Noise

Level 3 Health and Safety in the Workplace

Introduction

Whilst it's impossible to eliminate all noise from the workplace, there are various control measures that you should use in order to prevent the risk of harm to people's hearing from loud equipment and environments.

If not carefully managed, noise can have a significant and long term effect on workers' health. For this reason, it's essential that you consider noise as part of your workplace risk assessment.

This section of the course outlines your responsibilities in regards to noise and explains how you can work towards keeping it under control.

Topics to be Covered

The topics covered in this section are:

- How is noise dangerous?
- Measuring noise
- Employer responsibilities
- Supply of equipment
- Noise risk assessment
- Purchasing policy
- Reducing noise
- Personal protective equipment
- Information, instruction and training
- Health surveillance

How is Noise Dangerous?

Noise at work can cause significant hearing damage that is both permanent and disabling. Even if your workplace doesn't use obviously loud machinery, hearing can still be damaged by prolonged exposure to things such as vehicle noise, loud music, people talking, or noisy equipment.

It's estimated that around 2 million people in Great Britain are exposed to dangerous levels of noise at work.

The HSE further states that some 17,000 people in the UK suffer deafness, ringing in the ears or other ear conditions caused by excessive noise at work.

Despite this, workplace noise-induced hearing loss is entirely preventable through the implementation of adequate control measures.

Prolonged and repeated exposure to loud noise can be seriously debilitating and can irreversibly damage hearing.

Temporary loss of hearing may result after a few minutes or hours of loud noise, but hearing will usually return after a few hours away from the noise.

However, noise-induced hearing loss (NIHL) is permanent. It can be caused by a sudden loud noise, such as an explosion, but is most commonly caused by exposure to loud noise over a long period of time.

The effects of permanent hearing loss include:

- The inability to hear clearly when talking to other people, even from three feet away or over the telephone.
- Disturbance and interference with communication.
- A distorted sense of loudness and 'fullness' in the ears.
- Tinnitus: a permanent ringing or buzzing in the ears that varies in loudness and can be either intermittent or continuous.

Noise is measured in decibels (dB).

An A-weighting, sometimes written as dB(A), is used to measure average noise levels and a C-weighting, or dB(C), to measure peak, impact or explosive noises.

You might just notice a 3dB change in noise levels because of the way our ears work. However, every 3dB doubles the noise, so what might seem like a small difference in numbers can actually be quite significant.

Employer Responsibilities

The main legislation in place to control the risks from noise is the Control of Noise at Work Regulations 2005.

The regulations impose duties on employers to protect their employees from high levels of noise at work – as well as others who may enter their premises – which could otherwise lead to hearing loss or tinnitus.

Employers must also make provision for lower and upper exposure action values. These are limits set on occupational noise exposure which, if exceeded, employers must take the necessary steps to monitor and control.

The absolute maximum noise exposure has a daily or weekly limit of 87dB(A) or a peak sound pressure of 140dB. This must not be exceeded, although it can take into account reduction by hearing protection.

Lower exposure action values:

• A daily or weekly average personal noise exposure of 80dB(A).
• A peak sound pressure of 135dB.

If these are reached or exceeded, employers should provide information, instruction, and training on the risks posed by noise. Suitable hearing protection should be provided if requested.

Upper exposure action values:

- A daily or weekly average noise exposure of 85dB(A).
- A peak sound pressure of 137dB.

If these are exceeded, the employer is required to take reasonably practicable measures to reduce noise exposure, e.g. engineering controls or other technical measures.

If the noise cannot be reduced, employers must provide hearing protection zones, hearing checks, and ear protection.

Employers are required to undertake a risk assessment to eliminate or, where elimination is not reasonably practicable, reduce exposure to noise to as low a level as is reasonably practicable.

They must designate Hearing Protection Zones in the workplace where employees are likely to be exposed at or above the upper exposure action values.

Employers must provide health surveillance for any employee likely to be exposed at or above the upper exposure action value or any individual who may be particularly sensitive or have existing damage.

They must also provide information, instruction and training to any employee who is exposed to noise at or above the lower exposure action value.

Exercise

What unit is noise measured in?

- ○ cm
- ○ kg
- ◉ dB
- ○ oz

Supply of Equipment

Under the Supply of Machinery (Safety) Regulations 2008, a supplier of machinery must:

- Provide equipment that is safe and without risk to health, with the necessary information that will ensure it meets those aims.
- Design and construct machinery so that the noise produced is as low as possible.
- Provide information about the noise the machine produces under actual working conditions.

New machinery will also be provided with information relating to the risks from noise at workstations, including:

- The A-weighted sound pressure level, where this exceeds 70dB.
- The maximum C-weighted instantaneous sound pressure level, where this exceeds 130dB.
- Sound power (a measure of the total sound energy) emitted by the machinery, where the A-weighted sound pressure level exceeds 85dB.
- A description of the operating conditions under which the noise tests were carried out.

Noise Risk Assessment

Employers must assess the risks from noise if exposure is likely to reach or exceed the lower action values. Examples of situations where a noise assessment is likely to be required include where:

- The level of noise is intrusive for most of the working day, equivalent to a noisy street or crowded restaurant.
- People have to raise their voices to be heard when only two metres apart for at least part of the day.
- Employees are using noisy powered tools or machinery for more than half an hour a day.
- Work is in a noisy industry such as construction, demolition, engineering, manufacturing, paper or board making or general fabrication.
- There is the presence of loud intermittent noise such as pneumatic impact tools, drop forges and cartridge operated tools.

Step one of the noise risk assessment is to identify the different types of noise that exist in the workplace. This can be done through workplace observation, gathering feedback from employees, checking manufacturer's instructions and reviewing ill health records.

Step two is to identify who might be harmed by each specific hazard. For example, people who work with loud vehicles, employees with existing hearing damage, or customers who may come close to noisy machinery. You'll need to estimate the length of exposure and how it may vary from day to day.

Step three is to determine how the risks from noise will be eliminated or controlled. For example:

- Introducing machinery noise insulation.
- Establishing compulsory hearing protection zones and reducing access to these areas.
- Using warning signs.
- Providing employees with information, instruction and training.

Step four of the risk assessment is to record your findings and implement them. It's recommended that your risk assessment is written down, as this acts as evidence that you have made a proper check and considered all the risks to health.

Step five is to review your risk assessment and update it if necessary. Check regularly, such as on an annual basis, to see whether any changes to the workplace, new work equipment, employee feedback or findings from health surveillance have indicated that improvements to health and safety need to be made. It's also important that the risk assessment is updated whenever there has been an incident or accident.

The noise risk assessment can be carried out by anyone whom the employer deems to be competent. In order to be competent, the person must have the necessary knowledge, skills, and experience to:

- Understand the purpose of noise assessments.
- Understand what information needs to be obtained.
- Appreciate their own limitations and know when to seek help.
- Estimate noise exposure, make measurements where necessary, and record results.
- Use a variety of instruments and take care of them.
- Interpret information provided by others.
- Obtain and understand good practice and industry standards.
- Prioritise controls and tackle immediate risks.

Purchasing Policy

A purchasing policy is the best way to ensure that the equipment you buy or lease meets your noise emission expectations. If you can buy or lease quiet machinery and equipment, this will help to prevent the noise levels in the workplace from becoming harmful.

When introducing a purchasing policy, the following steps should be taken:

- Consider at an early stage how new or replacement machinery could reduce noise levels in the workplace.
- Set a target to reduce noise levels.
- Specify a realistic noise emission level that would be acceptable for new machinery and equipment.
- Check that renderers and suppliers are aware of their legal duties.

When purchasing equipment, you should:

- Ask potential suppliers for information on the likely noise levels of machines under the conditions they will be operated.
- Try to purchase or hire only from suppliers who can demonstrate a low-noise design with noise control as standard, not a costly operational extra.
- Ask the supplier about methods of mounting and location to ensure the machinery operates as quietly as possible.
- Ask the supplier about how the machine operates and what could affect the noise it produces.
- Ask the supplier about any maintenance arrangements to ensure that the machine does not get louder over time.

Reducing Noise

Where possible, always try to eliminate the hazard before implementing control measures. Where noise elimination or reduction isn't possible, you could try:

- Adding material to reduce vibration (damping).
- Enclosing particular parts of the machinery.
- Using sound-absorbent materials.
- Building barriers or screens around noisy equipment.
- Relocating the sources of noise to areas where fewer employees are present.
- Reducing the length of time that employees spend in noisy areas.
- Designating hearing protection zones where access is restricted and hearing protection is mandatory.

Personal Protective Equipment

Where noise levels cannot be reduced to an acceptable level by other means, hearing protection equipment should be distributed to employees and they should be trained on how to use it correctly.

Hearing protection should only be used as a last resort to protect workers from exposure to excessive noise levels.

When selecting hearing protection, you must ensure:

- It is the correct hearing protection for the job.
- It is only used in accordance with the instructions.
- It is comfortable to wear and fits the user correctly.
- The user knows to report any problems or defects.

Hearing protection is only effective if it is worn by the users. Ways to encourage your workers to wear PPE include:

- Provide a range of protectors so that employees can choose the ones which best suit them.
- Avoid providing protectors which cut out too much noise and create isolation.
- Ensure that hearing protection is only used during noisy tasks and jobs rather than all of the time.
- Avoid making the use of hearing protection compulsory where the law does not require it.
- Ensure rules on the wearing of ear protection are covered in the health and safety policy.
- Carry out spot checks to ensure rules are being followed and, if necessary, refer to disciplinary procedure.
- Managers should act as role models by wearing ear protection in required areas.

There are two main types of hearing protection:

Ear defenders (ear muffs)

These are designed to reduce the amount of noise that enters the user's ears. They should completely cover the ears, fit tightly, and have no gaps around the seals. Ear defenders can be worn alongside hard hats, but they can be uncomfortable when doing a lot of manual work.

Ear plugs (corded or loose)

These are available as disposable or permanent and fit directly into the ear canal. Permanent earplugs need good hygiene routines.

Ear plugs may not be suitable in very dirty work areas where workers' hands are likely to get badly soiled.

Information, Instruction and Training

Employers must ensure that workers understand their workplace duties. This means providing training on:

- The likely noise exposure and the risks posed to their hearing.
- The steps that have been taken to control risks and exposure.
- Training in the proper usage of machinery and work procedures so to prevent noise from reaching unnaturally high levels.
- How to check hearing protection before starting work.
- How to report defects in hearing protection and noise control equipment.
- What their legal duties are under the regulations.
- What they should do to minimise risks, e.g. proper use, storage, and care of hearing protection and noise-control equipment.
- Any health surveillance they will be provided with.
- Any symptoms of noise-induced hearing loss that they should look out for and to whom they should report them.

Health Surveillance

Employers must provide health surveillance for:

- Any employee who is likely to be regularly exposed above the upper action values.
- Any employee who is at risk for any reason, e.g. someone who already has hearing loss or is particularly sensitive to damage.

Health surveillance is important for noise exposure because:

- Hearing loss can be detected in its early stages.
- Employers can learn what control measures are needed to prevent hearing damage from worsening.
- It acts as a means of checking that noise control measures are suitable and sufficient.
- It enables employees to raise concerns about how work may be affecting their hearing.

Health surveillance comprises of:

- Regular audiometry tests.
- Informing employees of the results.
- Keeping a record for each employee.
- Ensuring any employee with identified hearing damage is examined by a doctor.

Hearing checks need to be carried out by someone who has the appropriate training, and a suitable doctor, nurse, or audiologist will need to review the results.

It is recommended that employees are checked annually for the first two years of employment then at three year intervals. Checks may need to be undertaken more frequently if problems with hearing are detected or risk of damage is high.

Exercise

Are the following statements true or false?

A purchasing policy helps you to ensure that the equipment you buy or lease meets your noise emission expectations	◉ True	○ False
Health surveillance is a requirement for all employees in the workplace	○ True	◉ False
Hearing protection should be the first control measure that you implement	○ True	◉ False
Hearing protection zones are designated areas where access is restricted and hearing protection is mandatory	◉ True	○ False
The noise risk assessment should be carried out by a competent person	◉ True	○ False

Summary

In this part of the course, you've learnt how noise can cause permanent damage to people's hearing if it's not kept under control. Long term damage is often caused by prolonged exposure to noise, whether it's from loud equipment, machinery, people or tasks.

The main legislation that covers noise is the Control of Noise at Work Regulations 2005. Under this legislation, employers must assess the risks, eliminate the noise hazards, and/or reduce noise exposure to as low a level as possible.

Employees must not be exposed to noise at or above the lower and upper exposure action values. If exposure to loud noise is likely, then control measures should be taken and hearing protection must be provided. Where possible, the source of the noise should always be removed or controlled before resorting to the use of hearing protection.