

A Safe Place to Work

Noise can be harmful, causing short term or acute damage

When thinking of noise do you think of your workplace? If you're lucky, then hopefully not. But there are people who come across excessive noise every day at work.

A worrying statistic shows that more than one million employees in Great Britain are exposed to levels of noise that put their hearing at risk. The louder the noise, the more damage it can cause, and may even create long term damage to our senses. Fortunately there is advice which can prevent damage from noise - and it is important to consider this as a real workplace risk.

A lot of us are exposed to noise in the workplace, ranging from a construction worker surrounded by loud equipment, to a shop assistant in a store with background music, (which more often than not is

anything but in the background). What we need to address is what makes noise in a workplace a danger and what measures are to be taken to reduce the risk of exposure, in turn preventing long term damage to the employees.

What is the cut off point whereby sound goes from being background noise to a serious health hazard? Put simply, if someone has difficulty in hearing another person talking, or has to shout to be understood at a distance of one or two metres, it's likely that the noise levels are in the danger zone.

Risks

The risk to hearing is permanent damage, and how quickly the damage displays itself is down to the nature of the exposure to noise.



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For example, exposures over a long period of time can cause hearing loss progressively. In contrast, some damage can be caused immediately when exposed to peak sound waves produced by sounds such as explosions or cartridge operated tools.

Anyone can be exposed to excessive noise levels. Those working in noisy workplaces, factories, foundries, working with power tools, plant and machinery, and in noisy environments such as roadworks, airports and construction sites are among those most at risk.

It is the obligation of the employer to ensure that all efforts have been made to protect staff at risk from noise in the workplace. General Health and Safety legislation covers all employers and workplaces - specifically the Control of Noise at Work Regulations 2005 in the UK, which is a good source of guidelines in the absence of local law. These regulations require employers to take action if daily or weekly exposure to noise is at or in excess of certain Exposure Action Levels.

There are specific steps an employer is recommended to follow in order to protect staff:

- *Conduct a Noise Assessment. This assessment should cover both loudness, {dB (A)} and frequency, {Hz} in order to plan the correct controls*
- *Take steps to prevent or control the risks. For example, engineering controls through design and layout of the workplace; implementing procedural controls for the employees affected by the noise can also reduce risk*

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- *Where possible eliminate exposure to noise at source by changing the process or equipment*
- *Control exposure to noise by limiting time/duration of exposure by changing the process for the affected employees*
- *Provide Personal Protective Equipment (PPE) - consultation with your PPE supplier will quickly show that there are noise protection solutions for virtually all work situations*
- *Provide information and training to educate the workforce about the danger and required precautions*
- *Regularly monitor and review the effectiveness of the measures - for example by measurement of noise levels and conducting health surveillance*

Employers need to take action if daily or weekly exposure to noise is at or in excess of certain Exposure Action Levels. These levels are referenced in the regulations in decibels (dB).

- *The lower exposure action value is termed as daily or weekly personal noise exposure of 80dB (A), or a peak sound pressure/impact noise of 135dB (C)*
- *The upper exposure action value is daily or weekly personal noise exposure of 85dB (A), or a peak sound pressure/impact of 137dB (C)*

There is always an upper limit of exposure and there are levels of noise that must not be exceeded. These are called Exposure Limit Values and take into account reductions

provided by hearing protection:

- *Daily or weekly exposure of 87dB (A)*
- *Peak action level - peak sound pressure/impact of 140dB (C)*

There is a general rule which can be used to simplify this and to put it into context. For example, the noise level is about 80dB (A) if people have to raise their voices to be heard at a distance of about one metre and the noise level is about 90dB (A) if people have to shout to be heard at a distance of about one metre.

Ongoing duties

Once a noise assessment has been completed this should not just be filed away, never to be seen again. The Noise Assessment is the start of the process, not the end. They should be used to assist the employer to carry out their duties to reduce the risk of hearing loss and control noise exposure.

At the Lower Action Values, employers must:

- *Assess the noise exposure*
- *Eliminate noise exposure at source or reduce to a minimum level*
- *Provide information instruction and training on risks and how to minimise risk, including how they can obtain hearing protection*
- *Ensure that all necessary maintenance is carried out to hearing protection and equipment ▶*

At the upper action values, employers must do all the above and also:

- *Mark hearing protection zones with prominent notices*
- *Provide everyone exposed with suitable hearing protection and ensure that it is worn*

Safe place versus safe person

Employers must first try to eliminate or reduce exposure to noise by means other than hearing protection. PPE should be a last resort and should be selected carefully and correctly.

As with all control strategies, we should consider making the workplace safe before we start to look at hanging pieces of safety equipment on to the workforce, the so-called safe place strategy being preferable to the safe person strategy.

In all workplaces, it may be worth considering the design and layout of the premises. Perhaps there could be a designated area, away from the noise, in which the affected staff could take their breaks, ensuring that they have a complete rest from the exposure. The length of time that employees are exposed to such levels of noise is just as important as the volume itself, so it is worth encouraging staff to take regular breaks and to spend time in designated quiet areas.

Quite often many variables and changes need to be considered and adopted, as reducing noise in working environments often requires more than one solution, as noise may be produced from a number of sources.

Good practices, reducing and eliminating sources of noise

There are many ways to reduce noise levels which are outlined below. A good guideline would be first to introduce methods and practices

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which protect the maximum number of the exposed staff.

These may include:

- *Implementing a quieter way or process of doing the work*
- *Using quieter pieces of equipment*
- *Introducing a low-noise purchasing policy for new equipment*
- *Improving maintenance procedures - good maintenance can reduce noise from friction and moving parts*
- *Fitting silencers to exhausts*
- *Isolating or damping vibrating machinery by fitting anti-vibration mounts*
- *Adding sound absorbing material to vibrating panels to reduce vibration*
- *Enclosing noisy machinery*
- *Erecting barriers and screens around noisy machinery and processes*
- *Positioning noisy machinery and processes well away from workers*
- *Using sound absorbing materials to reduce reflection of sound within buildings*
- *Limiting access by keeping people out of noisy areas*
- *Limiting time spent in noisy areas*

PPE - Hearing Protection

As mentioned before, PPE should be a last resort or temporary measure in protecting employees. Hearing protection should only be considered as a temporary measure, or as a last resort where a risk remains after steps have been taken to reduce noise levels. PPE should not be seen as a quick fix for a serious risk. It is not an alternative to controlling noise by technical and organisational means, but for tackling the immediate risk while other control measures are being developed. In the longer term, it should be used in tandem with technical and organisational changes and can even provide additional protection beyond what has been achieved through noise control.

Protective equipment should be made available to employees where they are exposed to levels of noise between the lower and upper action values.

Where noise exposure exceeds the upper action value, employers must:

- *Provide hearing protection to everyone exposed, and ensure it is used*
- *Identify Hearing Protection Zones with signs to show where hearing protection must be worn ▶*

“PPE should be used in tandem with technical and organisational changes and can even provide additional protection beyond what has been achieved through noise control”



- *Provide information, instruction and training on how to use and take care of hearing protection*

- *Make sure that hearing protection is properly maintained*

Ensuring that the right type of hearing protection is used is vital in the process. There are two main types - those which cover the ear and those which are inserted into the ear.

The Noise Assessment should indicate which sort of equipment is the most suitable for the circumstances.

The reduction of noise when using these different types of equipment varies. As a rough guide, in-ear plugs can reduce the noise level by 10-15 dB (A) and ear muffs which cover the ear can reduce noise levels by 20-25 dB (A), provided that they are fitted correctly.

Of course, account must be taken of the frequency as well as the 'loudness' when considering which protective equipment is the most appropriate solution. This is an important factor, as not all types of equipment are suitable or offer the correct level of protection for every

type of noise. For full guidance and advice, a specialist PPE supplier must be consulted.

When supplying hearing protection, it is the responsibility of the employer to ensure that the equipment is compatible with other types of equipment already in use by the employee.

Regular checks to ensure that the equipment is being used, and being used correctly, and that the equipment is in good working condition should also be a priority of the employer.

Important factors to consider in the selection and use of hearing protection include:

- *Types of protector, and suitability for the work being carried out*
- *Noise reduction offered by the protector, including taking account of 'real-world' factors, and also ensuring that not too much protection is provided*
- *Compatibility with other safety equipment*
- *Pattern of the noise exposure*

- *The need to communicate and hear warning sounds*

- *Environmental factors such as heat, humidity, dust and dirt*

- *Cost of maintenance or replacement*

- *Comfort and user preference*

- *Medical conditions the wearer may have*

Once the employer has taken their responsibility for assessing and providing appropriate equipment, the employee also needs to comply. For example, employees must take all reasonable steps to ensure that any protective equipment used is returned to the accommodation provided for it after use - unless the employee removes the equipment from the workplace. Examples of this type of equipment could include footwear or clothing.

The employee should also examine safety equipment before use to spot any loss or obvious defect, which of course must be immediately reported to their supervisor. And, importantly, the employee should not be carrying out any sort of maintenance of the equipment, unless trained and authorised to do so. ▶

Hearing checks (health surveillance)

Office workers are encouraged to have eyesight checks if they are using display screen equipment regularly at work. Similar guidelines can transfer to workplaces affected by noise - rather than eyesight checks, workers need hearing checks.

These should be carried out if there is a risk that noise levels could damage hearing and will help to warn any employees who may be suffering from early symptoms of hearing loss. It also allows employers to check that noise controls are adequate and update the levels of protection accordingly.

Hearing checks should be conducted by a competent person where employees are regularly exposed to noise levels above the action values. Once the employer has a baseline figure for each employee it is important that regular checks are conducted on their hearing. The interval between hearing checks will depend on a number of factors, including the level of risk and whether the checks show that hearing loss is evident.

In order to establish a start point or datum, it is good practice to carry out hearing checks for new employees in noisy workplaces. Such datum can be used to monitor any possible future loss of hearing ability.

Training

It all comes down to training. This should include ongoing training for

existing staff and introductory training for new starters. A designated member of each team could be responsible for communicating to the rest, perhaps via regular tool-box talks.

If equipment is used to protect staff, this needs to be done consistently and correctly across the board, with regular checks for adequacy, cleanliness and use.

Reviewing how the changes have affected staff needs to be regularly completed. This will be an indication as to how well the noise controls are working in-situ.

Spot checks of equipment in usage and checks of the noise levels will demonstrate how effective these implementations have been and demonstrate management commitment.

So in summary, noise can be harmful, either causing short term or acute damage with excessively high levels of exposure to impact noise, or sometimes more progressive harm may be caused due to regular exposure to constant, relatively high noise levels.

As mentioned above, we should always try to make the workplace as safe as we can before we consider making the worker as safe as possible, by using PPE or other similar controls.

When specifying personal protective equipment as the solution to a noise problem, always consult the specialist suppliers to ensure the best solution, both in terms of loudness, dB and frequency, HZ. ■

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British Safety Services (BSS) is an international consultancy based in Birmingham, offering advice and training on health and safety issues, including all aspects of public safety, specialising in workplace legislation and best practice.

BSS now have offices in Qatar, Dubai, Yemen, China, Libya and Algeria. Most clients are in high-risk sectors such as construction, the nuclear industry, oil and gas, together with many service industries including schools and food.

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