/pUbns/priced/l140.pdf
http://www.hse.gov.uk/vibration/hav/readyreckoner.htm
http://www.hse.gov.uk/vibration/hav/vibrationcalc.htm
WBV
http://www.hse.gov.uk/vibration/wbv/index.htm

http://www.hse.gov.uk/pUbns/priced/l141.pdf

Internal guidance

Key job hazards evaluation
Occupational Health Service
University Health & Safety Policy