

Workplace Health and Safety Queensland

Personal hearing protectors – Protecting your hearing

In most industries there are instances where we have to resort to using personal hearing protectors such as earmuffs or earplugs. To use personal hearing protectors correctly and effectively a number of factors must be considered.

How do we hear and why does our hearing need protection?

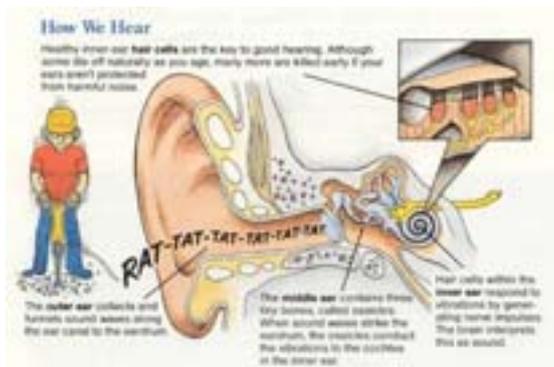


Figure 1: Brief description of how we hear
(Courtesy of EAR Cabot Safety Corporation)

Exposure to loud noise at work (but also at home or during leisure activities) can destroy the tiny hair cells in our inner ears. When they are damaged hearing is lost, as messages can no longer be sent to our brain to interpret the sounds. Hearing loss is permanent as there is no cure. Hearing loss affects not only your own quality of life, but also that of everyone else you deal with. It is important to protect your hearing, especially at work.

How to go about protecting your hearing?

The *Noise Code of Practice 2004* states that personal hearing protectors should not be used as a substitute for engineering or administrative noise control measures. Hearing protectors should be regarded as an interim measure while reduction of noise exposure is being achieved by other control measures. This is in line with the obligation to manage risks under the *Workplace Health and Safety Act 1995* (Section 27A) requiring that risk assessments are carried out and appropriate control measures put in place to minimise or prevent the risk. To put appropriate control options in place for identified risks we need to follow the hierarchy of controls and explore and implement higher order controls, where reasonably possible and practicable, before settling for lower order controls.

In many industries there are possibilities for engineering controls for a range of plant and equipment. The Health and Safety Executive's website (United Kingdom) may provide some useful information for your situation: <http://www.hse.gov.uk/noise/casestudies/csindex.htm>.

Some obvious examples are compressors, silencers on air exhausts and acoustic hoods on multi-spindle planers. Where engineering controls are not possible administrative controls should be investigated or it may be that personal hearing protectors have to be worn.

When inserting earplugs clean hands are necessary to avoid infections of the ear canal. Dirt from your fingers is transferred onto the plug when rolling the earplug tight before inserting it into our ears and so may cause ear infections.

Earmuffs provide a less critical fit over our ears than earplugs do in our ears, and are less likely to cause ear infections.

Another form of hearing protector is the so-called ear canal cap. It consists of pods on either end of a plastic tension band. The pods block the entrances of our ear canals rather than being inserted. They are easily put in place and removed when not needed. AS/NZS 1270 tests indicate a reduction of about 20 to 22 dB could be obtained from ear canal caps when worn correctly.



Figure 2: Typical example of an earmuff collecting dust

The problem with hearing protectors in the real world is that they are either of the wrong rating, not used at all, act as dust collectors, as shown in Figure 2, or are used infrequently and so drastically reduce their effectiveness to insufficient levels.

Hearing protectors are often selected on the basis that the higher the protection rating the better they protect, and consequently in many industrial situations they over-protect. Over-protection hinders communication between workers and the ability to hear machines operating correctly or give the wearer a feeling of isolation from the work environment.

In noisy work environments you can often see workers lift a cup of an earmuff or pull out their earplugs during conversations. If you do not wear your protector the whole time you are

exposed to noise, its effectiveness is drastically reduced as you can see in Figure 3 below. If the hearing protector rated at 28 dB is not worn for 10 minutes in noise during an 8-hour shift its attenuation is reduced to only 16 dB making the effective protective value 12 dB less than you expected and may result in risk of hearing loss due to insufficient protection.

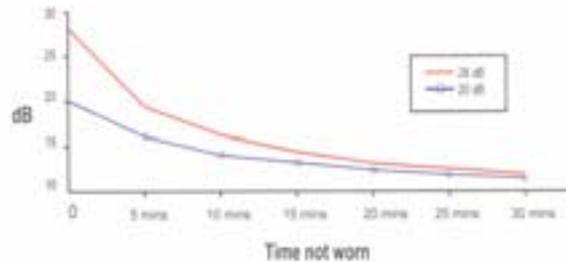


Figure 3: Reducing effectiveness of hearing protectors with time not worn.

Studies Berger (2000), Eden and Piesse (1991) demonstrate that the 'real-world' protection from earmuffs and plugs may be up to 6 dB lower for muffs and up to 9 dB lower for plugs when used in the work situation. In the example of Figure 3, this means that the effective rating may be only 10 dB if earmuffs were worn and 7 dB if earplugs were worn.

More information

Further information is available from www.worksafe.qld.gov.au or by calling the WHS Infoline on 1300 369 915.