Hand/Arm Vibration

Hand and Arm Vibration Syndrome (HAVS) has been known for almost 100 years. It is referred to by various names: Raynaud's phenomenon, vibration white finger, dead finger and vibration syndrome. HAVS can affect upwards of 50% of people who use vibrating tools. While it is unclear exactly how many workers actually suffer from vibration syndrome, current numbers are thought to significantly underestimate the situation.

Who is affected?
Research indicates a linear relationship between vibration dose (level of vibration and years of exposure) and onset/severity of HAVS. In the construction trades, HAVS most commonly occurs in: Pavement breakers; Nut runners; Chainsaws; Grinders; Riveters; Air drills; Chippers; Compactors. HAVS usually requires several hours exposure each day for several months or years before first signs develop.

What are the signs and symptoms?
Early stages usually include episodic numbness, tingling and blanching of fingers. Pain in response to cold exposure may occur. The symptoms are intermittent at first. With increased exposure, however, attacks become more frequent and more severe. Recovery is usually painful. As HAVS progresses workers may notice reduced grip strength and manual dexterity. Early stages are usually reversible.

As the disease progresses symptoms include: Loss of circulation to fingers; Continued loss of manual dexterity; Gangrene and tissue necrosis. It is thought that vibration somehow causes direct damage to nerve endings. Advanced stages are progressive with minimal effective treatment.

How can HAVS be prevented?
Low (anti-vibration - A/V) vibration tools.
Some tools are designed to be anti-vibration tools. This needs to be designed into tool from the start. Retro fit of tools is difficult and only works on rare occasions.

Work practices
One cost effective method is to minimize grip force (minimize coupling) on the tool. Hold the tool as loosely as possible and still control the tool. Other methods include: Use weight of tool to hold it against the work piece; Slip resistant handle to reduce grip force; Reduce the duration the tool is used; Use minimum speed or impact force that still allows job to get done efficiently; Provide work breaks to avoid constant exposure. Avoid allowing the hands to get wet and cold as this can further reduce circulation to the fingers.

Personal Protective Equipment - A/V gloves
Features to look for in an A/V glove include: Gloves should help keep hands warm and dry by wicking away moisture; Full fingers, (not fingerless style). HAVS usually starts in fingertips - this area needs to be protected; Minimal thickness so as not to reduce dexterity.

Studies indicate that cotton and leather gloves offer little or no vibration protection. Use of A/V gloves can reduce control over tool and potentially increase the risk of accident. Gloves may also cause the user to increase grip force and thereby increase coupling with may result in increased vibration transmission to the hand.

Other protective measures
Stop smoking - constriction of blood vessels may increase harmful effects; Adequate cold weather clothing - keep whole body as well as hands dry and warm to prevent cold induced circulation restriction.