Noise at Work: Guidance for Employees

Introduction

Noise can be defined as an unwanted sound; as such noise is part of everyday life and is all around us, traffic noise, noisy machines, noisy equipment, other people's music (our own music is never seen as unwanted), etc. Exposure to high levels of noise over extended periods of time can cause noise induced hearing loss, or lead to other hearing disorders such as tinnitus (constant ringing, rumbling or whistling in the ears). Once your hearing is lost, or damaged, nothing can bring it back, but noise induced hearing loss is completely preventable.

In our private life we can make an informed and conscious choice whether to go into noisy areas, or how loud to have the volume on our stereo, etc, but in the work situation we are rarely in control of levels of noise emitted by machinery, or equipment, that we work with, or by the work processes that we are involved in. However that does not mean that one just accepts the risk of hearing damage as part and parcel of working in a particular job; the law requires the University (responsibility delegated to Heads of School/Units) to do certain things to reduce your exposure to noise and to reduce the risk from noise to acceptable levels. The law also requires you, as an employee, to do certain things to both comply with the law and to help your employer comply with his obligations.

Requirements placed upon your Head of School/Unit by the Control of Noise at Work Regulations 2005

If you work in a noisy area, work with noisy machinery, or tools, your Head of School should make arrangements for a risk assessment to be undertaken of the noise hazards with a view to assessing the magnitude of risk to hearing and whether any steps need to be taken to reduce the risk and control your exposure to harmful levels of noise. If such risk assessment concludes that you are subject to levels of noise, averaged over a working day or week, which may be harmful to your hearing your Head of School/Unit must take steps to reduce the noise levels or control your exposure to it. This can be done in a variety of ways; from purchasing quieter machinery/tools, enclosing and/or suppressing machinery, to providing you with hearing protection, as appropriate to the individual situation. Arrangements should be made for you to be placed on a health surveillance scheme if your daily noise exposure (without wearing hearing protection) is likely to be at or above 85dB(A), or you already have hearing problems. If a risk assessment shows that your daily/weekly noise exposure is likely to be at or above the lower exposure action value (LEAV) (1) then you should be given certain information so that you can understand the risk that you may be exposed to and what actions you are required to take, or rules that you must follow in order to minimise the risk.

Requirements placed upon you (the employee) by the Control of Noise at Work Regulations 2005

Firstly and most importantly you, as an employee, are required by law to co-operate with your employer (in the context of this University this will be you're Head of School/Unit, or any person delegated by him to undertake his duties under the Regulations) in order that he/she can fulfil his/her duties under the Regulations.

You are required to participate and cooperate in any risk assessment process that requires being undertaken. You are required to take heed of and comply with any relevant information and instruction from your employer, or his delegate, regarding methods of reducing and /or controlling your exposure to harmful levels of noise and you must not knowingly place yourself in harmful situations contrary to that information and direction.

You must not enter areas that have been designated as hearing protection zones and signed as such at their entrance, without wearing suitable hearing protection. Typical signs that you may see denoting a hearing protection zone:

You must wear, and wear properly, where appropriate and according to any information given to you, any devices designed to protect your hearing from damage e.g. earplugs, hearing defenders (muffs), etc.

You must cooperate in any health surveillance programme organised by your employer as a preventive measure to protect employees hearing from damage.

You must keep any hearing protection equipment you are provided with clean, store it properly, maintain it in good order and inform your line manager immediately if it requires repair or renewal.

You are also required to inform your Head of School, through his delegate, or your line manager of any concerns that you have regarding noisy areas of work, noisy tools that you are required to use, or concerns as to hearing difficulties in order that this may be investigated and appropriate actions taken.

Remember: Once your hearing is lost, or damaged, nothing can bring it back, but noise induced hearing loss is completely preventable. It is therefore in your interest to wear any hearing protection equipment that you have been supplied with and to comply with any local rules that are put in place to protect peoples hearing,

remember it is your hearing that is at risk and it is you that will suffer in later life if you do not look after it.

You can hear what the world sounds like to a person with noise induced hearing loss if you turn on the sound on your computer and do not adjust the volume once the video starts, follow this link:

Risk Assessment/are you at risk?

Any risk assessment should start with a basic, subjective, assessment of the noise levels in a particular area, what type of noise is produced, how long persons are exposed to the noise and what effect, if any, it is having on the people who work there. This subjective assessment will help your employer decide whether, or not, there may be a problem with noise and whether a more detailed assessment, perhaps including noise measurement, is required. Indeed, if you were to carry out the subjective assessment it may help allay concerns that you have regarding noise levels in your workplace, or it may serve to confirm your fears in which case you should approach your line manager with your findings and ask that further action be taken.

The subjective risk assessment consists of touring your workplace and asking yourself, and your colleagues, the following questions:

- When at work do you have to raise your voice in order to carry out a normal conversation when approximately 2m apart, this for a significant part of the day?
- After leaving your workplace are your ears, or those of your colleagues, ringing, buzzing, or is hearing muffled?
- Is the noise level in your workplace intrusive – like standing in a busy street, using a vacuum cleaner, or trying to talk in a crowded bar – for most of the working day?
- Do workers use noisy power tools or machinery for a significant part of the day?
- Do you work in a work sector that is known to be noisy: construction, engineering, woodworking, grounds and gardening, glassware or cage washing plants?
- Do you work where there are significant loud impact noises e.g. metal hammering, pneumatic impact tools, etc?

If you or your colleagues are returning ‘yes’ answers to any of the above questions you should ask your line manager, or the person delegated by your Head of School/Unit the task of looking after health and safety matters, to investigate the matter further with a more detailed assessment. This may require them enlisting assistance from the Health and Safety Department’s Occupational Hygiene and Safety Adviser in the form of noise measurement, noise mapping and hearing protection advice.

As well as a health hazard, noise at work can also be a safety hazard, if it interferes with communication, or makes warnings e.g. fire, temperature or gas alarms harder to hear. You should check that all audible warnings can be clearly heard, if not inform your manager, and ask that the need for extra sounders or strobe light beacons be considered.

The basic mechanism of hearing

Sound waves are produced when the air around us is mechanically disturbed (e.g. a vibrating hi-fi speaker, a jet engine, speech) these cause changes in the air pressure which on entering the ear canal cause the ear drum to vibrate. The vibrations then pass along three connected bones (hammer, anvil and stirrup) to the middle ear where movement in the fluid in the inner ear (cochlea) bends thousands of delicate hair like cells, which covert the vibrations into nerve pulses that are transmitted to the brain via the auditory nerve, where they are converted into sound as we hear it.

The importance of getting the message of risk of hearing loss and the need to wear hearing protection, or follow local rules, across to the worker.

The risk associated with exposure to loud noise, its debilitating effect and the importance of wearing hearing protection is not, and has never been, an easy concept for health and safety professionals to convey to the workforce because the result of exposure to harmful levels of noise does not physically show, and its consequence is rarely instantaneous. One can readily see the consequence of someone cutting off a finger because a machine guard was not present, or facial scarring as a result of a corrosive liquid burn, but noise is an insidious hazard that takes time, often years, to manifest as permanent damage to hearing and when one does not suffer from hearing loss, or another hearing disability such as tinnitus, its effect is difficult to comprehend.

Persons may expose themselves to noisy situations on many occasions and because they do not notice any immediate or lasting effect they think that there has been no effect, alas this is often not the case; the effect on the small delicate and sensitive hair cells deep in the inner ear, that react to differences in sound pressure and send nerve pulses to the brain that it recognises as sound, is cumulative. Whilst permanent hearing damage can be caused immediately by sudden, extremely loud, explosive noises, e.g. from guns or cartridge operated machines, hearing loss is usually a gradual process caused by prolonged exposure to noise. Indeed it may only be when damage caused by noise over several years combines with natural hearing loss due to ageing that people realise how deaf they have become. This may mean their family complains about the television being too loud, they cannot keep up with conversations in a group, or they have trouble using the telephone. Eventually everything becomes muffled and people find it difficult to catch sounds like ‘t’, ‘d’ and ‘s’, so they confuse similar words. Of course hearing loss is not the only problem; people may develop tinnitus (ringing, whistling, buzzing or humming in the ears), an extremely distressing condition which can lead to disturbed sleep, irritability and mood swings.

Remember: young people can be damaged as easily as the old and if this were to be the case they would then suffer from a disability that has an extremely detrimental effect on the quality of life for a greater part of their life, noise induced hearing loss is incurable.

How to protect yourself

Take heed of, and follow, any local rules that have been put in place to reduce/control your exposure to noise and protect your hearing, these may include:

- Using noise refuges in noisy workshops e.g. where engines are run up
- Avoiding metal-on-metal impacts, e.g. line collection bins with abrasion-resistant rubber, and reduce drop heights
- Using compressed air at minimum working pressures
- use and positioning of noise sources as far away from colleagues as practicable
- Limiting the time you spend in noisy areas – every halving of the time spent in a noisy area will reduce noise exposure by 3 dB
- The recommended wearing of hearing protection in areas where noise produces a daily exposure above 80dB(A) and (requirement of law) always wearing hearing protection in areas where daily noise exposure levels are at or above 85dB(A)
- Always wearing your hearing protection for all of the time you are exposed to high levels of noise, as removing your hearing protection for even a short period can drastically reduce the level of protection provided
- Attendance at the Occupational Health Unit as part of the health surveillance programme. This usually means having your hearing tested, under controlled conditions, at regular intervals and answering a few questions. (The purpose is to provide early warning of signs of hearing damage so that something can be done to prevent the damage getting worse)

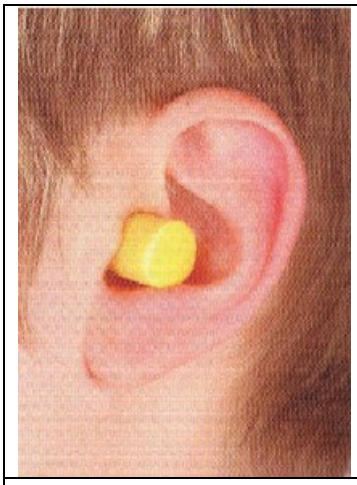
Hearing protectors and maintenance

There are basically three types of hearing protector available: earplugs, hearing defenders (muffs) and semi-aural inserts, each with individual advantages and disadvantages that will affect their choice for any given situation. There are however three main factors that need to be considered when choosing hearing protection: suitability of attenuation, comfort of wear and compatibility with other items of PPE. What follows here is a very general overview of these factors, should you require more detailed information or practical assistance you should contact the Occupational Hygiene Unit.

			
Earplugs	**Ear Defenders**	**Helmet Mounted Defenders**	**Semi Aural Inserts**

Earplugs

Earplugs fit into the ear to fill and seal the ear canal. They can be supplied as individual plugs, or connected by a cord to prevent loss. Some plugs are re-usable (silicone or plastic), whilst others are one use disposable (waxed cotton or foam) – you should check the manufacturer's instructions. Earplugs are well suited for use with other forms of PPE such as safety glasses, hard hats, etc, and of course wearer's prescription spectacles, they are also often favoured over ear defenders for work in hot areas. Crucially, they must be fitted properly and you should be aware that they may work loose over time with the action of the jaw whilst talking, or chewing, and therefore should be refitted, in a quiet place, every hour. They should only be fitted with clean hands and should not be used by persons with ear infections. Reusable plugs must be issued on an individual basis, and not shared; they must be cleaned regularly with warm water and mild detergent and inspected for signs of damage.

	
Earplugs improperly fitted	**Earplugs properly fitted**

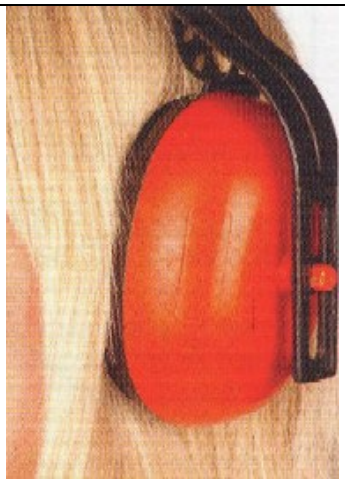
Ear defenders (muffs)

Ear defenders are basically hard plastic cups that fit over, surround and enclose the ears; their inner surfaces are covered with a sound absorbing material, and they are sealed to the head by soft cushion seals filled with foam or a viscous liquid. Tension to assist the seal is supplied by a headband. They are not compatible with the wearing of some other items of PPE (e.g. hard hats, bump hats, safety spectacles)

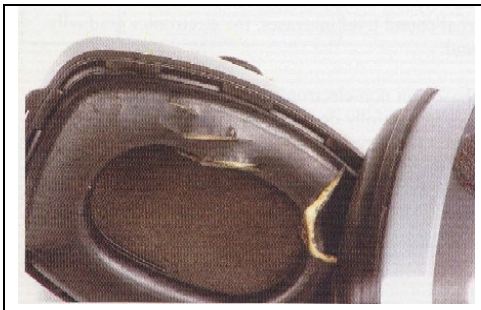
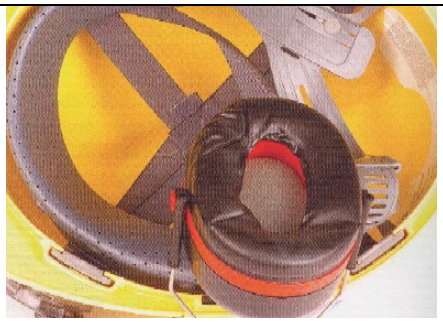
and may not be compatible with some prescription spectacles, items of jewellery, or the wearing of long hair or beards. Compatibility should always rank highly in the choice process. Helmet mounted ear defenders are available for persons who wear hard hats in noisy areas, or whilst undertaking noisy work. Defenders designed in such a way that the headband can be worn behind the head are available, but it must be stressed that only defenders specifically designed to be worn in this fashion should be worn in this way. Defenders are also available that will, on pressing a button, have their attenuation reduced momentarily to allow speech, without the need to remove the defenders from the ear. If you require further details and guidance on specialist defenders contact the Occupational Hygiene Unit.

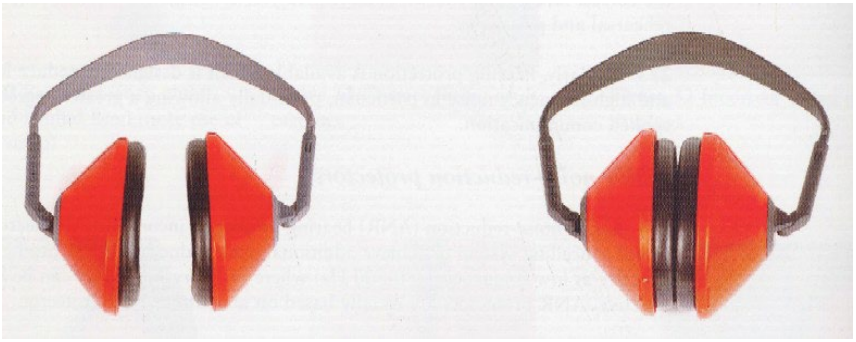
Seals should be checked regularly for cleanliness, hardening, tears, or misshape, Cups should be checked for cracks, holes or other damage and the headband tension should be checked to ensure that it is not deteriorating (check by comparing with new defenders). If you are using helmet mounted defenders make sure that they are not held for long periods in the 'up' position against the helmet side, as this can be a source of distortion, which can affect their performance.

Defenders incompatibility with:

		
Safety Spectacles	**Jewellery**	**Long hair or beards**

Defender maintenance checks:

	
Damaged seal	**Distorted helmet mounted defender seal**



Reduced tension in head band when compared to new

Semi-aural inserts

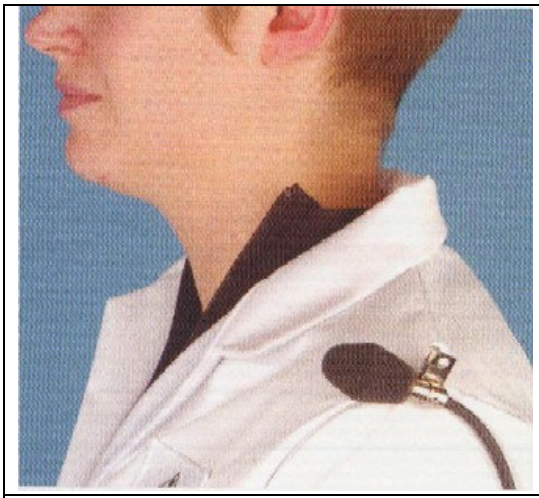
Semi-aural inserts have the appearance of earplugs joined by a headband; the band is in fact a neckband and is designed to be worn behind the neck, or under the chin. The pugs themselves are similar to ear plugs in that they fit into the ear canal, but they do not fit as deeply into the canal as do earplugs, the significance of this being that they are not capable of delivering the same degree of attenuation as is available with earplugs, or defenders, at high frequencies, but they do attenuate low frequency noise well, this results in a fairly level attenuation that enhances the wearers ability to understand speech. They are particularly suited for use by persons going into and out of, or passing through, noisy areas (e.g. managers) and can be 'parked' around the neck. They are not suited for protection against very high levels of noise and it is recommended that their use be restricted to areas where noise levels are between 80 > 87dB(A).

Semi-aural inserts are available with foam or plastic ear inserts, maintenance will depend on choice of insert. If plastic the entire product should be regularly cleaned in warm water with mild detergent. If the inserts are foam wash the entire product, the foam will soak up water and increase in size, pat the foam dry with a gentle squeezing action. After washing allow to dry overnight this will allow the inserts to

return to their original shape and size. Always store your semi-aural inserts in a clean dry place, before and after use.

Measuring noise in the workplace

It may be that the conclusion of the first, subjective, risk assessment is that further more detailed assessment, including noise measurement, is required. If this is the case noise measurement will, in most cases, be undertaken by the Health and Safety Departments Occupational Hygiene Unit and a report detailing the findings and any suggestions for remedial action sent to the Head of School/Unit. Should noise measurement be required within your work area please afford the Health and Safety Adviser your cooperation and patience. Dependent on the noise sources to be monitored, the type of work undertaken and the duration of exposure it may be necessary for static measurements to be taken with an instrument held near to your head, or it may be that you will be asked to wear a personal dosimeter, probably attached to your clothing near to your ear, for a set period of time as you move about from one job to another. In both cases the Health and Safety Adviser may follow you as you go about your daily tasks in order to obtain an overall picture of the tasks you undertake e.g. which are most noisy and what causes the noise. Remember the Health and Safety Adviser is there to observe and measure the noise aspect of your work, or work area, only - he/she is not there to observe matters such as; time taken, etc. and the microphones only record noise levels they do not record speech. The measurements are being taken for your benefit in order to minimise the risk of hearing damage.

	
Noise measurement using a personal dosimeter	**Noise measurement using a hand held sound level meter**

Acknowledgments

I wish to thank the following for kind permission to reproduce photographs:
Her Majesty's Stationery Office
The Health and Safety Executive
3M Safety Products
Signs and Labels Ltd.

Occupational Hygiene Unit
May 2006

For further information concerning the above, please contact the Occupational Hygiene Unit, 51 4261

Document version

Version number	Summary of change	Date and by whom
V1.0	New template	June 2023 HE

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