Safety Services Guidance

Hearing protection

Key word(s) :	Noise at Work Regulations 2005, hearing protection, attenuation, selection, training and supervision, duties
Target audience :	Managers and staff with responsibility to control noise within the workplace

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The Law

1. The Control of Noise at Work Regulations 2005 ('the Regulations') requires employers to prevent or reduce risks to health and safety from exposure to noise at work.

2. 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; and
   - Carry out health surveillance where there is a risk to health.

3. Employers must reduce the level of noise so as far as possible by modifying or replacing equipment and maintaining it regularly.

4. There are certain levels in the regulations that require action. At the lower exposure action value (daily or weekly) of 80 dB(A) or 135 dB(C), the employer must give information on the risk and what measures can be taken to protect hearing. The employer must also provide ear protectors on request.

5. If the daily or weekly noise level reaches 85 dB(A) or 137 dB(C) Peak, the law says that ear protection must also be worn. The employer must ensure that hearing protection zones are clearly marked with adequate safety signage.

6. 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(A) and the maximum peak sound pressure is 140 dB(C). These levels take account of any reduction in exposure provided by hearing protection, above which workers must not be exposed.

Noise Assessment

7. A noise assessment should be undertaken by a competent person to assess the noise exposure. Suitable hearing protection can then be provided to those workers exposure to hazardous noise levels.

How to select suitable hearing protection

8. The following list should be considered when deciding whether hearing protection is suitable

   - It must adequately attenuate noise levels to below those set out in the regulations. The Health and Safety Executive's (HSE) states that hearing protection should be selected that will reduce the a-weighted level at the wearer's ear to between 70 and 80 dB(A);
   - The chosen hearing protection should not over-protect an individual; over protection can lead to employees not being able to hear safety warnings in the workplace. Where levels are reduced below 70 dB the user will be over-protected and may experience an unnecessary hearing impairment that also has safety risks;
   - The attenuation values of different types of hearing protectors should be obtained by contacting the appropriate manufacturers of the type of PPE. General guidance suggests that 4 dB should be subtracted from the manufacturer's stated attenuation value to account for 'real world' attenuation;
   - A calculation of the acoustic attenuation using the 'octave band analysis' or by the 'HML (High, Medium or Low) Method' or using the 'SNR' (Single Number Rating) should be performed to determine if the hearing protector will adequately attenuate nose levels when worn by a worker;
   - It should be determined whether an individual needs to communicate verbally during the course of their work. When this is the case, a hearing protector should be provided that does not over-attenuate the speech frequencies where possible;
   - The individual should be involved in the selection type to ascertain if they find it comfortable or not and if it fits them properly;
   - The length of time the person will have to wear a hearing protector should be determined. If the hearing protector is not comfortable the person may not want to wear it for the entire working shift.
   - All types of personal ear protection should carry a CE marking.

Different types of hearing protection

9. **Disposable earplugs** – These are often made of soft and pliable material such as foam enclosed in a soft polyethylene foil.

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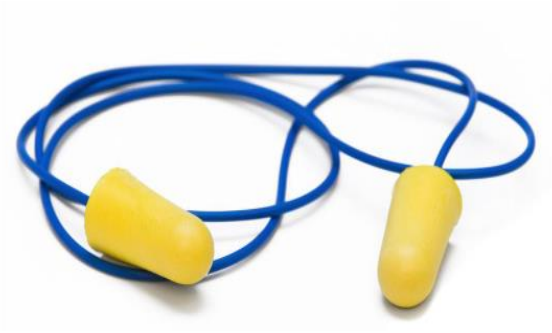
10. **Corded earplugs** – These usually made from the same

material as those in para 9 above but are connected together by cord. The cord is useful to stop them falling out of the ears and into a production process.



11. **Reusable earplugs** – These are either corded together or separate. As the name suggests they can be reused and are often supplied with their own storage case.

12. **Banded earplugs** – These types of earplugs still fit in the ear canal but are connected together with a headband. They are useful when there is a need for temporary hearing protection, eg when a visitor enters a noisy area within a workplace and requires hearing protection.

13. **Earmuffs** – These types of hearing protectors go over the entire ear and have a headband that goes over the head. There are various types of earmuffs offering low, medium and high acoustic attenuation. Other types of earmuffs have built-in transmitters to allow for interference-free communication in noisy environments. Other earmuffs have built-in FM radios combined with hearing protection.

Advantages and limitations of ear plugs and ear muffs

14. Ear plugs are generally mass-produced; however, some types can be individually moulded to fit the ear. Both can be bought as either reusable or disposable. Ear plugs are simple to use, less expensive than earmuffs, and are considered more comfortable in hot or damp work areas. On the negative side, they provide less protection than some earmuffs, and should not be used in areas having noise levels over 105 dB(A). They are not as visible as earmuffs, therefore, making it difficult to identify if employees are wearing them. Ear plugs must be properly inserted into the ear canal if they are to provide adequate protection.

15. Earmuffs can vary with respect to the material and depth of the dome, and the force of the headband. The deeper and heavier the dome, the greater the low-frequency attenuation provided by the protector. The headband must fit tightly enough to maintain a proper seal, yet not be too tight for comfort. On the positive side, earmuffs can usually provide greater protection than ear plugs, although this is not always the case. They are easier to fit, generally more durable than plugs, and they have replaceable parts. On the negative side, they are more expensive, and often less comfortable than ear plugs, especially in hot work areas.

16. In areas where noise levels are very high, earmuffs and ear plugs can be worn together to improve protection.

Compatibility with other PPE

17. Employees should be aware that some safety helmets might adversely affect the efficiency of hearing protectors by breaking the ear and the protector.

18. Employees should ensure that prescription or safety spectacles are compatible with hearing protectors so that any personal protective equipment worn remains effective. For example, if a worker wears spectacles, earplugs should be considered instead of earmuffs, as the latter type of protector has a headband that may become distorted by wearing spectacles.

Maintenance of hearing protection

19. Hearing protectors should be stored in a suitable place within the workplace.

20. Hearing protectors should be clean and in good working order before being issued.

21. The condition of the headband of earmuffs and the seal over the ear should be checked by the employee each time before use.

22. A stock of new hearing protectors of the same types in use should be maintained so that comparisons can be made between those is use to ensure that they remain in optimum condition.

23. There should always be an adequate supply of disposable earplugs. A system for re-ordering should be set up before supplies run out.

24. Spare parts and cleaning materials should be readily available to ensure effective cleaning and repair of hearing protectors.

Training and Supervision

25. Employees should be trained so that they understand:

- How to fit and use hearing protectors correctly;
- Why they must wear hearing protectors correctly and throughout their working shift;
- Why they should never take off their hearing protectors in designated 'hearing protection zones';
- Why the hearing protectors have been selected and what they can and cannot do in a given situation;
- The manufacturer's instructions on the correct use and maintenance of the hearing protector; and
- When not in use, how and where to store their hearing protectors.

26. Employees should receive periodic refresher training to ensure they continue to use their hearing protectors properly.

Employees' duties

27. Hearing protectors must be used in line with any information, instruction and training provided by the employer.

28. Hearing protection wearers must not deliberately endanger themselves or others by not complying with the information, instruction and training provided.

29. Any hearing protection provided remains in optimum condition and is stored appropriately after use.

30. Wearers of hearing protection should report any loss or defect in their hearing protectors to their line manager/employer immediately.

31. Wearers have a legal duty under health and safety legislation to co-operate and comply with their employer in matters relating to their health and safety.

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