

HEALTH AND SAFETY

SAFETY POLICY & ARRANGEMENTS



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Subject: **Vibration (Hand Arm & Whole Body) Control at Work**

Introduction

This document forms part of the National Ice Centre's organisational written safety policy arrangements.

Departments, services or teams may consider it appropriate to develop additional guidance and systems of work on specific work related activities.

Where proposals, additional guidance or changes to systems of work will have an impact on health, safety and welfare, this will be discussed and agreed at the Health & Safety Committee.

If you have any questions or require further information or support on the contents of this document, please contact The NIC Health & Safety Advisor or Corporate Safety Advice.

Overview Of Management & Colleague Responsibilities

Manager Responsibilities

Below is an overview of the responsibilities which is intended to support managers in identifying their key duties that need to be taken to comply with the requirements of this document and the safety management systems of the National Ice Centre.

- Managers must ensure that **risk assessments** in relation to HAVs are completed by a competent person & their findings communicated to those at risk as appropriate and reviewed regularly;
- Managers must ensure all colleagues including temporary and agency workers who use hand-held powered tools as part of their work and may be considered as being at risk are identified;
- Managers must ensure that vibration levels (**vibration magnitude**) emitted by tools and equipment in use are identified prior to use;
- Managers are required to consider and implement the **control measures** that avoid or reduce the use of hand-held powered tools e.g. by substitution or mechanisation;
- Managers need to ensure that colleagues are provided with the **most appropriate tool for the job** and that prior to the selection of new tools, information is sought from suppliers about vibration levels;
- Managers need to ensure that the **maintenance schedules** conform to the manufacturer's specifications and the maintenance arrangements are supervised, monitored and recorded;
- Managers need to demonstrate that all colleagues using vibrating equipment have received appropriate **information, instruction, training and supervision**;
- Managers must ensure appropriate Personal Protective Equipment (**PPE**) is provided to those colleagues using vibrating equipment(e.g. gloves or clothing to help keep them warm);
- Managers need to ensure that colleagues are aware of the control measures they need to take to minimise vibration risks and the importance of **reporting symptoms** without delay;
- Managers must ensure that, where the need has been identified by risk assessment, there is a **health surveillance programme** for identifying and monitoring early adverse health effects of colleagues using vibrating equipment;
- HAVs is a **reportable occupational disease under RIDDOR**. Incidents must be reported to the Health & Safety Executive. In addition to this, an online NIC accident & ill health report must also be completed upon confirmation of the injury by a medical practitioner;

Employee Responsibilities

The Health & Safety at Work Act 1974 section 7 requires all employees to consider their own health & safety and the safety of others.

As an employee of the National Ice Centre, if you have concerns in relation to health & safety that is likely to cause you or someone else, injury or ill health then you must ensure that the concern is communicated to your manager immediately.

You are also required to co-operate with the management of the National Ice Centre to ensure compliance with the health & safety arrangements, policies and procedures and work to the requirements identified within this document.

To ensure that employees including temporary and agency staff have a basic understanding of the hazards and symptoms associated with HAV, the [INDG 296 – 'Hand-arm Vibration – Guide for Employees' \(HSE\)](#) must be made available to all affected colleagues.

Hand Arm Vibration Syndrome (HAVS)

HAVS is a general term embracing various kinds of permanent damage to hands and arms including:

Vascular Disorders

Generally known as Vibration White Finger (VWF) causing impaired blood circulation and blanching of the affected fingers and parts of the hand.

Neurological and Muscular-Skeletal Damage

Leading to numbness and tingling in the fingers and hands, reduced grip strength and dexterity and reduced sensitivity both of touch and to temperature.

HAVs is a reportable occupational disease under RIDDOR

Upon confirmation of the injury by a medical practitioner, managers must ensure that it is reported to the Health & Safety Executive.

In addition to this, an online NCC accident & ill health report must also be completed.

Causes Of HAVS

Managers need to understand that HAVS is caused by regular and frequent exposure to high levels of vibration transmitted from work processes into the hands, arms and body of colleagues.

It can be caused by operating hand-held power tools, hand-guided equipment, or by holding materials being processed by machines.

Equipment known to potentially produce this type of vibration includes:

Chainsaws	Concrete breakers/road drills	Hammer drills
Hand-held grinders	Hand-held sanders	Nut runners
Pedestal grinders	Power hammers and chisels	Powered lawnmowers
Riveting hammers / bolsters	Strimmers / brush cutters	Floor Polishers / Scrubbers

Symptoms/Effects Of Vibration To Hands And Fingers

Managers need to be aware of the potential health effects of vibration injury in their colleagues.

- In the early stages, an individual may notice a tingling sensation of 'pins and needles' in the fingers. This is most noticeable at the end of the working day and may be accompanied by numbness.
- This early phase is followed by an intense red flush, signalling the return of blood circulation to the fingers and is usually accompanied by uncomfortable throbbing.
- If exposure continues, the colleague may suffer periodic attacks when the fingers change colour when exposed to the cold.
- In mild cases the whiteness and numbness only affects the tips of the fingers.

- If the condition becomes more severe, the whole finger down to the knuckle becomes white and attacks happen more frequently in cold weather.
- The attacks may last up to an hour, causing considerable pain and loss of manual dexterity, resulting in clumsiness and reduced grip strength.
- As the condition worsens, attacks can occur in warm surroundings inside and outside of work.

Legal Requirements

The Control of Vibration at Work Regulations 2005 requires employers to manage the risks from exposure to vibration.

These regulations require the risks of exposure to be assessed by consideration a range of specific criteria, to eliminate the source of vibration or reduce it as low as is reasonably practicable and specifies the following daily exposure limits and values:-

- Exposure Action Value (**EAV**) of 2.5m/s^2 A(8) (100 points on HSE Ready Reckoner)
- Exposure Limit Value (**ELV**) of 5m/s^2 A(8) (400 points on HSE Ready Reckoner)

The Exposure Limit Value is the maximum allowable exposure to vibration over an 8 hour day and the Exposure Action Value is the exposure at which health surveillance must be carried out.

These must not be considered 'safe' levels and all efforts must be made to eliminate or reduce to levels as low as possible, as some employees could still develop HAVs after being exposed to low levels of vibration.

There are further legal requirements under the Provision and Use of Work Equipment Regulations 1998.

These regulations require employers to ensure that work equipment is suitable for the task it is provided for, that it is maintained and inspected adequately, that where it exposes employees to specific risks that appropriate measures are taken to control those risks and that suitable training is provided to those using the equipment.

Under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 Hand-Arm Vibration Syndrome and Carpal Tunnel Syndrome are reportable to the Health and Safety Executive when confirmed by a doctor (Hand-Arm Vibration Syndrome includes vibration white finger).

Assessing The Risk Of Exposure

Managers must ensure that suitable and sufficient risk assessments are carried out that will:

- Identify all vibration equipment that may give rise to exposure that has the potential for harm;
- Identify who is at risk and tailor controls to the individual in accordance with health surveillance;
- Decide if the processes can be changed or managed differently to reduce hands on contact with vibratory equipment;
- Decide on the control measures to reduce the risk to the lowest possible level, including purchasing and hiring of new equipment with low vibration magnitude data;
- Monitor the effectiveness of the controls in place, including where necessary, the vibration testing of equipment for true magnitude data.
- Incorporate annual health surveillance of employees who are likely to be regularly exposed to vibrating equipment at 100 points daily exposure or more.
- Be reviewed regularly and as a minimum when equipment or activities change or injury is reported.

Managers need to be aware that the risk to their colleagues is dependent on the magnitude and frequency of the vibration together with how long exposure occurs.

Each individual must also be considered, as some colleagues may be more susceptible to injury than others. Other factors include:

- Grip, push and other forces to guide and apply vibrating tools or work pieces;
- Exposure patterns, length and frequency of work as well as rest periods;
- How much of the hand is exposed to vibration;
- Factors affecting blood circulation, such as temperature and smoking;

- Pre-existing medical conditions;
- Individual susceptibility;
- Previous employment or additional employment;
- Activities outside of work.

Managers must consider all of these factors as part of the risk assessment process.

Measuring Exposure

Exposure to vibration usually occurs over short periods, often repeated many times during a working day.

Although measurements can be averaged over complete cycles of operation (including periods when the vibration source is switched off), normally it is only possible to average over the short period that the hand is in contact with the vibrating surface ('trigger time').

The assessment of vibration exposure is usually based on the daily exposure.

This is expressed in terms of the 8 hour energy equivalent acceleration, and is denoted by the term A (8). The [HAV's Calculator](#) provides a quick guide by calculating points given the vibration level for the source and the amount of time that the equipment is in use.

The base vibration level for equipment should be available from the equipment manufacturer, trade association or from actual measurements that have been carried out.

Vibration levels of equipment whilst in use can vary widely depending on how they are used and may be much higher than manufacturer's data which is based on laboratory tests and measurements.

Whilst this source of information is currently acceptable to provide a baseline or guide measurement, it will be necessary to provide more accurate measurements when the risk assessment is next reviewed.

More accurate methods of measurement include the completion and analysis of daily/weekly records by employees.

However, accuracy depends on regular (ideally daily) completion and realistic times/tasks carried out with the vibratory equipment. E.g. travel times, meal breaks and tasks not involving the use of the equipment must be excluded.

Personal (continuous) monitoring by electronic devices offers the most accurate way of measuring data, as it automates the points calculation process and provides comprehensive monitoring data and reports, which is particularly helpful for large workforces spread over wide geographical areas.

These devices are not required by law and can be costly and need to be used in accordance with specific criteria, instructions and training.

Accuracy depends on the source of vibration magnitude data used and employees using the devices in accordance with training and instructions.

There are a variety of methods in place across NCC see 'references and further information' at the end. Regardless of measurement methods, managers must carry out regular on site monitoring and spot checks to ensure that procedures are being followed and data accurate.

Vibration Management & Risk Reduction

In the event that HAVS is considered a hazard following the risk assessment, the basic measures that are available for managers to implement to reduce exposure can include:

- Elimination or substitution of the hazard by using lower vibration processes or tools;
- Reduce the time period during which vibration tools are used;
- Minimisation of the vibration transmission to the hands;
- Provision of instruction and training on the correct operating procedures;
- Personal Protective Equipment;
- Health surveillance.

Elimination

Managers need to consider, where appropriate, the elimination of vibration hazards where reasonably practicable e.g. purchase of prefabricated elements thus preventing the need for any work by hand.

Substitution

Managers may also consider substitution as a means of control for a less hazardous process or work equipment e.g. an automated or mechanised process, use of electric power tools (to reduce noise levels also).

Minimisation or Reduction

The following areas should be considered by managers to reduce the risk from vibration

- Reduce the need to use vibrating tools where possible;
- Tools of low vibration or those fitted with anti-vibration mechanisms should be used (please note that vibration controls may reduce the equipment's efficiency – if it is less efficient it may have to be used for longer, negating any advantage);
- Ensure that the lightest tool that will perform the task is utilised as this will reduce the force required to hold it;
- Consider handles which are designed to reduce vibrations transmitted to the hand;
- Implement maintenance arrangements in accordance with manufacturer's instructions and guidelines and, where available, NCC services. For example, maintain tools to reduce slack in bearings and imbalance of rotating parts, ensure blades / chisels are kept sharp in order to reduce the need to grip the tool tightly or to push the tool hard against the work piece;
- Ensure that the use of equipment or tool is spread among a number of people to reduce individual exposure. Staffing levels and equipment availability (including absences and tools being out of use) must be factored in;
- Ensure that colleagues consider job rotation and take frequent breaks when using vibration tools. Use of different equipment can lead to a cumulative effect and consideration for breaks off vibration producing equipment should be implemented;
- Ensure that operators wear gloves when vibrating equipment is being used in order to keep the hands warm when environmental conditions are cold and damp or when compressed air tools become cold due to air expansion. Gloves are generally not effective in reducing the amount of vibration transmitted to the hands and arms;
- Ensure a suitable testing regime is implemented where it is identified as being required.

Personal Protective Equipment

Managers are recommended to ensure that anti-vibration gloves are **NOT** used as the primary means of protection.

They should be considered as a last resort or in addition to other controls higher up the control measure hierarchy.

Various types of glove are available on the market, which purport to be "anti-vibration".

Normally these consist of some form of soft padding and a layer of harder material.

A well-designed glove can reduce the transmission of vibration to the hand at some frequencies, but every glove has its own resonant frequency where the gloves mass and spring system is capable of amplifying the vibration transmitted.

As the vibration from most equipment covers a wide spectrum, the attenuation at some frequencies is counteracted by amplification at others.

Information, Instruction, Training and Supervision

Managers need to ensure that all employees including temporary and agency staff are given appropriate training and/or instruction in the correct use of the equipment they will be utilising in the normal course of their job.

The employee should be made aware of the following:

- The equipment they are using can cause vibration exposure;
- The vibration can cause Vibration White Finger if exposure is long or intense;

- The maximum length of time they can use such equipment;
- Health surveillance will be undertaken where the risk assessment process has identified employees who may be at risk from Hand Arm Vibration Syndrome.
- Provision of the HSE 's 'pocket card' [INDG 296 – 'Hand-arm Vibration – Guide for Employees' \(HSE\)](#) must be made available to all affected colleagues.
- Recognition of symptoms and the need to report these as soon as they become aware.
- The nature of the risk and any signs that injury may have occurred;
- What to do to minimise the risk;
- How to maintain a good blood supply;
- How to report symptoms/injuries.

Health Surveillance

Managers must ensure that the recruitment of any new employee considers the potential risk for significant exposure to vibration and this is indicated in the 'job profile' section of the Pre-Employment Health Questionnaire.

This will enable the Employee Wellbeing Team to carry out an appropriate fitness for work assessment.

They must also keep the team updated with staff changes and arrange for the annual health screening.

Where it has been indicated that employees are likely to reach the exposure action level, they must be included in the health surveillance scheme via the Employee Wellbeing Team.

This includes, as a minimum, annual health screening via a questionnaire (tiers 1 & 2), plus additional checks dependent on what the results show.

It is mandatory for an employee to complete health surveillance questionnaires (tiers 1 & 2) and participate in any health surveillance appointments (tiers 3, 4 or 5) where this has been identified as necessary.

The outcomes will be fed back and managers advised about their suitability to continue using work equipment or otherwise.

References & Further Information

The following information and reference material is in place to assist managers to understand their responsibilities and duties.

NIC Documentation and Links

External References

- www.hse.gov.uk/vibration - (HSE Internet Site)
- INDG 175 – 'Hand-arm Vibration at Work' (HSE)
- INDG 242 – 'Control the Back Pain from Whole Body Vibration' (HSE)
- INDG 296 – 'Hand-arm Vibration – Guide for Employees' (HSE)
- HAV's Calculator (HSE)