Safety Talk

Vibrating Tools

Before you begin:

List some commonly used powered tools in your workplace that generate vibration

Ask whether anyone has experienced unusual feelings in their hands after using vibrating tools

Introduction

Vibration from tools, such as chainsaws and jackhammers, can injure workers' fingers and hands. The injury is called Hand-Arm Vibration Syndrome (HAVS). This is a serious medical condition that can affect workers' ability to do their jobs.

March 2022

Ohio | Bureau of Workers' Compensation

Definitions

Cumulative Trauma Disorder (CTD) – a type of injury that develops from damage that accumulates from repeated wear and tear on soft tissues.

HAVS (Hand Arm Vibration Syndrome) – a cumulative trauma disorder to the fingers and hands that is caused by using equipment which transmits vibration to the hands.

Discussion

Any type of powered tools can cause HAVS. These include pneumatic, hydraulic, electric, diesel or gasoline-powered tools:

- Drills and impact drivers
- Grinders and sanders
- Lawn mowers and weed whips
- Jackhammers
- Chainsaws and reciprocating saws

The vibration can cause cumulative damage to the blood vessels in the fingertips. Eventually, the damage may extend to nerves and bones in the fingertips. Symptoms of HAVS include:

- Tingling or numbness in fingers
- Painful fingers
- Cold skin on fingers
- Loss of color of fingertips
- Reduced sensation in fingers
- Weaker hand grip, impaired fine-motor skills

Initially, some symptoms may appear immediately after using a vibrating tool, then disappear shortly afterwards. But as workers continue to use vibrating tools, the symptoms may persist. Exposure to cold temperatures can trigger the onset of symptoms, as can tobacco use. Since the damage is cumulative, the more the worker uses the tools, the greater the damage. With continued exposure, blood vessels and nerves can suffer irreversible damage that leads to permanent disability.

Common countermeasures can limit a worker's exposure to vibration. Choose the right tool for the job, including use of non-vibrating tools if possible. Buy tools with built-in anti-vibration features. Keep tools in good condition and replace worn parts to reduce vibration. Limit the amount of time that workers use a vibrating tool: either provide rest breaks or alternate with jobs that don't use vibrating tools.

Vibration dampening tool wraps and anti-vibration gloves can help by absorbing the vibration, but only if the material "matches" the frequencies of the vibration, i.e., absorbs the vibration frequencies generated by the tool. Anti-vibration gloves should be full fingered (not fingerless). The vibration dampening material must extend to the tips of the fingers and thumbs because this is where the primary damage occurs. The thumb should have anti-vibration material on both sides because the material at the thumb often rotates during gripping. This exposes the backside of the thumb to vibration. Gloves should not be too tight because tight gloves can decrease tactility and dexterity. But neither should the gloves be too loose because this will also hinder hand activities.

Conclusion

HAVS is a serious medical condition that can cause severe discomfort, pain, and even disability. Take steps to counteract the damage by limiting workers' exposure to vibration.

Group Activity

Ask if anyone has experienced any symptoms of HAVS.

Ask which tools and tasks have the greatest risk of HAVS

Brainstorm some solutions and practical countermeasure to try out.

Resources

- Electronic Library of Construction Occupations Safety and Health: Hand-arm vibration checklist
- World Health Organization: Occupational exposure to vibration from hand-held tools. A Teaching guide on health effects, risk assessment, and prevention.
- CDC/NIOSH Occupational Exposure to Hand-Arm Vibration. DHHS (NIOSH) Publication No. 89-106