



LEAFLET 38
CONTROL OF VIBRATION AT WORK

AMENDMENT RECORD

Amd No	Date	Text Affected	Authority and Date

REVISION NOTE:

Leaflet has been completely revised to bring the advice into line with the Control of Vibration at Work Regulations and the Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations.

This leaflet follows a similar format to the Health and Safety Executive (HSE) Approved Code of Practice (ACoP) with guidance contained in boxes separating it from policy.

HISTORICAL RECORD:

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This policy has been equality and diversity impact assessed in accordance with Departmental policy. This resulted in a Part 1 screening only completed (no direct discrimination or adverse impact identified) This policy is due for review on July 2013

Leaflet 38

CONTROL OF VIBRATION AT WORK

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Foreword

This leaflet is published under the authority of the Occupational Health Safety and Environment Board (OHSEB). This leaflet is for application across all areas of MOD and the Armed Forces and reflects recent changes in legislation and/or MOD practices.

1. SCOPE

1.1 This leaflet provides policy and guidance to Top Level Budget (TLB) holders, Commanding Officers (CO)/Heads of Establishment (HoE), Line Managers (LM), and all staff (Service and civilian) for the application of The Control of Vibration at Work Regulations (CVAWR) and the Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations (MSFV(CVW)R)¹ which apply in full throughout the MOD to all workplaces (including, vehicles, ships, boats, vessels, aircraft and premises).

2. INTRODUCTION

2.1 Vibration is encountered virtually everywhere in daily life (driving, travelling by train, boat, riding in a lift etc). In the majority of cases exposure to vibration should not cause harm. The risk of vibration induced

¹ Applies to the Royal Fleet Auxiliary

injury depends on the exposure (time), intensity (power) and frequency of exposure to that vibration (including intermittent exposure and repeated shocks).

2.2 The HSE and the medical profession recognise that there are two specific categories of exposure to occupational vibration, these are:

- **Hand Arm Vibration (HAV)** – is defined as exposure to vibration from mainly hand-held, hand-guided and/or hand-fed tools. Vibration is transmitted from use of these tools through the hand and or fingers. The longer the exposure to the vibration the greater the risk or severity or damage to blood vessels and nerves in the fingers, hands and arms. The specific conditions which can result are collectively known as Hand-Arm Vibration Syndrome (HAVS). Commonly reported conditions related to HAV can include vibration white finger, and carpal tunnel syndrome (a nerve disorder resulting in pain, tingling and weakness in parts of the hand);
- **Whole Body Vibration (WBV)** – is defined as vibration usually transmitted to the whole body from the supporting surface or a platform (vehicle, ship, boat, aircraft; and/or machinery) involving standing, seated or recumbent persons. There is no formal identifiable medical condition that develops as a result of WBV (Although mainly associated with the driver, crew or pilot, passengers can also be affected). There is no known direct relationship between the exposure and severity of injury. Commonly reported symptoms from WBV exposure can include pain in back/neck, nausea, headaches, dizziness, blurred vision etc.

2.3 Staff who are exposed to regular and long term vibration and/or impact shock may develop various medical syndromes/conditions and may be forced to retire early on medical grounds; this has a detrimental effect on the welfare of the individual as well as the Department (skill shortages, recruitment costs, retraining, compensation payments etc). It is essential that awareness is raised and the risk of vibration related injury is managed to minimise its effects on staff, resources and operational capability.

3. ROLES AND RESPONSIBILITIES

3.1 Top Level Budget (TLB) Holder

3.1.1 TLB Holders shall ensure they have strategies and procedures in place to minimise the effect and exposure or potential exposure of their staff and others that may also be affected (e.g. passengers carried in vehicles/boats/aircraft) by vibration in course of their work. Sufficient resources shall be made available to provide competent advice; conduct risk assessments and implement effective vibration control measures.

3.1.2 Adequate resources for the provision of sufficient information, instruction, and training, for affected staff (Commanding Officers/Heads of Establishment, Line Managers, staff, visitors and contractors) shall also be made available.

3.2 Procurement or Acquisition (Supply Chain)

3.2.1 Acquisition teams shall at the earliest opportunity evaluate predicted exposure levels within the scope of the User Requirement. Any equipment/platform designed and/or purchased shall be technically engineered to eliminate or reduce vibration exposures to the user to a level that is As Low As Reasonably Practicable (ALARP); this may require commissioning vibration surveys of the (HAV/WBV) of the equipment before its introduction into service.

3.2.2 The results from MOD vibration emission surveys and/or supplier/manufacture vibration emission data shall be supplied to the operating TLB to enable suitable user risk assessments to be carried out on the equipment prior to use.

3.2.3 If the equipment is procured locally² (new or refurbished) and no vibration (manufacturer/supplier) emission data is available, a suitable and sufficient risk assessment shall be carried out on the equipment to determine any potential for harm to the user. If the risk assessment identifies that there is a potential of HAVS/WBV to the users then an emission survey shall be carried out before the equipment is issued. However, where there is an urgent operational need the equipment maybe issued after the risk assessment has been carried out and the emissions survey carried out as soon as is practicable.

GUIDANCE

The supplier/manufacture emission data can be used as an initial source for the assessment of vibration risk.

3.3 Commanding Officers (CO)/Head of Establishment (HoE)

3.3.1 The CO/HoE shall ensure that where powered hand-tools and/or vibrating platforms (vehicles, ships, boats and aircraft) are used and exposure to vibration is likely to occur, sufficient resources are made available to perform risk assessments, implement control measures, monitor and record outcome and review.

² Equipment if purchased within the EU shall be CE marked to confirm that it meets minimum Health and Safety standards. The LPO shall assure themselves that any equipment purchased outside the EU is confirms to a similar health and safety standard.

3.3.2 CO/HoE shall ensure that sufficient information, instruction, and training on the hazards associated with activities on their site which may expose staff to vibration are provided. Resources shall also be made available for the provision of health surveillance/health monitoring programmes (JSP 375, Vol 2, Leaflet 2) where there is a risk of harm to staff that may be exposed to vibration in the workplace.

3.4 Line Manager (LM)

3.4.1 The LM shall ensure that where there is a risk of staff being exposed to levels of vibration that may cause harm all activities/processes e.g. the use of vibrating tools or riding on/in vibrating platforms (forklifts, small fast boats, helicopters, 4 x 4 vehicles) and the environment (eg cold/wet) in which these activities are to be conducted in are subject to a formal risk assessment (see section 4). The risk assessment shall be carried out in conjunction with a competent person (see Section 3.5).

GUIDANCE

LMs should contact their local health and safety advisor in the first instance for advice on the availability of competent vibration risk assessors. If the local health and safety advisor is unable to assist then LMs should contact their TLB Chief Environmental Safety Officer (CESO) for advice.

3.4.2 LMs shall for the purpose of the risk assessment, take into consideration any vibration emission information from the manufacturer/suppliers of tools, equipment and information provided by procurement and acquisition teams which may indicate that an operator may be at risk of developing vibration exposure related injuries unless suitable control measures are implemented.

3.4.3 The findings of the risk assessments for the process/activity and the control measures (including provision of suitable and sufficient information, instruction and training on the possible effects and consequences, and how to manage the exposure) shall be implemented and communicated to all those at risk and all interested stakeholders (trade union appointed safety representatives or other employee safety representatives etc).

3.4.4 Where the risk assessment has identified a risk of HAV and/or WBV, health surveillance and/or health monitoring programmes shall be implemented in accordance with JSP 375, Vol 2, Leaflet 2. LMs shall ensure that all staff (new and existing) who are exposed to the risk of HAV

and/or WBV complete the appropriate health surveillance self assessment(s):

- Pre-exposure: **MOD Forms 5053 (HAV) and 5055 (WBV)**;
- Post exposure: annually, **MOD Forms 5054 (HAV) and 5056 (WBV)**.

3.4.5 LMs shall refer any member of staff reporting a **positive** result on or between pre-exposure and annual self assessments to Defence Business Services - Civilian Human Resources, (DBS-CHR) for civilian staff or local Services Medical Centre for Service personnel. Staff reporting a positive result shall trigger a review of the risk assessment.

3.4.6 LMs shall in accordance with JSP 375 Vol 2 Leaflet 55, record when self assessments have been handed to staff (existing and new) at risk and keep a register of whether a negative or positive response was recorded for their staff, together with the action taken.

3.4.7 The LM shall ensure that suitable and sufficient training is provided to staff who have been indentified as working with vibrating tools or on/in vibrating platforms. The training shall include (not exhaustive):

- the safe operation of the equipment;
- the findings of the risk assessment and explanation of the risks;
- reporting of injuries/developed conditions;
- safe working practises to minimise exposure to vibration.

3.4.8 The training shall be updated if there are significant changes to work practises/introduction of new equipment.

3.5 Competent Risk Assessors

3.5.1 Competent risk assessors shall have adequate knowledge, training and expertise in the assessment, evaluation and control of risks arising from exposure to vibration (HAV or WBV) together with knowledge of the process/equipment; how and in what environment the vibration may be caused/produced. The assessor shall bring to the attention of the LM the findings of the assessment and, if appropriate, explain the risks and the required control measures to manage those risks.

GUIDANCE

For details on sourcing internal competent advice – see Annex B

Information on Internal training providers for HAV management are also detailed at Annex B

3.6 Staff

3.6.1 Staff shall follow any working arrangements that are put in place for their protection; take reasonable care when using vibration producing equipment, and/or use anti-vibration control devices in accordance with instruction and/or training, and attend appropriate training as required.

GUIDANCE

Smoking may put staff at greater risk of injury from vibration due to combined adverse effects on blood flow. Both smoking and exposure to vibration have an effect on blood vessels resulting in reduced blood flow. Staff who regularly work with vibrating equipment are recommended to cut down or stop smoking.

3.6.2 A pre-exposure or annual health surveillance self-assessment form shall be completed as appropriate (**MOD Forms 5053 to 5056**) if instructed by LM, or if staff are concerned about the potential of HAV and/or WBV exposure. Staff shall inform their LM either of a negative or positive response, but need give no further detail. These forms are Protect-Medical once complete and therefore LMs have no right to have sight of them.

- **Negative** health surveillance self assessments shall either be posted or e-mailed by the staff member to Defence Business Services- Civilian Human Resources, (DBS-CHR) (for civilian staff) or handed in an envelope to the local Services Medical Centre (for Service Personnel) for filing with their personnel file.
- **Positive** health surveillance self assessments shall be notified to the LM and local health and safety adviser immediately. The LM shall then arrange referral to the relevant occupational health provider for assessment. Staff should retain the form and hand it over to the occupational health practitioner (for civilians) and the local Services Medical Centre (for Service Personnel).

3.6.3 If staff experience any symptoms (see examples at paragraph 4.5 that may be related to exposure to vibration, either HAV or WBV, they shall inform their LM immediately who will refer them to the appropriate occupational health provider (Defence Business Services- Civilian Human Resources, (DBS-CHR) for civilian staff) or local Services Medical Centre for Service personnel) for assessment.

4. ASSESSING THE RISK

4.1 The hazard survey for all activities/equipment/platforms shall identify the potential for HAVS/WBV.

GUIDANCE

Typical activities that are a common cause of HAVS include the operation of:

- hammer action tools (e.g. hammer drill, rivet gun) for more than an average of 15 minutes (continuous) per day and/or;
- rotary and other action tools (e.g. angle grinder, chain saw, floor polisher) for more than 1 hour (continuous) per day.

GUIDANCE

WBV occurs when operating or riding in/on the following equipment/platforms:

- any equipment/platform which vibrates (e.g. helicopters, motorcycles) and/or;
- the operation generates shocks/impacts (e.g. fast boats, vehicles on unmade roads, railway vehicles).

4.2 A formal risk assessment shall be carried out in accordance with JSP 375 Vol 2 Leaflet 39 by a competent person (see Annex B) working in consultation with the LM and the operators of the activity/equipment/platform.

GUIDANCE

Vibration from equipment can potentially cause damage to other workplace equipment or structures; this may create additional safety risks (e.g. materials falling from overhead platforms or joints moving apart). Vibration may also affect the ability of staff to read instruments or indicators, or to handle equipment controls. Although mainly associated with the driver, crew or pilot, the exposure of passengers to WBV will need to be considered.

4.3 The risk assessment shall evaluate whether the activity/equipment/platform exposes staff to risks from HAV and/or WBV, and special consideration shall be given to:

- young persons (under age of 18);
- expectant mothers/and those who have recently given birth;
- staff who already suffer from a existing injury (neck/back/circulatory problems), or a vibration related injury;
- staff with prosthetic devices;
- staff who have recently undergone surgery.

4.4 The risk assessment shall consider:

- magnitude, type and duration exposure including intermittent or repeated shocks;
- effects of vibration on the workplace and equipment e.g. reading of controls, handling, stability;
- Availability of alternative equipment designed to reduce vibration;
- environmental conditions e.g. exposure to low temperatures, wet conditions (can leave staff more vulnerable to vibration induced injury);
- information from health surveillance programmes or published guidance.

GUIDANCE

If staff have an existing medical condition affecting blood circulation (e.g. diabetes) they will be at higher risk of susceptibility to vibration related injury.

4.5 The risk assessment shall detail the control measures to be taken to control exposure and where appropriate whether health surveillance/health monitoring shall be required. The risk assessments shall be regularly reviewed (at least every two years) or immediately if there are reasons to believe it is no longer valid if there are any significant changes to processes/ equipment/personnel or if staff report or exhibit any of the following symptoms):

HAVS

- blanching of fingers on exposure to cold and wet, becoming red and painful on recovery (know as vibration white finger);
- attacks of numbness or tingling in fingers after using powered hand tools;
- difficulty in picking up small objects.

WBV

- pain from any part of the neck, back, knees, hips, wrists or ankles;
- Nausea, headaches, dizziness, blurred vision.

5. MITIGATION AND CONTROL MEASURES

5.1 The control measures identified in the risk assessment shall be put in place to eliminate exposure risks from HAVS and/or WBV, or reduce the risk to ALARP and mitigate the effects.

GUIDANCE

The best solution is to eliminate the risk completely through introduction of automation/remote working technology or alternative vibration-free processes; however this may not always be possible. Where the risk cannot be eliminated, the regulations require control measures to be applied and exposure managed.

5.2 When developing control measures to reduce HAV the following approaches should be considered (not exhaustive):

- reduce vibration exposures by modifying the existing process;
- replace the powered tools with ergonomic, reduced vibration equivalents;
- ensure maintenance of tools and equipment in accordance with manufacturers' instructions;
- select appropriate consumables (e.g. better balanced and fitting grinding wheels) and replace items as and when required;
- provide staff with training, information and instruction on safe use of tools and equipment;
- if working in a hot environment, systems shall be put in place to minimise the effect of perspiration on the grip of tools or equipment;
- if working in a cold or wet environment, controls shall be put in place to protect staff from cold or from getting wet or stop working with vibrating tools altogether in extremely low temperatures;
- ensure adequate supervision and health surveillance;
- minimise the forces needed to operate and control the tools (e.g. tensioners, balancers, jigs, fixtures);
- reduce the exposure time (e.g. through job rotation);
- monitor the effectiveness of control measures.

5.3 When developing control measures to reduce WBV the following approaches shall be considered (not exhaustive):

- select the right equipment/vehicle/vessel suitable for the job;
- ensure that all vehicles/vessels fitted with suspension seating prevent the seat suspension 'bottoming out' when travelling over rough ground/seas;
- the driving seat position is adjusted correctly and that all foot and hand controls are within easy reach with no twisting of the body required;

- ensure maintenance of vehicles/vessels is in accordance with manufacturer's instructions;
- provide staff with training, information and instruction on safe use of vehicles/vessels e.g. adjust vehicle/vessel speed/direction to suit the conditions, avoiding excessive bumping, slamming and jolting;
- inform staff of the risk factors such as manual handling and poor posture that can contribute to injury;
- plan routes (uneven ground/rough seas) to avoid where-ever possible shocks and jolts, and where possible to take account of WBV risks as well as safety factors;
- reduce the exposure time (e.g. through job rotation);
- monitor control measures to consider whether further protective measures are needed, and introduce if appropriate;
- wear adequate clothing to provide thermal protection to reduce possibility of muscular injury through exposure to cold and wet environments.

6. EXEMPTIONS FROM THE CVAWR/MSFV(CVW)R

6.1 The Secretary of State for Defence will only grant an exemption to the regulations where he/she is satisfied that health and safety of persons or class(es) of persons to be exempt in respect of activities carried out in the interests of national security is ensured so far as possible.

6.2 All requests for exemption shall be detailed in an Exemption Case Submission (ECS) and be passed for scrutiny to the relevant subject matter experts. After passing scrutiny, the ECS shall be passed to the relevant Functional Safety Board for endorsement and signed off at two * level. The ECS shall then be forwarded to Secretary of State for approval (copied to DBR-SSDC). Any exemption granted will be subject to conditions, which will include a time limit and may be revoked by a certificate in writing at any time.

GUIDANCE

The preparation of the ECS will require input from operating authorities (e.g. RN, RAF, Army), material duty holders (e.g. acquisition, project teams) and medical personnel etc. as appropriate. The ECS should include the following information:

- The name and purpose of the particular equipment/system giving rise to the problem;
- An outline of the problem and its magnitude – i.e. without exemption how particular activities (e.g. training) will be adversely affected, numbers of people placed at potential risk, the impact on front line operational capability (e.g. military tasks that will become impossible to undertake, or otherwise severely hampered), etc;
- Actions undertaken and/or considered to comply with the

regulations – where compliance is being ruled out on cost grounds cost data shall be provided;

- An action plan for compliance in the short and medium to long term – i.e. mitigation options available, likely costs and timescales, etc;
- The time period for which an exemption is required and the rationale for it;
- The plan for health surveillance/monitoring and assessment by the users;
- Where renewal of an existing exemption is being sought, details on the success or otherwise of the previous action plan, including the results of health surveillance/monitoring.

7. RECORDS

7.1 Records (risk assessments, action plans, health records, training records, maintenance records etc) shall be retained in accordance with JSP 375, Vol 2, Leaflet 55.

8. RELATED DOCUMENTS

8.1 The following documents should be consulted in conjunction with this leaflet:

JSP 375 Vol 2:

- a. Leaflet 2 – Health Surveillance and Health Monitoring;
- b. Leaflet 8 – The Purchase and Safe Use of Work Equipment;
- c. Leaflet 13 – Management of Personal Protective Equipment;
- d. Leaflet 14 – Accident/Incident Reporting and Investigation;
- e. Leaflet 39 – Health and Safety Risk Assessment;
- f. Leaflet 55 – Retention of Records.

Other MOD Guidance

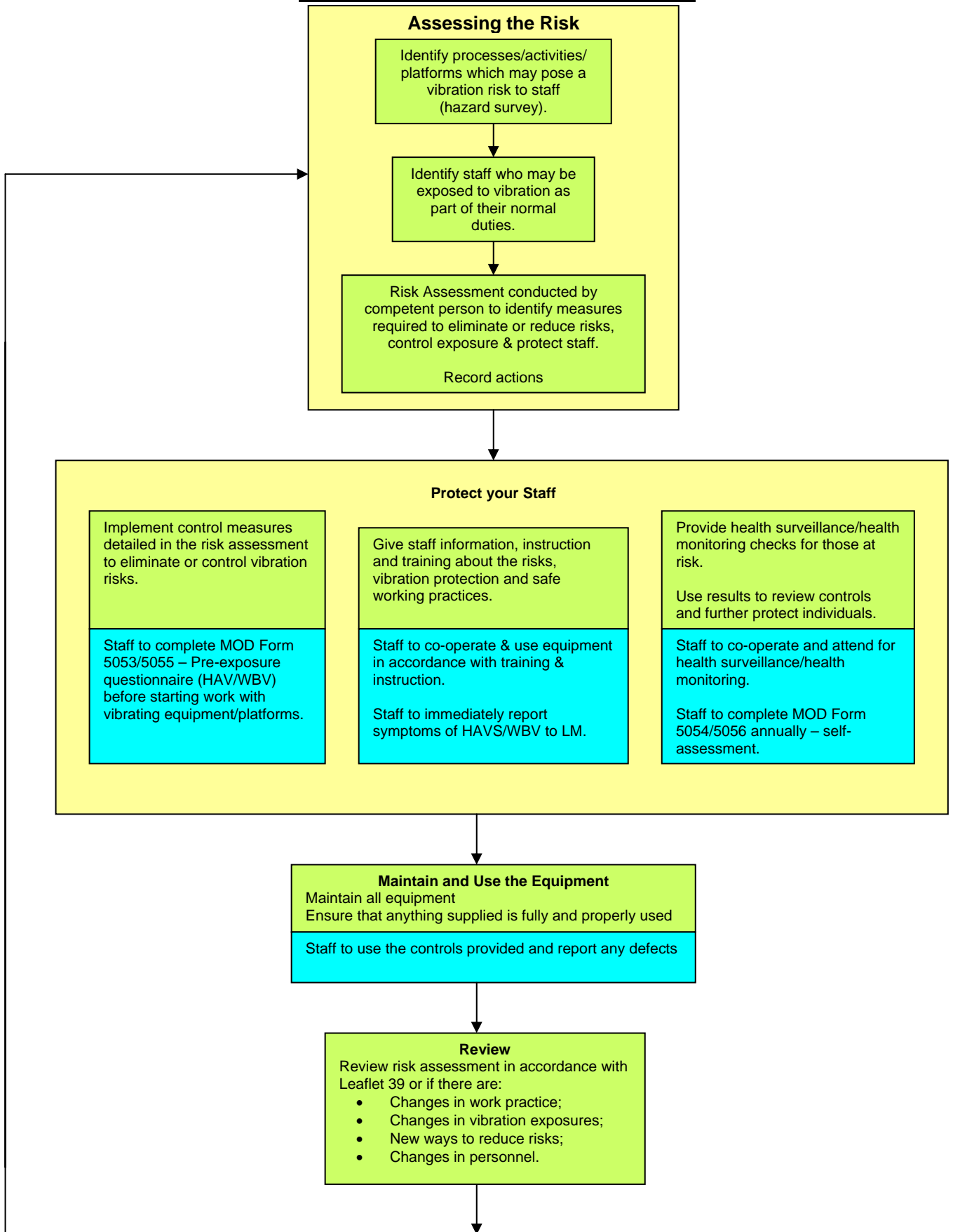
- a. Surgeon General's Policy Letter - SGPL 11/06 Hand Arm Vibration at Work Health Surveillance;
http://defenceintranetds.diiweb.r.mil.uk/sites/polestar/cs/DocumentLibrary/11/1395_sgpl112006.pdf
- b. Surgeon General's Policy Letter – SPGL 13/06 Whole Body Vibration Health Surveillance;
http://defenceintranetds.diiweb.r.mil.uk/sites/polestar/cs/DocumentLibrary/11/1395_sgpl132006.pdf
- c. JSP 437 – Personal Protective Equipment Catalogue;
- d. JSP 815 – Defence Environment and Safety Management;
- e. JSP 800 – Defence Movements and Transport Regulations;

- f. DIN 2010DIN06-034: Health Monitoring and Accident; Reporting Programme for Whole Body Vibration – Small Boats, Planing Watercraft and Landing Craft.

Legislation and Guidance

- a. HSE Guidance L140 – Hand-Arm Vibration: The Control of Vibration at Work Regulations.
<http://www.hse.gov.uk/pubns/books/l140.htm>
- b. HSE INDG175 – Control of the Risks from hand-arm vibration - Advice for employers on the Control of Vibration at Work Regulations 2005.
<http://www.hse.gov.uk/pubns/indg175.pdf>
- c. HSE INDG296 – Hand-Arm Vibration – Advice for Employees. <http://www.hse.gov.uk/pubns/indg296.pdf>
- d. Practical Ways to Reduce The Risk of Hand-Arm Vibration Injury
<http://books.hse.gov.uk/hse/public/saleproduct.jsf?catalogueCode=9780717609543>
- e. Control Back-Pain Risks Whole Body Vibration – Advice for Employers on the Control of Vibration at Work Regulations
<http://www.hse.gov.uk/pubns/indg242.pdf>
- f. Whole Body Vibration – The Control of Vibration at Work Regulations
<http://www.hse.gov.uk/pubns/indg242.pdf>

Managing Vibration Risks Flow Chart



COMPETENCE

1. OBTAINING ADVICE

1.1 The local health and safety advisor shall be the initial point of contact for advice on the availability of competent assessors to undertake a vibration assessment. If the local health and safety advisor is unable to assist then LMs should contact their MOD Occupational Hygienists or their TLB Chief Environmental Safety Officer (CESO) for advice.

1.2 If competent advice is not available locally or from the TLB CESO, specialist in-house advice and expertise is available from the departments listed in Table 1; these resources are limited and priority will be given to the appropriate owning TLB.

Royal Air Force Head of Noise and Vibration Division	DE&S Defence Equipment and Support	Army Army Medical Directorate	Royal Navy Head of Acoustics and Vibration
RAF Centre of Aviation Medicine RAF Henlow Bedfordshire SG16 6DN Tel: 95381 7041	DES SE SEP Acq-Noise Elm 1b, #4128 MOD Abbey Wood Bristol BS34 8JH Tel: 030679 82524	Environmental Monitoring Team Former Army Staff College, Slim Road, Camberley, GU15 4NP Tel: 94261 2726	Institute of Naval Medicine Alverstoke Gosport Hampshire PO12 2DL Tel: 9380 68080

Table 1: Source of MOD Internal Competent Vibration Advice

1.3 If the above in-house expertise is unable to provide the service required, the LM should contact their TLB CESO for guidance in sourcing external competent advice/support.

2. TRAINING

2.1 Staff who require training to become a competent assessor for vibration risk shall undertake a suitable accredited training course. The MOD has a limited in house capability for the provision of suitably accredited training run by the Institute of Naval Medicine (INM) at Gosport.

2.2 A 5-day course entitled "The Management of Occupational Exposure to Hand/Arm Vibration" is designed for those responsible for the hand/arm vibration management in the workplace. Successful candidates will be awarded a certificate by the accreditation body, the Institute of Acoustics. Advice and application forms can be obtained from Head of Acoustics and Vibration, INM on 023 9276 8080 or Military 9380 68080.

2.3 There are currently no internal training courses for Whole Body Vibration risk assessment.

2.4 Staff who have completed appropriate training and have appropriate experience to qualify as competent vibration assessors shall notify their local health and safety advisor.

Template EXEMPTION CERTIFICATE (...name of Regulations and date...)

For persons undertaking [...name of activities to be exempt.....] using [...name of equipment/system.....].

1. [... name of Regulation and date....] cannot be complied with fully when undertaking [...name of activities to be exempt.....] using [...name of equipment/system.....].

2. I having considered the case made for exemption at Ref [...ESC reference...] do hereby exempt, in accordance with the power vested in me by virtue of regulation [...number...] of [...name of Regulation and date....], in the interests of national security, all persons undertaking [...name of activities to be exempt.....] using [...name of equipment/system.....].

3. This exemption is granted subject to the following conditions:

- a.
- b.
- c.

4. I may vary or revoke this Exemption at any time by a certificate in writing, and in any event this Exemption shall expire, unless renewed, on [...date...].

Signed..... Date.....
Secretary of State for Defence

Certificate No:.....