

# Noise at Work: Guidance for Heads of School, School Safety Advisers, Supervisors etc

## Introduction

The Control of Noise at Work Regulations 2005 (CNAWR) replace the Noise at Work Regulations 1989 as from the 6th April 2006 with the exception of the music and entertainment industry where employers have a further two years until 2008 in which to comply (meanwhile they continue to follow the Noise at Work Regulations 1989). CNAWR do not apply to members of the public exposed to noise from their non-work activities, or making an informed choice to go to noisy places, nor do they apply to low-level noise which is a nuisance but causes no risk of hearing damage.

Noise induced hearing loss is a significant and yet preventable problem. The CNAWR tighten the values at which employers must take action, in line with the European Physical Agents (Noise) Directive and it is the Health and Safety Executives (HSE) belief that if the 2005 Regulations are complied with, they should eventually eliminate disability from occupational noise induced hearing loss. However HSE also state that the new legislation will mean that an additional one million workers will require hearing protection by law!

The main difference between the old and new regulations is that the daily exposure levels that trigger the requirement for certain action to be taken, previously known as the First and Second Action Level and now termed Exposure Action Values (EAV), have been reduced by 5dB (decibels) at both levels. Other changes relate to the control measures that need to be introduced to enable an overall reduction in noise within the workplace after a noise assessment has been conducted and the requirements for health surveillance.

## Summary of action and limit values:

- Lower Exposure Action Value (LEAV) – daily exposure of 80 dB(A) – peak sound pressure of 135dB
- Upper Exposure Action Value (UEAV) – daily exposure of 85 dB(A) – peak sound pressure of 137dB
- Health surveillance must be provided where a risk assessment indicates that an employees health is at risk due to noise exposure (exposures at or above 85 dB(A), or for persons identified as sensitive to noise between 80dB(A) and 85dB(A))
- There is a new Exposure Limit Value (ELV) - no employee should have a daily, or weekly, noise exposure exceeding 87 dB(A) – peak sound pressure of 140dB, although use of hearing protection is admissible to ensure this level is not exceeded.
- Weekly averaging, as opposed to only daily averaging at present, is allowed where noise exposures vary significantly from day to day

## Do you have a noise problem at the School/Unit workplace you are responsible for?

This depends on how loud the noise is and how long persons at work are exposed to the noise, as a simple guide you will probably need to make a detailed risk assessment and take measures to reduce the noise levels, or workers exposure to it, if any of the following apply:

- When at work people have to raise their voices in order to carry out a normal conversation when approximately 2m apart, for a significant part of the day.
- Workers ears are still ringing, or buzzing, after leaving the noisy work area
- The noise level is 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
- Workers use noisy power tools or machinery for a significant part of the day
- You work in a work sector that is known to be noisy: construction, engineering, woodworking, grounds and gardening, glassware or cage washing plants
- There are significant impact noises e.g. metal hammering, pneumatic impact tools, etc.

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 heard clearly, if this is not the case then you should consider the need for extra sounders or strobe light beacons.

## Loss of hearing

Noise at work has the potential to cause varying degrees of hearing loss which may be temporary or permanent. People sometimes experience temporary deafness, a buzzing, or ringing in the ears after leaving a noisy place. Although hearing recovers within a few hours, this should not be ignored, it is in fact a sign that if the person continues to be exposed to that level of noise their hearing could be permanently damaged.

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. 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. 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.**

## Risk assessment

If any of the bulleted points in the section titled 'Do you have a noise problem in the School/Unit workplace you are responsible for?' apply to your School/Unit workplace you will need to assess the risks in order to decide whether any further action is needed, and plan how you will do it. The aim of the risk assessment is to help you decide what you need to do to ensure the health and safety of employees in your charge who are exposed to noise. It is more than just taking measurements of noise – sometimes measurements may not even be necessary.

Your risk assessment should:

- Identify where there may be a risk from noise and who is likely to be affected; try the 2m test
- Contain a reliable estimate of your employees' exposures, and compare the exposure with the exposure action values and limit values; remember when assessing exposure time it is actual operating or 'trigger time' of noise producing equipment that is important e.g. a person may leave base for a 4 hour tree lopping session with a chainsaw, but the actual trigger time and thus exposure to noise, may be as little as 1 hour
- Identify what you need to do to comply with the law, e.g. whether noise-control measures or hearing protection are needed, and, if so, where and what type; and
- Identify any employees who need to be provided with health surveillance and whether any are at particular risk.

It is essential that you can show that your estimate of employees' exposure is representative of the work that they do. It needs to take account of:

- The work they do or are likely to do;
- The ways in which they do the work; and
- How it might vary from one day to the next.

Your estimate must be based on reliable information, e.g. measurements in your own workplace, information from other workplaces similar to yours, or data from suppliers of machinery. You must record the findings of your risk assessment. You should record, in an action plan, anything you identify as being necessary to comply with the law e.g. noise reducing measures, supply of hearing protection, provision of health surveillance, setting out what you have done and what you are going to do, preferably with a timetable and

stating who will be responsible for implementing the measures. As with all other risk assessments: review your risk assessment if circumstances in your workplace that affect noise exposures change, or if staff change and new staff may be more susceptible to noise induced hearing loss.

If initial assessment within a particular School or Support Unit shows that there is noise at a level and duration where it may cause damage to hearing, assistance in the form of noise measurement, advice on available control measures, suitability of hearing protection, etc. may be sought from the Health and Safety Adviser at: [occupational.hygiene@ed.ac.uk](mailto:occupational.hygiene@ed.ac.uk).

## Measures to control the risk of hearing damage

If your risk assessment has shown that there is a significant risk to employees hearing then tackle this immediate risk by providing suitable hearing protection until more suitable control measures can be implemented.

There are many ways in which noise can be reduced and hence workers exposure reduced, it is often a combination of methods that works best. You should be looking for alternative processes, equipment and/or working methods which would make the work quieter or mean people are exposed for shorter times. You should also be keeping up with what is good practice regarding the standard for noise control within your related industry sector. Where there are things, which are reasonably practicable, that can be done to reduce risks from noise, they should be done. Where a risk assessment shows that employees in a work sector you are responsible for are likely to be exposed at or above the upper exposure action values, you must put in place a planned programme of noise control.

If risk to hearing is low, where noise exposures are below the lower exposure action values, you would only be expected, for reasons of comfort and to reduce stress levels, to take actions which are relatively inexpensive and simple to carry out.

As in most risk control hierarchy, control by the use of Personal Protective Equipment (PPE) should be the last resort, so you must investigate and implement, wherever reasonably practicable, mechanical, technical or organisational methods of reducing noise exposure.

## Positive purchasing policy

Your School/Unit should have a positive low-noise purchasing, or hire policy, meaning that you are actively choosing quieter machinery from the outset, this could be the most cost effective long – term measure you take to reduce noise at work as it may save you the cost of introducing noise reducing and hearing protection measures. When you are considering purchasing, or hiring, new machinery you should:

- Ask suppliers about the likely noise levels under the particular conditions in which you will operate the machinery, as well as under

standard test conditions. Noise output data will only ever be a guide as many factors affect the noise levels experienced by employees, but it will help you to buy quieter machines.

- Try to purchase or hire only from suppliers who can demonstrate a low-noise design, with noise control as a standard part of the machine, not as a costly optional extra.
- Ask about special installation arrangements that may ensure machinery operates as quietly as possible e.g. methods of mounting and location.
- Ask if there is anything about how the machine operates that could affect the noise it produces
- Ask about the required frequency and detail of maintenance arrangements to ensure the machine continues to operate properly and does not get louder over time.

If you ask the same questions of all suppliers you can compare information and if you keep records of this process it will show that you have met your legal duties in reducing workplace noise.

### **Noise reduction**

First, think about if, and how, you can remove the loud noise, or loudest noise, altogether. If that is not possible, do all you can to control and reduce the noise at source, consider redesigning the workplace, reorganising work patterns and if necessary take measures to protect individual workers.

Investigate whether you can:

- do the work in some other quieter way
- replace whatever is causing the noise with something that is less noisy
- avoid metal-on-metal impacts, e.g. line collection bins with abrasion-resistant rubber, and reduce drop heights
- add material to vibrating panels on machines/equipment/autoclaves to reduce and damp vibration ( this can be a common source of noise in sterilising areas)
- isolate vibrating machinery, equipment or components from their immediate surroundings by using anti-vibration mounts, flexible couplings, or placing on rubber mats
- fit silencers to air exhausts and blowing nozzles
- use compressed air at minimum working pressures
- enclose machines to reduce the amount of noise emitted into the general workplace or environment e.g. laboratory/workshop air compressors
- erect barriers and screens to block the direct path of sound
- position noise sources further away from most workers
- use sound absorbing materials within the building to reduce reflected sound e.g. open cell foam or mineral wool
- keep noisy machinery and processes away from quieter teaching/study areas
- design the workflow to keep noisy machinery out of areas where people spend most of their time

- limit the time spent in noisy areas – every halving of the time spent in a noisy area will reduce noise exposure by 3 dB
- ensure that a proper and regular maintenance regime for machinery/equipment is developed within your School/Unit and that it is adhered to (machinery will deteriorate with age and become noisier). Listen out for changes in noise levels – it may be time to replace worn or faulty parts.

## Hearing protection

Hearing Protection is an item of Personal Protective Equipment (PPE) and as such should only be used as a method of noise control after you have investigated and implemented, any reasonably practicable, mechanical, technical, or organisational methods of reducing noise exposure and you require the personal protective equipment is required as a supplement to these measures, or;

- it is required as a short-term measure whilst other methods of controlling noise are been investigated or implemented, or:
- it is not reasonably practicable to reduce the daily noise exposure to a level below 80dB(A) by other means (e.g. the quietest available grass cutting machine has been purchased, but still delivers a daily noise exposure >80dB(A) and this cannot be further reduced because the machine is used outdoors and is mobile).

## The law requires:

- That you provide hearing protection if your employees ask for it and their daily noise exposure is between the lower and upper EAV's, that you provide hearing protection and that you make sure that they are worn properly if their daily noise exposure exceeds the UAV's.
- That you identify areas where the daily noise exposure is likely to exceed the UAV and where hearing protection will therefore be required to be worn, designate them as hearing protection zones and sign them accordingly:



- That you provide information and training to the employee on how to use the type of protector supplied, and if it is reusable, how to care for it.
- That you ensure that supplied hearing protectors are properly used. In order to do this you may wish to consider:

- including the need to wear hearing protection in your School/Unit safety policy
- designating a named person who has authority and is in overall charge of issuing protectors and making sure replacements are readily available
- carry out spot checks to see that the rules are being followed and that hearing protection is being used properly
- if employees carry on not using protectors, or not wearing them properly, invoking the normal University disciplinary procedures
- ensuring that all managers and supervisors set a good example and wear hearing protection at all times when in hearing protection zones
- ensuring, by instigating local rules, that only people who need to be there enter hearing protection zones and do not stay longer than they need to.

Although the law does not require signage where levels of daily exposure are below the UAV you should consider whether hazard warning signage is desirable, or whether you wish to implement local mandatory rules e.g.



## Selection of hearing protectors

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 is 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 [occupational.hygiene@ed.ac.uk](mailto:occupational.hygiene@ed.ac.uk).



Whichever type of hearing protection is chosen it is of course fundamental that it should provide sufficient attenuation to reduce the noise at the ear to at least below 85 dB(A), the UEAV laid down in CAWR, but to ensure that there is the minimum risk to hearing one should be aiming for attenuation that reduces noise at the ear to around 75-80dB(A). It is however just as important not to overprotect as it is to ensure that there is sufficient protection. Overprotection, by reducing the noise level at the ear too much (below 70dB(A)) can produce problems with the wearer having a feeling of isolation, problems in hearing verbal communication, or problems in hearing audible warnings e.g. fire/gas alarms, reversing alarms on vehicles, etc. The range of earplugs and defenders available is such that suitable attenuation in any given noisy situation within the University's working can be achieved. Semi-aural inserts are, because of their design, only suitable for attenuating noise levels <90dB(A).

Most workers do not like wearing items of PPE, because they are in the main uncomfortable, especially if being worn for prolonged periods of time, and whilst hearing protection is no exception you can put choice, for comfort reason, largely down to common sense. Defenders encompass the ear and part of the side of the head and can make that area sweat; this therefore would perhaps not be the first choice of hearing protection for workers working in hot, humid conditions such as a cage wash area, or boiler house, on the other hand for those working outside in cold conditions defenders may help to keep the ears warm and thus have a beneficial side effect.

In the case of earplugs dusty, dirty, or oily, environments can give rise to hygiene problems as they often have to be reinserted over the working period, as they will tend to work free due to movements of the temporomandibular joint (jaw joint) during speech or chewing, and if the fingers are dirty, infection may result. As earplugs fit deep into the aural canal they should not be chosen for persons with existing ear infections.

Compatibility with other items of worn PPE and individual features is important: if hard hats or bump caps need to be worn then normal defenders will not be suitable, rather hard hats with attached hearing defenders, special defenders with connecting bands that are designed to be worn behind the head, earplugs, or semi inserts, should be considered. A worker wearing prescription or safety spectacles may not obtain a proper seal of muff to head if defenders were worn so perhaps semi inserts, or plugs, would be more appropriate. Likewise long hair that covers the side of the head, or earrings may affect the fit of defenders and other more suitable choice should be made.

It is important that the worker has input to the selection of the type of hearing protector to be worn, as a worker is much more likely to wear the item of protection that they have chosen and found to be the most comfortable. This may result in workers in the same environment wearing a variety of earplugs, defenders, or semi inserts, there is nothing wrong in this as long as all types chosen suitably attenuate the noise levels that the workers are exposed to and are compatible with other items of PPE and the individual.



## Information, instruction and training

Where employees in the area that you have responsibility for are exposed above the lower exposure action values it is important that they understand the risks they may be exposed to. You should at least tell them:

- Their likely noise exposure and the risk to hearing this noise creates;
- What you are doing to control risks and exposures;
- Where and how people can obtain hearing protection;
- How to report defects in hearing protection and noise-control equipment;
- What their duties are under the Noise Regulations 2005;
- What they should do to minimise the risk, such as the proper way to use hearing protection and other noise-control equipment, how to look after it and store it, and where to use it;
- About the University's health surveillance system, if this is appropriate (see health surveillance).

Please remember that if you are working with students, or post-doctorate personnel that there may be language difficulties and you must ensure that the person understands the information given. Also, consulting with trade union-appointed safety representatives or other employee representatives is a legal requirement.

## Health surveillance

CNAWR requires that health surveillance (hearing checks) be provided for all employees who are likely to be regularly exposed above the UEAV, or between the LEAV and the UEAV they are at heightened risk for any reason, e. g. they already suffer from hearing loss or are particularly sensitive to hearing damage.

The purpose of health surveillance is to:

- provide early warning that employees might be suffering from signs of hearing damage;
- provide an early opportunity to do something to prevent the damage getting worse;
- check that noise control measures that are in place are working.

Health surveillance for hearing damage usually means having regular hearing checks under specially controlled conditions, these being undertaken by a competent person trained in audiometric testing, discussing with employees the results of their hearing checks and any actions that they, or their School/Unit should be taking in light of the results and keeping health records. In this University health surveillance is the responsibility of, and is undertaken by, the Health and Safety Department's Occupational Health Unit, which has suitably qualified and experienced occupational health professionals to undertake this aspect of occupational health surveillance.

## **Organising Health Surveillance for your staff**

The Occupational Health Unit already has employees in most noise 'at risk' sections of the University community under health surveillance, but if you have any concerns as to the noise levels in your area of responsibility get in touch, in the first instance, with the Occupational Hygiene Unit <mailto:occupational.hygiene@ed.ac.uk> and discuss the matter with the Health and Safety Adviser who can monitor the noise levels and pass on the relevant information to the Occupational Health Unit if the results show that this is appropriate. If you have persons, within your area of responsibility, that are complaining of hearing loss, or staff that have newly joined the University and are to work in a known noisy area please contact the Occupational Health Unit [occupational.health@ed.ac.uk](mailto:occupational.health@ed.ac.uk) direct to arrange their inclusion in the health surveillance programme.

## **Acknowledgements and further information**

Health and Safety Executive <http://www.hse.gov.uk/noise/index.htm>

3M Occupational Health & Environmental Safety <http://www.3m.com/>

Signs and Labels Ltd (Safetyshop) [www.safetyshop.com](http://www.safetyshop.com)

Occupational Hygiene (3rd Ed) Gardiner & Harrington, Noise Ch17

For further information concerning the above, please contact the Occupational Hygiene Unit, <mailto:occupational.hygiene@ed.ac.uk>, 51 4261