

# Whole-body vibration (WBV)

List whole-body vibration hazards on site.

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To determine the health effects of WBV, comparisons were made between operators of heavy equipment and workers in a similar environment who were not exposed to WBV.

With short-term exposure to vibration magnitude at 1 m/s<sup>2</sup>, workers reported symptoms such as abdominal and chest pain, headaches, nausea, and loss of balance. Long-term exposure to WBV can cause serious health problems, in particular those related to the spine and the gastrointestinal system.

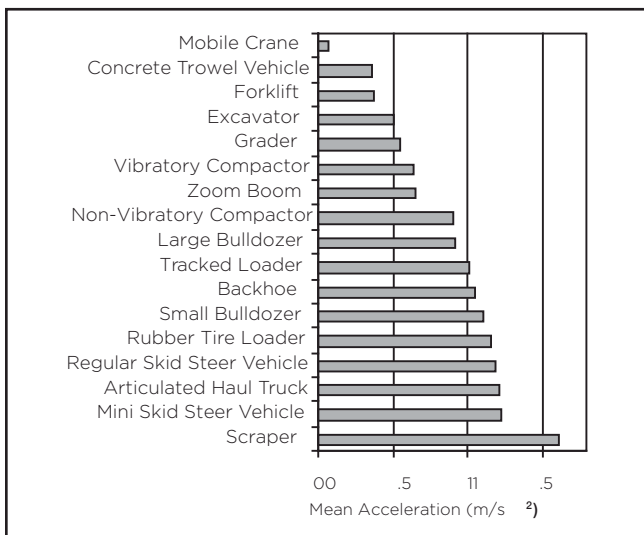
## Explain dangers

Heavy equipment operators are exposed to vibration from bulldozers, backhoes, loaders, skid steer vehicles, excavators, and other machines (Chart 1).

The three main sources of whole-body vibration (WBV) from heavy equipment are:

- low-frequency vibration caused by the tires and terrain
- high-frequency vibration from the engine and transmission
- shock from running into potholes or obstacles.

**Chart 1: Vibration Magnitude of Equipment**



For eight hours of continuous work, the magnitude of vibration should not exceed 0.5 m/s<sup>2</sup>.

Source: ISO 2631; The European Vibration Directive.

## Identify Controls

Until improved equipment comes on the market, heavy equipment operators should do the following to reduce WBV.

- Report any poorly maintained equipment to your supervisor. A good suspension system and correct tire pressure will help to reduce vibration.
- If your seat has hydraulic dampers and shock absorbers, adjust the seat to your weight and height.
- Slow down when driving over potholes and rough terrain such as shale or rock.
- Report any rough terrain to your supervisor. Other workers may be able to level or smooth out the road.
- Get out of your vehicle (in a safe location) for a few minutes every hour to stand, stretch, and give your body a break from vibration.

## Demonstrate

- Ask the crew to describe any problems they have had with WBV.
- Use Chart 1 to show them the vibration level of their equipment.