

## **Noise at work – a guide for health and safety representatives**

Hearing problems caused by noise at work are far too common. The HSE estimates that 170,000 people in the UK suffer deafness, tinnitus or other ear conditions as a result of exposure to excessive noise at work.

Once your hearing is gone it will not come back, however it is easily preventable simply by removing or reducing the exposure to noise. Yet even today over 1 million employees in Great Britain are exposed to levels of noise which put their hearing at risk.

This guide gives information to health and safety representatives on what the law is and what they can do to ensure that their employer does not put the hearing of their workers at risk.

### **How does noise cause hearing loss?**

Exposure to noise can damage the hair cells inside the ear. Sometime this loss is temporary where a person notices a temporary dullness in their hearing after exposure to loud noise. The hearing may recover but if the exposure continues there is a risk of permanent damage and permanent hearing loss.

Permanent hearing loss happens when a person has been regularly exposed to damaging levels of noise over a long period of time. They gradually get a hearing loss that is usually most severe in the high frequencies. The hearing loss is usually similar in each ear but often it is not noticed until years after it starts. So long as exposure to noise goes on the hearing loss will continue.

Often by the time a person realises they have hearing loss their hearing has already suffered considerably. The first signs are that conversation becomes more difficult or they have trouble using the telephone. In addition people with noise induced hearing loss sometimes find it difficult to catch sounds like 't', 'd' and 's', so they confuse similar words.

However hearing loss is not always gradual. It can also occur when a person is exposed to a very high sound level for a short time such as a loud explosion. This is called “acoustic trauma” and can cause a sudden hearing loss that is often more severe in the ear closest to the sound.

### **Tinnitus**

Sometimes the first sign that a person's ear has been damaged by noise is a ringing in the ears called tinnitus. Tinnitus is the perception of noise in the ear or head, which is generated inside the body rather than coming from outside. Most tinnitus is caused by a problem with the inner ear, which converts sounds to nerve signals, the auditory nerve, which carries these signals to the brain, and the parts of the brain involved in decoding those signals into what we sense as sounds. Tinnitus is often linked to hearing loss.

Exposure to loud noise at work may also cause tinnitus. Although a third of all adults report some tinnitus, it is usually temporary, but in time, as a result of prolonged exposure to loud noise, this temporary tinnitus may become permanent. About one in 100 people experience serious problems with long-term tinnitus which can effect concentration, sleeping and lead to depression.

### **What level of noise is “loud”?**

The level of noise that is likely to damage a person’s hearing varies depending on the individual and the duration, but there are guidelines as well as legal maximums. A rough guide to whether noise exposure is likely to damage your hearing is whether a person can talk to someone about two metres away without shouting because of background noise. However even at lower levels if someone is exposed to noise at work and finds they cannot hear properly for a few hours afterwards, or if they have had ringing in their ears, that is a sign the sound was loud enough to damage their ears permanently.

Noise levels are usually measured in dB(A), often just called decibels. This scale Does not just measure noise, it emphasises those levels and pitches that have most effect on the human ear. A quiet room at night will be around 20 dB(A). A normal conversation is likely to be around 60 dB(A) while a jet aircraft taking off 25 metres away will be 140 dB(A), which is the threshold at which noise is painful to listen to for most people, although some people may find lower levels painful too.

However 140 dB(A) is not seven times the level of 20 dB(A). It is 1,000,000,000,000 times as intense. That is because a small increase in the decibel scale corresponds to a large increase in intensity, so every 10 dB(A) increase means the sound energy increases ten times.

This means that while a small increase in the number of decibels such as a rise from 80 dB(A) to 83 dB(A) may sound like just a little increase, it actually means that the noise intensity has doubled, and therefore is far more likely to damage hearing.

### **The Law**

The Control of Noise at Work Regulations 2005 require employers to prevent or reduce risks to health and safety from exposure to noise at work. The Regulations require employers to:

- Assess the risks to your employees from noise at work;
- Reduce the noise exposure that produces those risks;
- Provide hearing ear protection if the noise exposure cannot be reduced enough by using other methods;
- Make sure the legal limits on noise exposure are not exceeded;
- Provide workers with information instruction and training;
- Carry out health surveillance where there is a risk to health.

There are certain levels in the regulations that require action. These are a lower exposure action values of a daily or weekly exposure of 80 dB and an upper exposure action values of a daily or weekly exposure of 85 dB; At the lower action

level the employer must give information on the risk and what measures can be taken to protect hearing. The employer must also provide ear protectors for you to use and keep them in good working order. Employers must make every effort to reduce noise levels as far as possible by modifying or replacing equipment and maintaining it regularly. Noisy machinery may need to be enclosed so that the sound is muffled.

If the daily noise level reaches 85dB(A), the law says that ear protection must not only be provided, it must be worn. It is up to the employer to make sure this happens. The employer must also keep the ear protection in good condition and clearly mark ear protection zones – areas where it must be worn.

There are also levels of noise exposure which must not be exceeded. These are called exposure limit values and the maximum daily or weekly exposure is 87 dB and the maximum peak sound pressure is 140 dB. These levels take account of any reduction in exposure provided by hearing protection, above which workers must not be exposed.

If you are exposed to high noise levels at work, your employer should arrange for you to have your hearing tested regularly by experts. Your employer must keep records of the test results and make sure you are told about your own results and what they mean. They must also make sure you get medical advice if you have a hearing loss.

These regulations only came into force in 2006 (2008 in the music and entertainment sectors) and many employers have not reviewed their procedures in the light of the new regulations. Health and safety representatives need to ensure that their employer has implemented the new Noise Regulations and they should be consulted on how this happens. However many employers simply see the new regulations as meaning they should issue ear protection. In fact the use of personal protection should be a last resort. For example, the use of ear protection is a last resort to control noise exposure. It should only be considered where noise cannot be eliminated at source or reduced to a minimum.

The limits in the Noise Regulations should in no way be seen as being “safe”. Even at 80 dB exposure some 20% of workers will have 30dB of hearing loss after 10 years. Some people get hearing loss after exposure at levels less than that so all unnecessary noise should be avoided.

## **Prevention**

Excessive noise is not inevitable. There are lots of actions employers can take to remove or reduce it. However the employer will always try to go for the cheapest option which is to issue ear protection.

The regulations state that “the employer shall ensure that risk from the exposure of his employees to noise is either eliminated at source or, where this is not reasonably practicable, reduced to as low a level as is reasonably practicable. If any employee is likely to be exposed to noise at or above an upper exposure action value (see

above – 85dBA), the employer shall reduce exposure to as low a level as is reasonably practicable by establishing and implementing a programme of organisational and technical measures, excluding the provision of personal hearing protectors, which is appropriate to the activity.”

The regulations even state the actions that must be considered. These are:

- other working methods which reduce exposure to noise
- choice of appropriate work equipment emitting the least possible noise, taking account of the work to be done
- the design and layout of workplaces, work stations and rest facilities
- suitable and sufficient information and training for employees, such that work equipment may be used correctly, in order to minimise their exposure to noise
- reduction of noise by technical means
- appropriate maintenance programmes for work equipment, the workplace and workplace systems
- limitation of the duration and intensity of exposure to noise; and
- appropriate work schedules with adequate rest periods

In addition the regulations make it clear that employees and their health and safety representatives must be consulted on what measures are taken.

### **Risk assessment and safety policies**

Employers should always ensure that their risk assessments include the issue of noise exposure. Health and safety representatives should ask for copies of the risk assessments that the employer has done to ensure that they are preventing and controlling hazards from noise, and make sure that their employer is fully consulting them. Risk assessments must take account of the provisions of the new Regulations on noise. Where control measures are in place then health and safety representatives should check that they are being adhered to and maintained and also that they are effective in preventing injuries and ill health.

Where there is an issue of noise exposure it is important that employers get competent advice. Noise control is more than checking levels with a meter and issuing ear plugs. Controlling noise requires professional help and expert advice. Employers should consult with health and safety representatives over the arrangements for the appointment of competent people.

Health and safety representatives should also be of the training and information arrangements where there is any potential risk and should ensure that their employer has given all their workforce appropriate training and information

Health and safety representatives can identify if there is a problem with noise by carrying out a survey with workers that may be affected or using body and risk mapping techniques. They can also do a special inspection that concentrates on noise

Health and safety representatives should report their concerns and those of their members to management in writing.

## Ear Protection

Ear protection is a last resort where other methods of removing the risk from noise have been introduced and there is still a problem. There are a lot of different factors to be taken into account including the frequency of the noise to be kept out, whether the wearer must still hear other sounds and the length of time they must be worn. The main factor in determining whether workers wear ear protection is not training but the practicality of the specific protection protectors that the employer provides. It must be comfortable, and at the same time effective. In many jobs it must allow conversations still to take place.

There is a lot of detailed advice on what is best for different situations. There are also international standards ear protection must comply with. The best guidance on this can be found in the HSE guide L108 "The Control of Noise at Work Regulations 2005", but there is also a lot of advice on the HSE website, including information on specific sectors such as entertainment.

The term used to describe the extent that ear protection reduces sound is "attenuation". This is also measured in decibels (dB). However ear protection will give different levels of protection at different frequencies and most are better at higher frequencies than lower ones. Most manufacturers however label their products with a single simplified noise-level reduction (SNR). Usually ear protectors will have an SNR or between 20 and 30 dB which is a rough indication of what the manufacturers claim the noise exposure reduction will be if worn properly.

The HSE however advises that under conditions of real use, hearing protectors will give lower protection than predicted by manufacturers' data which is obtained from standardised tests. The difference between manufacturers' data and 'real-world' protection is due to factors such as poor fitting and wearing of spectacles or other personal protective equipment. You should account for this 'real world' protection by presuming that the level of protection given by ear protectors will be 4dB less than claimed by manufacturers.

Hearing protection falls into two broad categories: earplugs and earmuffs. High-attenuation earmuffs are normally more effective for high level noise as they can reduce levels by up to 30dB, but can be uncomfortable and are not really suitable for prolonged use. They may also cut out other sounds such as fire alarms. For very high noise levels earmuffs and earplugs can be worn together.

Earplugs come in a wide variety of forms and some are intended just to reduce irritating noise. To protect against noise it should have an SNR of at least 20dB. There are disposable and re-usable ones and both have their advantages and disadvantages. However whichever is used, workers need to be trained how and why to use them. If earplugs are not used properly their effectiveness can be reduced considerably. Few workers for instance are told to pull the ear back when inserting them.

There are also specialist earplugs for different occupational groups such as high frequency ones for musicians that protect their hearing against the damage done by loud noise but allows them to hear the music. Other earplugs protect against high-intensity sounds but allow normal hearing at other times. There are even earplugs for

food packaging that mean they can be detected by a metal detector if they fall into food.

### **Check your hearing**

The Royal National Institute for Deaf People (RNID) have produced a very simple easy and free way of checking your hearing on the phone. It is not a substitute for a full hearing assessment but is intended to help identify people who have hearing loss and encourage them to take action. Health and safety representatives can publicise it as a way of raising awareness of the issue of noise at work. To take the hearing check call 0844 800 3838

### **Further information**

The TUC has advice on noise at work at: [www.tuc.org.uk/noise](http://www.tuc.org.uk/noise) You can also access the noise pages from the TUC book "Hazards at Work", including a checklist for health and safety representatives on this site.

The HSE noise pages are at: <http://www.hse.gov.uk/noise/index.htm>

The RNID has a lot of good information on preventing noise exposure at work. Go to: <http://www.rnid.org.uk>

The British Tinnitus Association is at: <http://www.tinnitus.org.uk>