

WHOLE-BODY VIBRATION INFORMATION SHEET



Overview

This Information Sheet provides advice on how to manage the risks of whole-body vibration (WBV) in the workplace.

Workers using machinery in workplaces can be exposed to harmful levels of WBV.

By minimising vibration exposure you can reduce the risk of musculoskeletal disorders.



What is whole-body vibration?

WBV is vibration transmitted to the whole body by the surface supporting it, for example through a seat or the floor. WBV is commonly experienced by drivers, operators and passengers in vehicles and machines when travelling over uneven surfaces. WBV is not restricted to seated work like driving and may be experienced while standing, for example standing on platforms attached to a concrete crushing plant. WBV includes sharp impact like shocks and jolts.

The effects of vibration are complex. How vibration passes through the body depends on posture. Exposure to WBV may:

- cause discomfort
- reduce performance
- cause health effects, and
- aggravate pre-existing conditions.



What are the health effects of exposure to whole-body vibration?

The longer a worker is exposed to WBV the greater the risk of health effects and musculoskeletal disorders. The most commonly reported disorder is lower-back pain. Long term exposure to WBV may cause:

- neck and shoulder problems
- herniated discs, and
- early degeneration of the spine.

Exposure to WBV may contribute to other health effects including:

- cardiovascular, respiratory, neurological, endocrine and metabolic changes
- digestive problems
- reproductive organ damage, and
- impairment of vision, balance or both.

Exposure to WBV may cause discomfort, fatigue and other problems when work activities are being carried out. This could lead to workplace incidents.

There is evidence that workers who are exposed to WBV and noise at the same time are more likely to suffer hearing loss than workers exposed to the same level of noise alone. Exposure to both vibration and noise is also understood to increase musculoskeletal problems.



Factors that can increase health effects

Working posture, size and proportions of the body, muscle tone, physical workload and individual factors like age, pre-existing disorders and muscle force can make the health effects of WBV worse.

Operating mobile plant can also strain the back, shoulders and neck which can be caused by:

- prolonged sitting in constrained or poor postures
- frequent twisting of the spine
- adopting twisted head postures
- frequent lifting and material handling e.g. delivery drivers
- traumatic injuries
- unexpected movements
- cold work temperatures, and
- stress.



Factors influencing the effects of exposure to whole-body vibration

Factors that can impact on WBV exposure include:

- seat design, suspension and maintenance
- cab layout, design and orientation
- task design and work organisation, and
- lighting and visibility.

The main factors influencing WBV exposure in vehicles and mobile plant include:

- resistance forces, rough roads and surface conditions e.g. mobile plant with scraper blades
- road construction and maintenance
- vehicle type and design
- age and condition of vehicle
- maintenance of vehicle suspension systems
- vehicle speed, driver skills and awareness
- vehicle activity, and
- engine vibration.



Eliminating and minimising vibration exposure

Exposure to WBV may be controlled:

- at the source
- along the paths of the vibration, and
- at the position of the worker.

Minimising WBV exposure usually requires a combination of control measures. Control measures, listed in order of the highest level of protection and reliability to the lowest, include:

- modifying the process to eliminate the task or the risk
- redesigning the task, vehicles or machines



- buying machines or vehicles designed to minimise vibration transmitted to the operator
- improving and maintaining road surfaces
- implementing a seat maintenance program to ensure vibration dampened seats are maintained in good condition
- implementing speed limits
- implementing regular work breaks, posture changes or job rotation
- providing training, information and supervision on adjusting and using equipment e.g. seats, and
- implementing safe work procedures and standard operating procedures.

Workers must be consulted where reasonably practicable, when deciding how to manage the risks of exposure to WBV in the workplace.



Do you need to measure vibration?

Measuring WBV can be difficult and complex. If workers feel WBV is uncomfortable, it is likely their exposure to vibration is reaching levels which could affect their health. It can also indicate a WBV problem requiring controls to be put in place.



More information

[Guide to managing risks of exposure of hand-arm vibration in workplaces](#)

[Guide to managing risks of exposure to whole-body vibration in workplaces](#)

[Guide to measuring and assessing workplace exposure to hand-arm vibration](#)

[Guide to measuring and assessing workplace exposure to whole-body vibration, and](#)

[Information Sheet: Hand-arm vibration](#)

For more information see the [Safe Work Australia website \(www.swa.gov.au\)](http://www.swa.gov.au).