

Isle of Man Government

# Noise At Work

**Cabinet Office**  
*Oik Coonceil ny Shirveishee*

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## Introduction

Noise is defined as unwanted sound; its intensity (“loudness”) is measured in decibels (dB).

The duration of exposure is also very important in determining whether noise is hazardous. When considering this, time weighted average sound levels are used. For workplace noise, this is usually based on an eight hour working day.

Other factors that can affect how hazardous noise is include:

Impulsiveness – are there sound peaks

Frequency – measured in hertz (Hz). The pitch of a sound is the perception of a frequency time distribution – when the sound occurs and how often.

Noise can interact with other workplace hazards to increase risk to workers, such as masking warning signals thereby increasing the risk of accidents and causing work related stress.

Loud noise at work can damage your hearing. The higher the noise level and the longer the exposure, the higher the risk of suffering harm from noise.

Hearing loss is not the only problem. People may develop tinnitus (ringing, whistling, buzzing or humming in the ears), a distressing condition which can lead to disturbed sleep.

Noise at work can interfere with communications and make warnings harder to hear. It can also reduce a person's awareness of his or her surroundings. These factors can lead to safety risks – putting people at risk of injury or death.

Young people can be damaged as easily as the old. Managers must identify if they have a noise problem. This will depend on how loud the noise is and how long people are exposed to it.

## Legal Duties

Employers have a legal duty to protect the health and safety of staff from all noise related risks at work. This document will help you to understand about hearing loss and your responsibilities as a manager to protect your employees from noise.

The main elements of the 2005 Regulations are as follows:

- Requirement for risk assessment for any noise exposure likely to be at or above the lower exposure action values (see below).
- Inclusion of exposure limit values for daily or weekly personal noise exposure and for peak sound pressure.
- Elimination of risk or, where elimination is not reasonably practicable, reduction of the risk from noise to as low a level as is reasonably practicable.

- A programme of measures, excluding the provision of personal hearing protectors, to be taken at the upper exposure action values to reduce exposure to noise to as low a level as is reasonably practicable.
- Actions to be taken at the exposure limit values and prohibition on exceeding the exposure limit values.
- The provision of personal hearing protectors at the upper action limit values and, upon request, at the lower exposure action values.
- The designation of Hearing Protection Zones where exposures above the upper action value are likely, where the use of hearing protection must be enforced by the employer.
- Employers' and employees' duties concerning the use of equipment, including personal hearing protectors, provided under the Regulations.
- Health surveillance where a risk assessment indicates a risk to health.
- Provision of information, instruction and training to employees.
- Maintain and ensure that use of equipment you provide to control noise risks

The level at which employers must provide hearing protection and hearing protection zones is 85 decibels (daily or weekly average exposure) and the level at which employers must assess the risk to workers' health and provide them with information and training is 80 decibels. There is also an exposure limit value of 87 decibels, taking account of any reduction in exposure provided by hearing protection, above which workers must not be exposed.

## Action Values and Limit Levels

The Regulations require that specific actions are taken at certain action values. These related to:

- Level of noise exposure of employees averaged over a working day or week.
- The maximum noise (peak sound pressure) to which employees are exposed in a working day.

The values are:

- Lower exposure action values:
  - daily or weekly exposure of 80 dB (A)
  - peak sound pressure of 135 dB (C).
- Upper exposure action values:
  - daily or weekly exposure of 85 dB (A)
  - peak sound pressure of 137 dB (C).

There are also levels of noise exposure which **must not** be exceeded. These are called exposure limit values:

- Daily or weekly exposure of 87dB.
- Peak sound pressure of 140dB.

Where the exposure of an employee to noise varies considerably from day to day, employers may use weekly personal noise exposure (in place of daily personal noise exposure) in order to comply with the requirements within the Regulations.

When applying the exposure limit values (but not in applying the lower and upper exposure action values) the protection given by any personal hearing protectors provided by the employer should be taken into account.

## Do you have a noise problem?

Appendix A at the back of this document can be completed by managers to determine whether they need to manage noise as a hazard in the workplace.

What managers need to do about noise will depend on how loud the noise is and how long people are exposed to it. If selecting Yes to any of the answers then you will probably need to do something about it.

## Risk Assessment

Employers who undertake work liable to expose any employees to noise at or above a lower exposure action value must make a suitable and sufficient assessment of the risk that noise poses to the health and safety of those employees. The risk assessment must also identify the measures needed in order to meet the requirements of the Regulations (that is, to eliminate or adequately control the exposure).

In conducting the risk assessment, employers are required to:

- Observe specific working practices.
- Refer to relevant information on the probable levels of noise corresponding to any equipment used in the particular working conditions.
- If necessary, measure the level of noise to which the employees are likely to be exposed.

The employer must also assess whether any employees are likely to be exposed to noise at or above a lower exposure action value, an upper exposure action value, or an exposure limit value.

Aspects to be considered by the risk assessment include:

- The level, type and duration of exposure, including any exposure to peak sound pressure.

- The effects of exposure to noise on employees or groups of employees whose health is at particular risk from exposure (eg those who may already be suffering from noise-induced hearing loss (NIHL)).
- So far as is practicable, any effects on employees resulting from the interaction between noise and the use of substances which may damage hearing at work, or between noise and vibration.
- Any indirect effects on the health and safety of employees resulting from the interaction between noise and audible warning signals or other sounds that need to be audible in order to reduce risk at work.
- Any information provided by the manufacturers of work equipment.
- The availability of alternative equipment designed to reduce the emission of noise.
- Any extension of exposures to noise at the workplace beyond normal working hours, including exposure in rest facilities supervised by the employer.
- Appropriate information obtained following health surveillance, including, where possible, published information.
- The availability of personal hearing protectors with adequate attenuation characteristics.

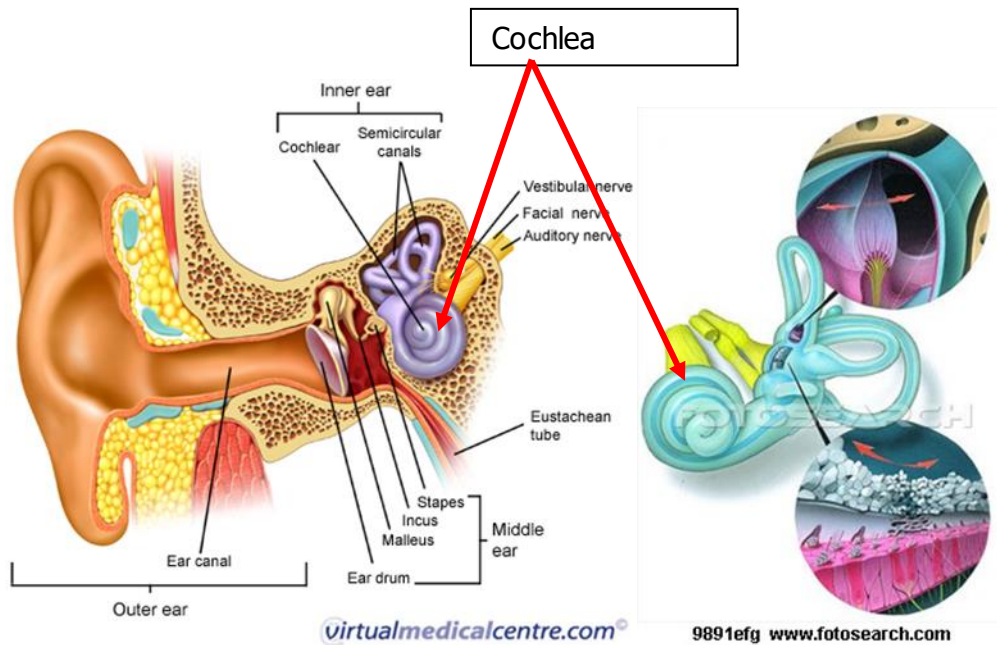
The risk assessment must be reviewed regularly. If there is reason to suspect that the risk assessment is no longer valid, or there has been a significant change in the work to which the assessment relates, the risk assessment must be reviewed immediately.

## What problems can noise cause?

Exposure to noise may pose a variety of health and safety risks to workers.

### Hearing loss

Excessive noise damages the hair cells in the cochlea, a part of the inner ear, leading to loss of hearing.



There are a series of hair cells contained in the cochlea (inner ear) that are key to most people's hearing. They are called the "inner hairs". It is damage to, or lack of the inner hair cells that cause most hearing loss. High decibels i.e. loud music or sounds above 140 db. will cause some of these hairs to die, as will some serious infections. Once an inner hair dies, it cannot be replaced. Because we initially are born with only about 3500 of these hairs, loss of a few can make a big difference in our hearing capacity.

### Physiological effects

There is evidence that exposure to noise has an effect on the cardiovascular system resulting in the release of catecholamines and an increase in blood pressure. Levels of catecholamines in blood (including epinephrine (adrenaline)) are associated with stress.

### Work related stress

Work related stress rarely has a single cause and usually arises from an interaction of several risk factors. Noise in the work environment can be a stressor, even at quite low levels.

### Increased risk of accidents

High noise levels make it difficult for staff to hear and communicate, increasing the probability of accidents. Work related stress (in which noise may be a factor) can compound this problem.

### Who is at Risk?

Anyone who is exposed to noise is potentially at risk. The higher the noise level and the the longer you are exposed to it, the more risk you have of suffering harm from noise.

## Employee involvement

Consulting the workforce is a legal requirement and helps to ensure that the workforce are committed to safety and health procedures and improvements. Using their knowledge helps to ensure hazards are correctly spotted and workable solutions implemented. Worker representatives have an important role in this process. Employees must be consulted on health and safety measures before the introduction of new technology or products.

## Control methods or noise reduction techniques

Wherever there is noise at work 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 keep up with what is good practice or the standard for noise-control within your industry, eg through your trade association, or machinery or equipment suppliers.

Where your employees are likely to be exposed at or above the upper exposure action values, you must take action to reduce noise exposure with a planned programme of noise control.

Even where noise exposures are below upper exposure action values, you should take action to reduce the risks, eg reducing exposure further.

Any action you take should be 'reasonably practicable' – in proportion to the level of risk. If exposure is below lower action values, the risk is low and it is likely no action is required – but if there are simple, inexpensive practical steps that would reduce risks further, you should consider implementing them. Some method examples are below:

- Using a different, quieter process or equipment, e.g. replace whatever is causing the noise with something less noisy; instituting a low-noise purchasing policy for machinery and equipment.
- Introducing engineering controls: avoiding metal-on-metal impacts, fitting silencers to air exhausts and blowing nozzles.
- Modifying transmission routes for noise, e.g. erecting enclosures around machines to reduce the amount of noise emitted into the workplace or environment.
- Designing the workplace for low noise emission, e.g. keeping noisy machinery out of areas where people spend most of their time.
- Limiting the time spent in noisy areas; every halving of the time spent in a noisy area will reduce noise exposure over the whole period by 3 dB.



<b>Control Measure</b>	<b>Consideration or Options</b>
Use quieter processes or equipment	Is there an alternative way of working? Are quieter machines available? Does the purchasing policy reflect safety needs? Consider cost benefit and noise produced by energy sources – electricity may be quieter than compressed air
Engineering Controls	Avoid free falling materials that cause noise on impact Reduce drop distances Use an absorbent material at landing points to dampen noise Reduce vibration of machines through damping Fit silencers Use isolation techniques
Noise attenuation by distance and path	Place noisy equipment in positions away from the workplace – i.e. generators or compressors Enclose equipment in barriers to absorb or redirect noise
Design and layout of the building and processes	Use of acoustic damping materials in the walls or other reflective surfaces Locate noisy processes away from the workstations Restrict access to noisy locations Can workflow be adjusted so that less people are exposed? Consider reduction of background noise issues.
Limit exposure times	Restrict the amount of time an operative can work in noise areas Restrict, through engineering or other controls, the amount of time noisy processes can be carried out Consider out of hours working for noisy processes
Increased duty of care	Consider those to whom you owe an increased duty of care, such as employees already suffering from Noise Induced Hearing Loss
Consider the effect of your controls on other systems	Ability to hear audible warnings or access for maintenance

At the back of this document please see Appendix B Control of Noise Action Plan

## Safety Risks

Where warning sounds are used to avoid or alert to dangerous situations, they should be selected to be clearly audible in the environment in which they are used, taking into account of the hearing ability of the people involved and any use of personal hearing protection.

Systems of work where safety relies on verbal communications should be avoided where levels of noise or wearing hearing protection could lead to misunderstandings.

Where personal hearing protection is being used when working around mobile machinery or traffic, particular consideration should be given to the types of protector you supply and the ways in which you expect workers to make use of them.

## Personal Hearing 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. Hearing protection should be issued to employees:

- Where extra protection is needed above what has been achieved using noise control
- As a short term measure while other methods of controlling noise are being developed

You should not use hearing protection as an alternative to controlling noise by technical and organisational means

### Do:

- Make sure the protectors give enough protection; below 85 dB(A) at the ear, to do this they need to be selected having regard to the level and type of noise exposure and suited to the individual.
- Select protectors which are suitable for the working environment; consider comfort and hygiene.
- Think about how they will be worn with other protective equipment (e.g. hard hats, dust masks and eye protection).
- Provide a range of protectors so that employees can choose ones which suit them.
- Arrange audiometry (health surveillance) where appropriate.

You should only supply CE-marked hearing protectors. You must consult with workers and their representatives over the types of protector provided.

You need to make sure that employees use hearing protection when required to and are trained in how to use the equipment and in the hazards of noise exposure.

Noise risk assessments should be carried out by a competent person and take into account the HSE's five steps of risk assessment and document the estimated noise exposure and the control measures required.

## Maintenance of Hearing Protectors

You have a duty to maintain hearing protection so that it works effectively. Factors that affect the level of protection, such as the headband tension and the condition of seals, should be checked as part of your system of maintenance.

Employees have a duty to report any defects in hearing protection. This duty should be explained to them, as well as how to identify defects, as part of their training.

## Information, Instruction and Training

Employees should be provided with training so that they understand the risks they may be exposed to, and their duties and responsibilities. Where they are exposed above the lower exposure action values you should at least tell them:

- their likely noise exposure and the risk to hearing this creates;
- what you are doing to control risks and exposures;
- where and how to obtain hearing protection;
- how to identify and report defects in noise-control equipment and hearing protection;
- what their duties are under the Noise Regulations;
- what they should do to minimise the risk, such as the proper way to use noisecontrol equipment and hearing protection;
- your health surveillance systems

## Health Surveillance

Health surveillance must be provided for all your employees who are likely to be frequently exposed above the upper exposure action values, or are at risk for any reason, eg they already suffer from hearing loss or are particularly sensitive to damage. Consult your trade union safety representative, or employee representative and the employees concerned before introducing health surveillance.

Health surveillance usually means regular hearing checks, conducted annually for the first two years of being exposed and then at three-yearly intervals (although this may need to be more frequent if a problem with hearing is detected or where the risk of hearing damage is high).

Occupational Health will support Managers and employees with audiometry testing. This technique is used to detect early damage to hearing from exposure to noise.

This testing is repeated throughout the employees employment to allow for ongoing monitoring.

Where any hearing damage due to noise is identified you should prevent further harm to the individual, taking account of the medical advice you receive on fitness. On the basis of both individual and grouped information, you will need to consider what action you need to take;

this should include reviewing your risk assessment, any control measures you have in place and your health surveillance procedures.

You will need to keep health records containing information on the outcomes of health surveillance and fitness for work. Health records must be kept separate from any confidential medical results.

## Reference Material

HSE Noise at Work: A brief guide to controlling the risk  
Control of Noise at Work Regulations 2005

## Useful Links

HSE Noise - <https://www.hse.gov.uk/noise/>

Isle of Man Government Occupational Health: <https://hr.gov.im/workplace-wellbeing/occupationalhealth/>

## Appendix A – Do you have a noise problem?

Management Considerations	Response	Comment
<p>Are individuals aware of the risks from noise?</p> <p><i>Employees exposed to noise in the workplace should receive information, instruction and guidance on how exposure is managed.</i></p> <p><i>This can be done through Induction, Tool Box Talks, Noise Awareness Training, Refresher Noise Awareness training</i></p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>Is any data available that suggests a noise problem might exist?</p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>Does the noise in the area compare to that of a busy street, a vacuum cleaner or crowded restaurant for most of the working day?</p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>At a distance of 2 metres, do you need to raise your voice in order to have a conversation?</p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>Do processes involve impact noise</p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>Do employees use noisy tools in their normal working?</p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>Is your industry known to be a risk area, for example:</p> <ul style="list-style-type: none"> <li>• Construction.</li> <li>• Woodworking.</li> <li>• Plastics processing.</li> <li>• Pressing operations.</li> <li>• Forging.</li> <li>• Road working.</li> <li>• Engineering.</li> <li>• Textile manufacture.</li> <li>• Bottling.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>Has health surveillance been conducted which indicates special risk groups?</p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
<p>Has health surveillance been completed which</p>	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> </ul>	

indicates individuals who may be suffering from noise-induced hearing loss?	<ul style="list-style-type: none"> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Are any employees exposed to ototoxic materials?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Are any employees exposed to a mix of vibration and noise which may have synergistic effects?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Has a noise survey been completed?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Have you made an estimate of noise exposure amongst employees and others?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Has an action plan been drawn up?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Has a senior manager been allocated responsibility for noise and monitoring the action plan?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Are you monitoring the safety press for significant changes or developments?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	
Is a system in place to review and monitor performance?	<ul style="list-style-type: none"> <li>▪ Yes</li> <li>▪ No</li> <li>▪ Unsure</li> <li>▪ N/A</li> </ul>	

## Appendix B - Control of Noise Action Plan

<b>Problem Area:</b>			
<b>Exposure Limit Exceeded:</b>			
<b>Cause of Noise:</b>			
<b>Who is exposed:</b>			
Can noise be reduced	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	How?	Action owner and due date
Can exposure be reduced	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	How?	Action owner and due date
Will Hearing protection be needed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	What Variety?	Action owner and due date
Will staff members need any extra training?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Describe? ( <i>noise awareness, using PPE</i> )	Action owner and due date
Has operational risk assessments been updated to include noise?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	By Who	Action owner and due date
Is any other action required	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	Detail	Action owner and due date