

Hand-Arm Vibration Syndrome Prevention Guide

A Resource for Employers, Site Supervisors and Health and Safety Representatives



What is Hand-Arm Vibration Syndrome (HAVS)?

Regular occupational exposure to vibrating tools (electric, hydraulic, pneumatic or gasoline powered) can result in an irreversible medical condition called hand-arm vibration syndrome (HAVS).

HAVS involves damage to three different systems in the fingers, hands and arms:

1. **Vascular system:** The best known disease component of HAVS is vibration white finger (VWF), which is primarily due to damage to the blood vessels in the fingers and hands, and results in a decrease in the blood supply to the fingers.
2. **Nervous system:** The nerves in the fingers can be damaged and/or compressed, which results in digital neuropathies and/or compression neuropathies (such as carpal tunnel syndrome).
3. **Musculoskeletal system:** The bones, joints and muscles can be damaged, resulting in arthritis, contractures (inability to straighten the fingers) and tendonopathies (painful inflammation of the tendons).

What are the symptoms of HAVS?

- Pins and needles, tingling and numbness in the fingers.
- Loss of finger sensation and dexterity.
- Night time awakening with painful hands and fingers.
- Painful attacks of fingers turning white or “blanching” when exposed to cold and/or vibration.

Stages of Vascular HAVS (vibration white finger)



Mild

Moderate

Severe (gangrene)

How common is HAVS?

The prevalence of HAVS ranges from **20-50%** of exposed workers in certain occupational groups. In occupations with very high exposure, workers can begin to develop symptoms after as little as 2 months.

Is there a treatment for HAVS?

In general, HAVS is irreversible and there is no effective treatment or cure. Medications can sometimes be effective in reducing the frequency and severity of blanching attacks, and anti-inflammatory medications can be used to reduce pain symptoms.

Because there is no effective treatment for HAVs, prevention is essential. Protecting workers from developing HAVS is the only way to stop disability from this disease.

How can employers help to prevent HAVS?

1. Reduce vibration exposure at the tool

- Develop an anti-vibration tool purchasing policy:
The policy should aim to buy tools with the lowest vibration levels possible. Choose tools that are labelled as 'anti-vibration' or 'A/V' tools. Manufacturers identify vibration levels in units of meters per second (m/s^2). International occupational exposure limits require average tool acceleration levels to be below $5 m/s^2$ over an 8 hours shift, with an action level of $2.5 m/s^2$ (level at which additional precautions and surveillance should be instituted).
- Ensure tools are well maintained with regular maintenance schedules/maintenance policy:
The policy should address replacing vibration mounts before they are worn out, keeping tools sharp, and ensuring rotating parts are checked for balance and replaced if necessary.

2. Reduce vibration exposure at the worker

- Provide workers with ISO/ANSI Certified Anti-Vibration Gloves: Only gloves labelled "meet ANSI S2.73/-ISO 10819" are true anti-vibration gloves. Half-finger gloves do not meet the ISO/ANSI standard.



Workers should use ISO/ANSI certified anti-vibration gloves

3. Provide educational programs to workers on how to prevent HAVS through good working practices:

- Workers should keep fingers, hands and the body warm
- For pneumatic tools, workers should keep the cold exhaust air away from their hands and fingers.
- Workers should grip tools as lightly as possible consistent with safe working practices.
- Workers should prevent continuous exposure by taking frequent short breaks or by using regular task rotation.
- Workers should avoid smoking (nicotine constricts the blood vessels which reduces the circulation in the hands and fingers).

Resources

For additional information on HAVS and its prevention, visit:
<http://www.hse.gov.uk/vibration/hav/advicetoemployers/index.htm>

For information on the vibration characteristics of tools, visit:
www.cdc.gov/niosh-sound-vibration

For additional information on vibration measurement, controls and standards, visit:
http://www.ccohs.ca/oshanswers/phys_agents/vibration/vibration_measure.html

For additional copies of this flyer (pdf), visit:
<http://www.creod.on.ca/web/knowledge/havs/>

This guide was created for use and distribution by the Occupational and Environmental Medicine Clinic at St. Michael's Hospital. Support was provided by the Centre for Research Expertise in Occupational Disease, a collaborative program of the University of Toronto and St Michael's Hospital, and AHSC AFP Innovation Grant funding, a collaborative effort by the Ontario Medical Association (OMA) and the Ministry of Health and Long-Term Care (MOHLTC). This document may be reproduced for the purpose of education and training without permission provided that appropriate credit is given to the Occupational and Environmental Medicine Clinic, St. Michael's Hospital.