WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Company Directive

STANDARD TECHNIQUE : HS3B/2

Control of Hand Arm Vibration

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Approved by

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Document Revision & Review Table		
Date	**Comments**	**Author**
Oct 2012	• Section 4.0 – Clarifies the definitions of Action and Limit Values and actions required. • Section 5.0 – Management Arrangements for HAVS has introduced the HSE HAV point process and old references to acceleration levels and vibration database have been removed. • Re-numbering of Sections thereafter to reflect the addition of the new Section 5 as above. • Section 6.2 – Clarifies the responsibilities of the Safety Team • Section 6.3 - Clarifies the responsibilities of Team Managers. • Addition of new Section 6.4 regarding Employee Responsibilities • Section 7 – provides a working example to staff on use of road-breakers • Appendix A introduces an example working protocol letter. • A new table showing HAV points has been included in Appendix B. • Information relating to the Method for Determining Vibration Levels and Exposure is in Appendix C. • Original appendix's D to G thereafter re-named as appendix's D to H. • Minor typographical/branding changes to incorporate the Midlands.	Steve Hayward & Tony Powell
Date	**Comments**	**Author**

1.0 INTRODUCTION

1.1. POL:HS3 sets out Western Power Distribution's commitment to ensure compliance with the Control of Noise at Work Regulations 2006, the Health and Safety at Work Act 1974, the Control of Vibration at Work Regulations 2005 and other associated HSE Guidance Documents in order to minimize the risk of ill-health caused by noise and vibration.

1.2. Hand Arm Vibration (HAV) is vibration that affects the hands when working with certain hand held power tools, or when holding materials that are being processed by machinery. Regular and frequent exposure to high levels of HAV can cause permanent injury to the hands and arms.

1.3. This Standard Technique provides information concerning the control of Hand Arm Vibration (HAV) from tools and equipment that may affect hands and arms by exceeding the Daily Exposure Action Value (A8) of 2.5 m/s^2 and/or the Daily Exposure Limit Value (A8) of 5.0 m/s^2.

1.4. For a majority of staff the risk of injury from HAV in most WPD work is considered to be low, however, there are some activities e.g. use of road breakers and duckbill stay drivers, where the risk of HAV is considered to be higher and this ST sets out details for controlling that risk. It is essential that all staff who use powered tools or machinery understand what HAV is and the precautions that should be taken to avoid the risk.

1.5. **It must be noted that no adequate personal protective equipment to protect against vibration is presently available.**

2.0 EXAMPLES OF TOOLS AND EQUIPMENT THAT COULD CAUSE HAV.

2.1. Any powered tool or machine will produce a degree of vibration. The main tools in use within WPD that can subject the operator to high levels of vibration are:

- pneumatic or petrol powered road breakers
- duckbill stay drivers
- chainsaws
- hammer drills
- angle grinders and concrete saws
- bench mounted grinding wheels
- jig saws
- nut runners

Note: This list is not exhaustive.

2.2. The risk of injury from HAV when using any of these tools will depend on:

- the magnitude of vibration produced
- the time the tool or machine is used for
- how tightly the tool has to be gripped
- whether the operator gets cold or wet while using the tool

3.0 HEALTH RISKS

3.1. The main symptoms of injury that can be caused by HAV are:

- **Vibration White Finger (VWF)** – the first signs may be occasional episodes when the fingertips become white. Cold or wet hands can increase the risk of these episodes. Further exposure to excessive HAV may also produce sensations of "pins and needles". An episode may end with the whiteness in the fingers changing to a deep red flush that can be very painful.

- **Sensory Nerve Damage –** Damage to nerves in the finger can result in reduced sense of touch and temperature. Permanent numbness or tingling in the fingers can also occur.

- **Damage to Muscles, Bones and Joints** – there may be pains in the wrists and arms combined with loss of grip strength in the hand.

Note: Serious injury to hands, wrists and arms caused by HAV cannot be reversed, so it is important to control the risk of injury in the first place.

4.0 EXPOSURE LIMIT VALUE & ACTION VALUE DEFINITIONS

4.1. The Daily Exposure Action Value ((A8) = 100 points or 2.5 m/s^2) is determined over an eight hour period, and is the daily exposure to vibration above which certain actions are required to reduce exposure such as the provision of information on control measures to reduce exposure e.g. reducing the time of use, task sharing and finding alternative methods of working.

4.2. The Daily Exposure Limit Value ((A8) = 400 points or 5.0 m/s^2) is determined over an eight hour period, and is the maximum amount of vibration an employee may be exposed to on any single day. Exceeding this

value is considered to be unacceptably high and would require control measures to reduce exposure e.g. job rotation, alternative system of working, health surveillance etc.

4.3 Staff exposed to HAV exceeding the A(8) Action Value are entitled to health surveillance which aims at early detection of a vibration syndrome, and requires routine examinations.

5.0 MANAGEMENT ARRANGEMENTS FOR HAV

5.1. The measurement of personal exposure to vibration is complex. However WPD has adopted a process of converting the vibration levels into 'HAV points'. A HAV point is the amount of vibration experienced every minute that a particular vibrating tool is used (known as the 'Trigger Time'). Appendix C describes the method which has been used by the Safety Team for measuring vibration levels and converting them into HAV points.

5.2. HAV points change with exposure (e.g. twice the exposure equals twice the number of points). They can be added together where a worker uses two or more different tools with different vibration levels in a day.

5.3. The aim is to keep the exposure level to below 100 HAV points per day. If staff regularly find they exceed the 100 HAV points, they should inform their Team Manager so that additional control measures can be introduced. If health surveillance is provided this can be extended to a maximum of 400 HAV points (representing the exposure limit value of 5.0 m\s² over 8 hours).

5.4. Operational Staff shall limit their exposure to a maximum of 400 HAV points per day and five day rolling total of 1000 HAV points.

5.5. Operational Staff are personally responsible for staying within the HAV points limits. Staff must report to their Team Manager if they go over the 400 point per day limit or 1000 point per rolling five day period. Team Managers shall review the working arrangements for these staff to ensure their HAV exposure is reduced to below these limits.

5.6. Occupational Health checks are provided to monitor staff on an on-going basis. These help to ensure HAV cases are identified early and as such the affects can be mitigated.

5.7. If a person is diagnosed with HAV they can continue to work in their role but only in line with an agreed working protocol which is developed by their Team Manager with advice from the Occupational Health Advisers and Safety Team, (See Example Letter in Appendix A). The hyperlink below will allow access to a pro-forma letter.

5.8. There is a 'buy smooth' intent with regard to vibrating tools and equipment, i.e. eliminating or reducing vibration at source.

5.9. Appendix B contains a table showing HAV points for the different groups of vibrating equipment (e.g. reciprocating saws, wrenches, road drills, etc) which has been developed by the Safety Team for tools regularly used in WPD. It also contains instructions on the above HAV management requirements and it is provided to Operational Staff in the form of van/ toolbox stickers. These can be obtained from the Safety Team

6.0 RESPONSIBILITIES FOR THE CONTROL OF HAV

6.1. PURCHASING RESPONSIBILITIES

6.1.1. Staff having responsibility for the purchase of tools and equipment shall ensure that purchased items have as low a vibration level as reasonably practical and should, wherever practical, expose the intended user to less than the Daily Exposure Action Level of 2.5 m/s^2.

6.1.2. Staff having responsibilities for purchasing equipment, shall ensure that the manufacturer or supplier of new equipment provide information on the vibration characteristics. This information shall be passed onto the Safety Team for inclusion into the WPD database on vibration, which can be found in the Safety and Training Resources Catalogue.

6.1.3. Proposals to purchase equipment that may exceed these levels/limits shall be referred to the Safety Team for advice prior to purchase.

6.2. SAFETY TEAM RESPONSIBILITIES

The Safety Team shall:

6.2.1 Inform the relevant Enforcing Authority of the individual with HAVs in accordance with RIDDOR requirements.

6.2.2 Determine the relevant HAV point value for the vibration level of the tools/equipment used by measurement (i.e. See Appendix C) and/or Manufacturers data.

6.3. TEAM MANAGERS RESPONSIBILITIES

6.3.1. Team Managers shall identify and assess (e.g. duration of use, age of the equipment etc) the use of hand held vibrating tools by their staff, especially those types of tool that may produce high levels of vibration

(See Appendix B). Prolonged use of such tools by any one individual shall be avoided. Advice and guidance can be obtained from the Safety Team and the WPD Control of Vibration Leaflet.

6.3.2. Team Managers should review the working arrangements of any staff that report that they have exceeded the HAV point limit of 400 point per day limit or the 1000 point per rolling five day period. Team Managers should consider the following when discussing HAV with tool/equipment users:

- Work out daily time limits to do jobs and keep risks low
- Is the tool suitable for the task?
- Has the tool been maintained and in good condition, specifically any vibration reduction features?
- Does a maintenance and replacement routine for tools and consumables need to be set up?
- Is there opportunity to share the task?
- Does any additional information on how the tool should be used need to be considered?
- Has adequate training/instruction been provided on safe use?

- Note: Do not rely on 'anti-vibration' gloves. They do not reduce vibration and work only to keep the hand warm and dry.

6.3.3. Team Managers shall ensure that all staff that use power tools are aware of the risk of injury from HAV, and the precautions that are required to avoid the risk. A set of instructions to staff is detailed in Section 7 below. For example, this is relevant to users of equipment such as road breakers/duck-bill stay drivers.

6.3.4. Where it has been confirmed that a member of staff is affected by HAVs, health surveillance shall be arranged by the Team Manager in conjunction with Employee Relations and appropriate actions taken to ensure that additional exposure is avoided.

6.3.5. Team Manager shall compose the working protocol letter with advice from the Occupational Health Advisers and the Safety Team. The Team Manager shall discuss this letter with the employee and seek the employees understanding and acceptance by signing the working protocol.

6.3.6. The Team Manager shall ensure that a copy of this letter is retained by himself and the employee and a copy is sent to Occupational Health.

6.4. EMPLOYEES RESPONSIBILITIES

6.4.1. Identify the number of HAV point for the hand-held equipment that you use. A HAV point is the amount of vibration experienced every minute that a particular vibrating tool is used (i.e. the trigger time). If the tool is not on the list speak to your Team Manager.

6.4.2. Tools and equipment users should monitor their exposure to vibration simply by multiplying the number of minutes the tool is used (trigger time) by the HAV points number. Daily exposure can be found by adding up all the points for all the different tools used throughout the day.

6.4.3. **HAV Point Rules**:

- The aim is to keep the exposure level to below 100 HAV points per day.

- If health surveillance is provided, staff shall limit their exposure to a maximum of 400 HAV points per day and five day rolling total of 1000 HAV points.

6.4.4. You must tell your Team Manager if you go over 400 points during any day or 1000 points over any consecutive 5 day period in a week. No other hand held vibrating tool can be used by the individual for that shift period when these values are reached.

7.0 INSTRUCTIONS TO STAFF

Regular and frequent exposure to high levels of vibration when using power tools can cause permanent injury to your hands and arms. You should:

- avoid the use of vibrating power tools if possible. Studies have shown that the use of road breakers should be limited to 20 minutes/day/person with an occasional maximum of 60 minutes. Sharing the duties is advised. If the regular usage exceeds 20 minutes/day/person you shall inform your Team Manager in order to find an alternative method of working.

- reduce the time that you use the vibrating tool, e.g. by careful work planning or by rotating the use of the tool among all staff on site who are trained to use it

- use the right tool for the job. “Making do” with the wrong tool can mean:

    - more vibration,

- that the tool has to be gripped more tightly,
- that the work will take longer

- make sure that tools are properly maintained. Get defects fixed. Always use sharp chisel points and drill bits. Change grinding and cutting wheels before they become badly worn

- take regular breaks when using vibrating tools

- don't use more force than necessary, and try not to grip the tool tightly

- if using hire tools always select the equipment with the lowest vibration levels as is possible.

And, most important of all, good blood circulation is important to avoid injury:

- keep warm at work, especially your hands. Wear warm gloves and extra clothing in cold weather

- consider not smoking or at least cutting down before and while working. Smoking reduces the blood flow to the limbs and therefore increases the risk of HAV injury

- massaging and exercise your hands and fingers regularly to improve blood flow during and after work

- and finally, **don't ignore symptoms of injury.** It is important to do something about them before they become a problem. If, after using vibrating tools you notice any of the symptoms described in Section 3, inform your Team Manager immediately, who shall contact Employee Relations for further advice and assistance.

8.0 FURTHER INFORMATION

8.1 Further information can be obtained from the Safety Team.

APPENDIX A

EXAMPLE WORKING PROTOCOL LETTER

Mr *Team Managers address*

Address

Our ref *Your ref* *Extension* *Date*

Dear

Ref; Working Protocol for Hand Arm Vibration Syndrome (HAVS)

I am writing to you with regard the letter dated from Dr. , Consultant Occupational Physician and subsequent discussions to confirm the arrangements that you must follow in order to minimise the risk of worsening the mild to moderate HAVS symptoms that he has diagnosed.

Dr states in his letter that he feels you are fit to continue your current work and that you have indicated to him that this is what you would like to do.

Nevertheless, I need to ensure that any future exposure to vibration is kept as low as reasonably practical. You are therefore required to comply with the following protocol while carrying out your duties for WPD;

1. You must ensure that you minimise the use of power tools such as road breakers and/or shear bolt wrenches and drills, and under no circumstances exceed XX minutes of “trigger time” usage of these tools on any working day.

2. As a further precaution, you are expected to maintain a monthly log sheet of the duration, i.e Trigger Time, that you use any power tools at work along with the type of tool used. You should use the attached sheet for this purpose and completed sheets should be given to me at the end of each month for checking and filing.

3. If you note any mechanical defects or malfunction with the power tools supplied (e.g. shear bolt wrenches and drills) you must stop using these tools immediately and report the matter to me without unnecessary delay.

4. If you experience any tingling, numbness or whiteness in your fingers or hands, you must stop using any vibrating tools immediately and report the matter to me without unnecessary delay.

5. In situations where you are required to wear specified gloves under WPD Policy and Standard Techniques e.g. live working etc you must do so. However, to ensure good circulation in your hands it is advisable to wear appropriate warm gloves in cold conditions to keep your hands warm, and to massage/exercise your fingers during work breaks.

6. If you smoke, current medical opinion is that it would be advantageous to cut down or give up.

7. Your condition will be subject to a monthly review by me to determine any significant change in your condition and may result in changes to this protocol.

8. You will also be required to attend a medical appointment with the Occupational Physician in [six/twelve months] as a precautionary measure, at which time this working protocol will be reviewed.

9. If you have any concerns or doubts about this protocol or your condition, please raise the matter with me as a matter of urgency.

I would also like to remind you that WPD Company policy with regard to HAVS is set out in ST:HS3B

I trust that this is all in order and that you will speak to me if you have any issues or concerns about this letter or your condition

Yours sincerely

Team Manager

To be completed by the WPD Employee

I have discussed and fully understand the content of this letter and will abide with the requirement stated above.

Signature: Date:……..

HAVS WORKING PROTOCOL

HAVS Log Sheet

Name_____

Month_____

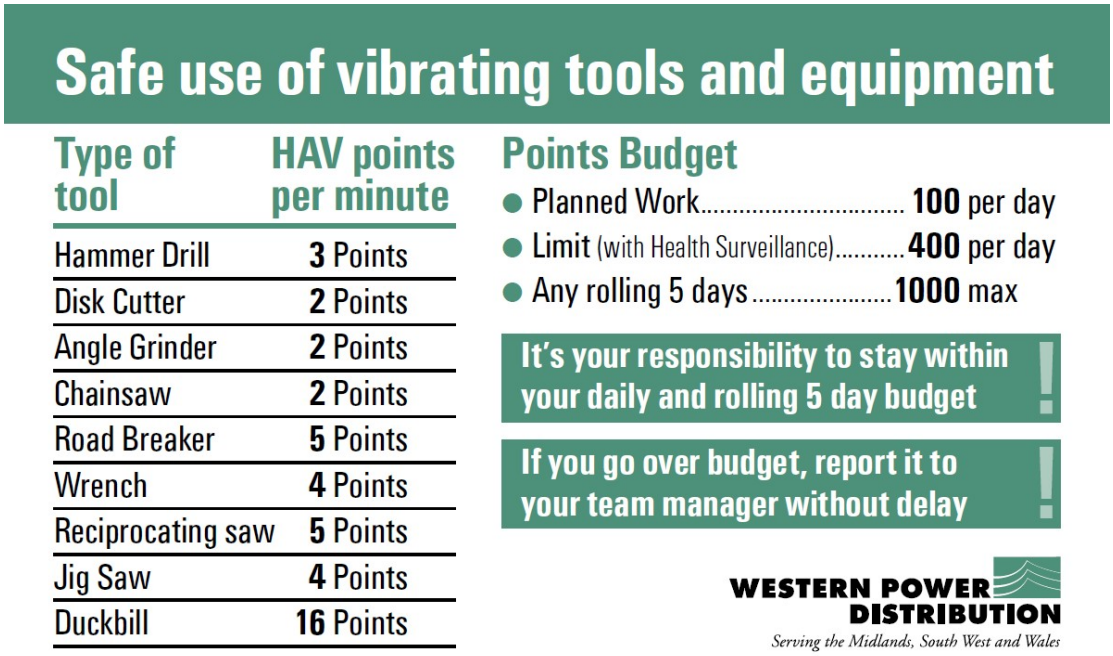
Date	Manufacturer, Model No. & Type of Tool	Trigger Time (minutes)	Over what time period

REMEMBER – your total "Trigger Time" must not exceed XX minutes per day.

This log must be returned, completed, to_____at the end of every month for review and filing.

APPENDIX B

Table of HAV Points for Tools and Equipment Used in WPD



Safe use of vibrating tools and equipment

Type of tool	HAV points per minute
Hammer Drill	3 Points
Disk Cutter	2 Points
Angle Grinder	2 Points
Chainsaw	2 Points
Road Breaker	5 Points
Wrench	4 Points
Reciprocating saw	5 Points
Jig Saw	4 Points
Duckbill	16 Points

Points Budget

- Planned Work..... 100 per day
- Limit (with Health Surveillance)..... 400 per day
- Any rolling 5 days..... 1000 max

It's your responsibility to stay within your daily and rolling 5 day budget !

If you go over budget, report it to your team manager without delay !

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N.B. These labels should be obtained from the Safety Team or author of this document

APPENDIX C

METHOD FOR DETERMINING VIBRATION LEVELS AND EXPOSURE

- A vibration level meter is used with a sensor attached to the tool to measure vibration levels in units of acceleration (m\s²) under actual or simulated site conditions. The reading obtained will depend on the materials being worked upon, the sharpness of the tools, tool design, environmental conditions and the operator. In order to reduce the variation, a series of vibration measurements are taken for each tool. The highest and lowest vibration levels measured are used to provide an average vibration level produced by the tool.

- The vibration level is then converted to 'HAV points' using the following calculation based on that used by the HSE:

  HAV Points = $(N / 2.5)^2$ x 1 /480 x 100 where N is the vibration level in m/s^2.

APPENDIX D

SUPERSEDED DOCUMENTATION

This ST supersedes ST:HS3B/1 dated January 2007, all copies of which must be withdrawn.

APPENDIX E

ASSOCIATED DOCUMENTATION

POL HS3 – Relating to the Noise and Vibration Issues Associated with Tools, plant and Equipment used in WPD.
HSE INDG296 – Health Risks from HAV – Advice for Employees
HSE INDG175(rev2) – Health Risks from HAV – Advice for Employers
HSE HSG170 – Vibration Solutions
HSE L140 – Guidance on the Control of Vibration at Work Regs 2005
ST:HS3C – Control of Whole Body Vibration at Work

APPENDIX F

IMPACT ON COMPANY POLICY

Team Managers shall ensure that personal exposure to hand arm vibration (HAV) arising from the use of hand-held power tools is controlled using the 'HAV points' process. This ST introduces a Working Protocol Letter that Team Managers shall use to set out the activities and trigger time that an employee who is diagnosed with HAV shall be allowed to carry out. It also introduces a self adhesive sticker indicating the HAV points per minute for commonly used tools in WPD. This is a new requirement in the South West and South Wales. Staff shall be advised of the content of this ST and any risk of high exposure to the equipment used.

APPENDIX G

IMPLEMENTATION OF POLICY

This Standard Technique will be implemented with immediate effect in WPD Midlands, South West and South Wales. The daily exposure to vibration shall be 100 HAV points in the absence of routine health surveillance and increase to 400 HAV points with health surveillance. Team Managers shall provide staff using vibration tools/equipment with van/toolbox stickers containing the HAV point table

APPENDIX H

KEY WORDS

HAV, HAV Point, Action Levels, Health Surveillance, VWF,