

Choosing the right hearing protection

Most of the businesses we deal with have a noise issue which needs some form of control and for the majority this usually means getting those employees who may be at risk to wear hearing protection, which always goes down well. Selection of hearing protection can be a potential minefield so we've come up with what we hope is a plain-English guide to how to approach it.

The requirement for hearing protection kicks in where you have employees who work in areas of 85dB(A) or above, which is where the provision and use of hearing protection becomes mandatory, (among other requirements – there is a guide to the noise regulations on www.hsmc.co.uk). However, not all forms of hearing protection offer the same level of protection so the tricky question arises of – how do you know that the hearing protection is doing its job?

Most people are aware that hearing protection comes in two main types; ear muffs (which if you are lucky make you look like some cool F1 racing engineer, or if you are unlucky make you look like a reject from the Mickey Mouse Club); or ear plugs.

One of the issues which is often overlooked is that not all hearing protection is good for all people and a variety of styles are often needed so one of the first things an employer usually needs to do is to make sure a range of suitable protectors are available. You may also need different sizes of the same protector – e.g. a woman may have smaller ear canals than a 60-odd year old chap who could give Dumbo some competition in a Flappy-Ear competition and therefore two different sizes of the plugs may need to be available to ensure everyone can get a good fit.

Ear plugs & ear damage

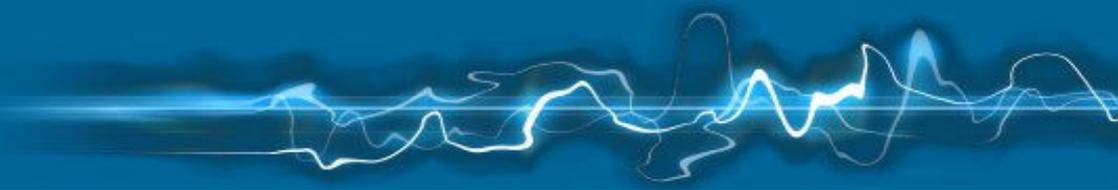
We did come across one client where the employees had been told that if they pushed the plugs in too far they would “damage the hairs which sense the noise”. This is simply not true – it would be both a miracle of biology and extremely painful before a plug got anywhere close to that – you cannot push a plug so far into an ear that it causes this damage. If you hear anyone come out with that take them somewhere quiet and speak to them very sternly.

Choosing the right protection

Hearing protection is provided by companies when a noise hazard is either considered to be present or is determined by measurement but how do companies choose the specific ones they want?

1. The hearing protectors measured effectiveness against the level and type of noise that they are trying to protect your workforce from
2. Because that's what their supplier/ sales rep told them they needed
3. Cost
4. Because they are a pretty colour, lightweight, people like them, etc.





Route 1

If hearing protection is being supplied based on the first one on the list, then that is excellent, give yourselves a pat on the back.

Route 2

If it is based on the second, that's fine as long as the person supplying it knows exactly what noise hazard they are trying to protect against. Many suppliers have specialists who will ensure that you have the correct hearing protection for your particular operation. To enable them to do this, they will require information on the level and type of noise present (such as the frequencies which make up the noise), or at least a couple of different types of noise level, and also the environment you are working in. If they don't know the specific details of the noise hazard present then how do they know that the protection they are offering is going to be suitable?

Route 3

Buying solely on the basis of cost is a no-no – if you have done this then hang your head in shame. But we are not just talking about buying the cheapest protection available here as we often we find that very cheap protectors do indeed to the job quite nicely. The other end of the spectrum can be a problem as well - we have come across companies who bought pretty expensive hearing protection on the basis that 'if its expensive then it must be good', only for us to find that although of high manufacturing quality it is actually not that well matched to the specific noise risk present and in fact is providing the protection at the wrong part of the noise spectrum meaning people are still not protected well enough. So, the moral of this is that cost should be taken into account, but only after you confirm that the protection is indeed good enough for the noise risks you have.

Route 4

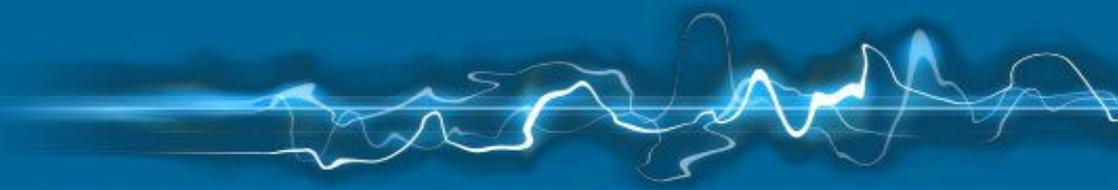
As for the fourth criteria in the list, that's not as daft as it at first sounds. Providing its good enough for the job, and the cost is good for those holding the purse-strings, then why not let employees choose on basis of looks or weight? If it means they are going to be happier to wear them then this can only be good – but as with cost it must not be the only selection criteria.



Every type of hearing protector reduces sound energy by a different amount, ranging from around 10dB up to around 50dB for the very best ear defenders.

Just to complicate it further, hearing protectors are usually more effective in reducing sound at various frequencies, basically being tuned to a certain range of pitches. Why is this important? You may have a workplace which is over the limit and have a hearing protector with a headline figure which is great protection, but if you have a lot of low frequency noise and the hearing protector is 'tuned' to high frequency noises, you may actually be getting less reduction than expected, meaning people are still at risk.



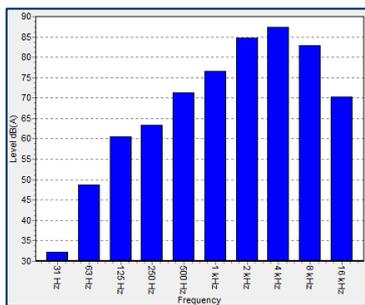


How do you know what is good enough?

We are going to do our best to explain this without making your eyes glaze over...

There are three main ways of assessing how suitable a particular protector is for a noise risk:

Octave band analysis



Frequencies of a noise

The best route is to measure the frequencies which make up the noise – called 'Octave band analysis' by us nerdy no-mates who get very excited about this stuff. This tells you the overall noise level but importantly, also tells you what the noise levels are at various frequencies. Whenever you buy hearing protection, the packaging should have a table of numbers on it somewhere – 'APVs' (Assumed Protection Values) and these tell you the dB reductions at each frequency so a calculation can then be done to determine if the protector works OK. This is brain-achingly complicated and dull to do so we won't bore you with it now but if you want to see how to do it there is a guide specifically on how to do this on our website. If we've done a noise survey for you in the past your simplest option is

to just ask us and we'll run a calculation for you as it makes Kevin feel useful.

There are other more rough and ready ways to work out if the protector is good enough, either by using the 'HML' data or the 'SNR' number, both of which will again be given on the packaging.

HML

HML is High, Medium and Low and is literally how the protector performs at high, medium and low frequencies and your hearing protection should have three values for HML somewhere on the packaging. A calculation for this is easier to do and again, there is a guide on our website of how to do it.

SNR

SNR is Standard Noise Reduction and is the most rough and ready way as this doesn't use much in the way of frequency data, but it is a reasonable indication of performance. The SNR is the number of decibels the protector will reduce the noise level by so all you need is the total noise level, subtract the given SNR for the protector and there you go. Its quick and easy and gets you into roughly the right area.

One word of warning, the SNR is determined under laboratory conditions and in the real world the protection offered may be up to 5dB or more lower than the figure stated due to incorrect fitting of the protection, deterioration over time, etc. Oh, and just to confuse things, if you are planning to use this method make sure you have the noise levels measured in the 'C' weighting rather than the more standard A-weighting.

How much protection?

You are aiming for a 'sweet-spot' of between 70 and 80dB under the hearing protection – the noise the individual actually receives. Above this is getting a tad loud while under it is tending towards over-protection which usually reduces compliance, makes people feel more isolated, etc. If the wearer can't hear what their colleagues are saying the temptation is always there to remove the protection while they chat and then replace it but this must be avoided – in an area of 100dB(A), removing hearing protection for a total of just 15 minutes in a day can cause an overall exposure of 85dB(A) – at the upper limit in the regs.



Noise assessments
 workplace audiometry (hearing tests)
 noise training
 fire risk assessment
 fire training
 safety auditing

Tel: 0800 121 8710
 e-mail: hello@hsmc.co.uk

HSMC
 Darkes Barn (West)
 Conderton
 Tewkesbury
 Gloucestershire
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Hearing aids

You may also have to take some other criteria into account such as use of hearing aids - there's no point in an employee wearing an ear muff to reduce the noise and then a hearing aid to increase it again but also you don't want them to be working in such a low noise level that they can't hear what's going on. Your supplier should be able to help here or we can advise clients on how best to manage individual cases.

Ear infections

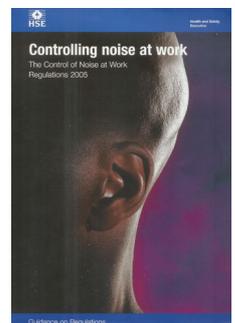
Where people are using ear plugs you should have some muffs available just in case they have a problem which prevents the use of the plug temporarily - during the hearing tests we come across loads of people who have been swimming on holiday and then come back with an ear infection meaning they can't wear a plug for a while.

Choosing which brand to use - a handy tip

Once you have the noise levels measured and have a range of suitable protection identified, grab some samples from your supplier and let employees try them out. If they are involved in the selection process then you will generally have fewer compliance problems further down the road. One word of advice - don't tell them the price of the styles they are trying out or chances are they will automatically assume the most expensive is the best and will inevitably choose that rather than what they actually find the best to use and wear.

Further information:

- There are associated guides on our website www.hsmc.co.uk which follow from this:
 1. *assessing hearing protector suitability* - this walks you through the calculations for the three methods of assessing whether hearing protection is good enough for your noise risk
 2. *noise regulations guide* - a table summarising the current 2005 noise regulations.
- The website www.noisemeters.co.uk has a good automated tool for assessing hearing protection suitability - you plug the numbers in for your noise risk and it will tell you if the protector is good enough or not. You can find it in the 'exposure calculators' link on their main page.
- If you haven't got it already, buy L108 from HSE Books. This has the full text of the Control of Noise at Work Regulations 2005 and also bucket loads of guidance from the HSE on how to meet the requirements.



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