



Examples include chainsaws, circular saws, hand-held grinders, hand-held sanders, nut runners, powered lawnmowers, trimmers/brush cutters and buffing machines.

## **6. How can the risk be reduced?**

Departments and Schools must ensure that HAV risk tools and processes are identified, and carry out a risk assessment on their use.

The following measures should be considered:-

- i. Avoid the need to use vibrating tools in the first place. For example, by reviewing cleaning effects on floors, to avoid the need to use buffing machines. Remember to

frequency dependence, a frequency weighting is applied to measurements. Hazard to health is usually assessed from the average (root mean square or rms) acceleration level where:-

$$a_{hw} \text{ in m/s}^2$$

(*h means hand transmitted and w means weighted*)

Information from suppliers is often presented as vibration magnitude data. However, much of that data is derived from laboratory type conditions that may not be indicative of typical work conditions. Ask suppliers for data and information available for the types of work carried out in your area. They are obliged by law to help with such advice.

### Daily vibration exposure

The vibration exposure or dose of a worker depends on the duration they are exposed and it is standardised to a reference period of 8 hours, thereby allowing different exposures to be compared. It is currently recommended that preventative measures and health surveillance are provided  $A(8)$ .

It is possible to work out the daily exposure when the vibration magnitude of a tool is known. For example, information from a supplier of a chainsaw states that vibration magnitude is  $9.7\text{m/s}^2$ . The equipment is worked on for 2 hours per day.

Using  $A(8) = a_{hw} \sqrt{t/8}$  where *t* is the daily exposure time in hours.

$$A(8) = 9.7 \sqrt{2/8} = 4.8\text{m/s}^2 A(8)$$

Where there are a number of different exposures you can use the formula:-

$$A(8) = \sqrt{A_1(8)^2 + A_2(8)^2 + A_3(8)^2}$$

Where data is not available from suppliers, or there is concern that the data is insufficient, it is possible to measure individual exposures, but, this should be carried out by an expert. Please seek advice from Safety Services or the Occupational Health Service before embarking on this course of action.

## **8 Anti- vibration gloves**

Gloves can be helpful in reducing risks from HAV. In cold conditions gloves will keep the hands warm, aiding circulation. Gloves are often necessary to protect against other risks. Any gloves supplied must be able to be used with the tool and task. Ensure that the wearer finds them comfortable and is able to manipulate the tools properly without increasing grip or force. Various gloves with special soft linings intended to reduce vibration risks, are available commercially. These usually provide little attenuation at the most hazardous frequencies and in some cases may increase the vibration reaching the hand. Therefore, unless test data is available for both the glove and the tool, it is best to assume they will not reduce the exposure to HAV.

## **References**

1. Hand Arm vibration CD ROM, available from loan from Health & Safety Services
2. *Hand Arm vibration* HSG88, HSE 0-7176-0743-7
3. *Vibration solutions, practical ways to reduce the risk of hand arm vibration injury*, HSE ISBN 0-7176-0954-5

4. Good leaflets for Departments/Schools are: *Health risks from Hand-arm vibration, for employers and advice for employees* and *Power Tools: how to reduce vibration health risks* ISBN 0-7176-1553-7, 0-7176-1554-5 and 0-7176-2008-5 respectively. These are available from Health & Safety Services.

Debbie Sullivan, August 2003