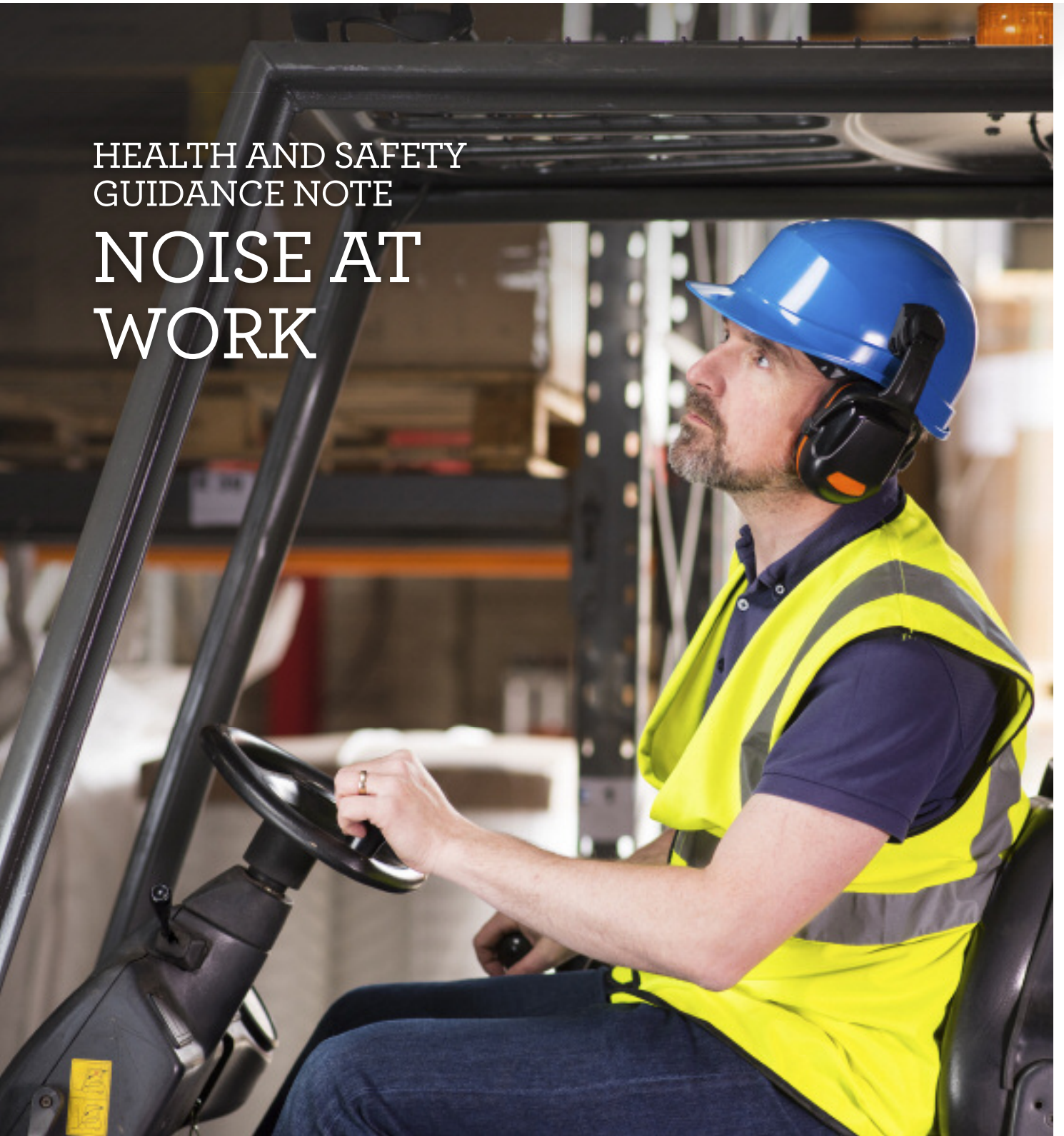


HEALTH AND SAFETY
GUIDANCE NOTE

NOISE AT WORK



NFU Mutual

Risk Management Services

INTRODUCTION

Exposure to high levels of noise can cause various hearing conditions including tinnitus and noise induced hearing loss, both of which are irreversible and can cause both physical and social problems for the individual concerned. Hearing problems can be caused by one off exposure, or by being exposed to high levels of noise over a period of time.

In addition to the risk of hearing damage, noise can also be problematic in the workplace when it interferes with speech, communication of safety instructions or the ability to hear alarms and warning signals. By managing exposure to noise, the hearing of people in the workplace (e.g. your employees, or others affected by your work activity) can be protected both in the long and short term.

WHAT ARE THE EFFECTS OF EXPOSURE TO HIGH NOISE LEVELS?

The risk of hearing damage depends on the dose of sound energy received over a period of time. A temporary loss of hearing lasting from a few seconds to a few days may result from exposure to intense noise for a short time. Regular exposure to high noise levels over a long period may result in the destruction of certain inner ear structures and a loss of hearing which is irreversible.

Hearing loss is not the only problem. People may develop tinnitus (ringing, whistling, buzzing or humming in the ears), a distressing condition which can have numerous consequences including disturbed sleep and depression.

Hearing loss, of course, is not always caused by exposure to noise at work; it is part of the normal ageing process and can also be caused by social activities (e.g. listening to loud music) or disease. However, you must consider the noise to which people at work are exposed, and must ensure that measures are taken where necessary to reduce the risk.

WHAT ARE MY LEGAL DUTIES?

The Control of Noise at Work Regulations 2005 [The Control of Noise at Work Regulations (Northern Ireland) 2006] require you to eliminate or reduce the risks to health and safety from noise at your workplace. **As an employer you have to:**

- Carry out a risk assessment where exposure to noise is likely to be at or above the Lower Exposure Action Values (see below);
- Take action to eliminate noise or where this is not possible, reduce the noise exposure;
- Introduce a program of control measures to reduce exposure;
- Maintain and ensure the correct use of equipment provided to control noise risks;
- Make sure that noise exposure is never at or above the Exposure Limit Values (see below);
- Where required, provide hearing protection and designate hearing protection zones;
- Carry out health surveillance where a risk assessment indicates that there may be a risk to employees health;
- Provide information, instruction and training to employees.

WHAT ARE NOISE EXPOSURE ACTION AND LIMIT VALUES?

Noise is measured in decibels (dB). An 'A-weighting', which is usually written as 'dB(A)', is applied by the measuring device to give the value of noise that is experienced by an individual at the ear.

A 'C-weighting' or 'dB(C)' is used to measure peak or high noise levels.

The law requires that you take specific action at certain Action Values that relate to either the average daily / weekly noise exposure level, or the maximum noise level (peak sound pressure).

The noise exposure action and limit values you need to be aware of are as follows:

	Lower Exposure Action Value	Upper Exposure Action Value	Exposure Limit Value*
Daily / Weekly Exposure Value in dB(A)	80	85	87
Peak Sound Pressure in dB(C)	135	137	140

(* The Exposure Limit Value **MUST NOT** be exceeded).

The daily personal noise exposure value relates to a standard 8 hour working day, so if a person works less or more than this time, the exposure value / limit must be corrected. Although an assessment should usually be made with reference to the daily exposure value / limit, if an employee's exposure to noise varies significantly from day to day, an assessment can be made using the weekly exposure value / limit.

HOW DO I KNOW IF THERE A NOISE PROBLEM IN MY WORKPLACE?

Although the susceptibility of individuals varies, in general there is only a very small risk to hearing from noise exposure to levels below 80 dB(A) averaged over an eight-hour day. However, the risk increases as the noise level increases.

A good starting point is to do a quick rough check to get an idea of the level of noise in the area, as follows:

	Possible Noise Level
You have to shout to someone at a distance of 1 metre (3ft) away to make yourself heard and understood.	90 dB
You have to shout to someone at distance of 2 metres (6ft) away to make yourself heard and understood.	85 dB
You can talk to someone using your normal voice at normal conversation distance to make yourself heard and understood.	80 dB or below

Remember that noise levels can vary greatly depending on the tasks being undertaken, so ensure you consider real life situations (e.g. if you are assessing noise levels in a packhouse, ensure you do so with the equipment running).

It's likely that you have a noise issue in your workplace if:

- The level of noise is intrusive for most of the working day;
- Employees are exposed to noise which makes it necessary to shout to talk to someone 2 metres or less away, for at least part of the day;
- Employees operate noisy powered tools for half an hour or more each day;
- There are a lot of high impact noises such as hammering, use of bead breakers and guns or even pallets being dropped on the floor.

It is probable that you will also have to address safety issues if your workplace is noisy and:

- You rely on warning sounds to avoid danger or alert people to dangerous situations etc. (e.g. reversing beepers);
- Your working practices rely on verbal communications;
- Work is often carried out around mobile machinery or traffic.

The chart below illustrates some examples of typical noise levels:

Shotgun		150 dB(A)
Hand Grinding of Metal		108 dB(A)
Chain Saw		102 dB(A)
Circular Saw		100 dB(A)
Petrol Driven Grass Mower		96 dB(A)
Modern Tractor Q Cab		80 dB(A)

HOW CAN I ASSESS THE RISKS?

If your initial assessment from the basic indicators above determines that noise may be a problem a more detailed risk assessment (a ‘noise assessment’) must be carried out to help you decide what action is needed. Unless you have the expertise in-house, you may need to engage a competent person to determine noise exposure using a sound level meter or estimating noise exposure from known generic information about the types of work carried out and how long employees are exposed.

In brief, your noise assessment should:

- State whether you have a noise problem that requires action;
- Provide you with data that determines if the Action and / or Limit Values have been exceeded;
- Tell you who is at risk, and why - both risks to health, and safety should be considered;
- Give you enough information to prioritise and plan the measures needed to control the risks;
- Let you know what to do about the immediate risk (e.g. hearing protection, warning signs etc.);
- Identify if health surveillance is required and who for;
- Help you to instruct, inform and train your employees about these issues.

There are some tell-tale signs that indicate that a noise assessment is not adequate, such as:

- Noise measurements don’t relate to the jobs or tasks people carry out – they are simply spot readings taken around the workplace;
- Noise exposures are not quoted;
- No reference is made to legal duties or Exposure Action Values and / or Limits.

The findings of your risk assessment must be recorded, along with any action you have taken, or intend to take, to comply with the law.

You should review your risk assessment if circumstances change or if it is no longer valid (e.g. if the work changes and this affects noise exposure to people at work, or there are changes to the availability, applicability or cost of noise-control measures etc.). An annual review is recommended, but you should not leave it for more than about two years without checking whether a review is needed.

HOW CAN I CONTROL EXPOSURE TO NOISE IN MY WORKPLACE?

Once your noise assessment is complete, you need to put together an action plan to eliminate or reduce the noise levels where identified. When deciding on methods of reducing* the risk from noise, a similar hierarchy of controls to that used in other risk assessments should be adopted. Elimination of the risk must be the priority, however where this is not possible you should initially reduce the risk at source using engineering noise control methods (see checklists provided at the end of this guidance document), followed by use of safe systems of work (e.g. designating hearing protection zones - see below). Although often seen as a “quick fix”, the use of personal protective equipment (e.g. ear defenders / ear plugs) should be your last resort where the other control measures described cannot achieve the reduction required.

When deciding on engineering control measures it is strongly recommended that you seek the advice of a competent noise control engineer.

* Please note that where exposure is at or above the Upper Exposure Action Value, your controls must reduce exposure as low as is reasonably practicable - not just to below the Upper Exposure Action Value. Even where noise exposures are below Upper Exposure Action Values, you should take action to reduce the risks (i.e. reducing exposure further).

Any action you take should be ‘reasonably practicable’ (i.e. in proportion to the level of risk). If exposure is below Lower Exposure 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 still consider implementing them.

Controls that you should consider include:

- Avoiding the noisy activity – if the task has to be carried out is there a quieter method?
- Carrying out the noisy activity less frequently;
- Reducing the speed or power of equipment to reduce noise levels;
- Selecting low noise machinery where this is available and practicable (e.g. using hydraulic instead of air tools) buying newer, quieter versions of the equipment etc.;
- Changing the layout of the workplace (e.g. placing noisy equipment in a different room to operators / other workers, placing an enclosure around the operator etc.);

- Providing technical or engineering controls (e.g. screens, absorption panels, enclosures or dampening systems to help absorb some of the noise energy);
- Keeping work equipment well maintained (e.g. keeping bearings greased, ensuring panels and covers are tight fitting and secure etc.);
- Training employees to work in a way which reduces noise (e.g. reducing drop height, working with vehicle cabs closed etc.);
- Limiting the time that individuals are exposed to noise (e.g. changing shift patterns, providing extra breaks so that overall daily exposure is reduced, or job rotation to reduce individuals’ exposure to noise etc.).

From a safety perspective, make sure that:

- Where warning sounds are used to avoid danger or alert people to dangerous situations, they are selected to be clearly audible in the environment they are used in (taking 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 are 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 is given to the types of protector issued and the ways in which you expect workers to make use of them.

PERSONAL PROTECTIVE EQUIPMENT

The use of personal protective equipment should not be used as the primary control measure for reducing exposure to noise and should generally only be considered after all other possible steps have been implemented and where there is still a risk from exposure to noise. If you have identified that other measures to control noise are necessary but they cannot be implemented immediately, hearing protection can be used as an interim means of exposure control.

Hearing protection must be provided and the wearing of it made compulsory where:

- Noise has been found to be between the Lower and Upper Action Values AND a worker has requested it;
- Noise exposure is at or above the Upper Action Value 85dB(A) or Upper Peak Value 137dB(C).

Where you provide hearing protection, ensure it is CE marked, suitable for use and ensure you train the wearers on how to use it. It is important to discuss the type of hearing protection you provide with those that will wear it, as some people may find certain types more comfortable than others – doing so will help to secure their co-operation in wearing the right protection. Once you have supplied the hearing protection, you must make sure that it is worn fully (all of the time it is needed), and properly (fitted or inserted correctly). This can be best achieved through good use of training and supervision, backed up by the use of spot checks and audits. Don't forget to set a good example yourself!

Different work environments and activities may require different types of hearing protection - the hearing protection should be sufficient to eliminate risks from noise but not provide so much reduction that wearers become isolated. It is also important to consider other factors such as workers needing to be able to hear emergency alarms, vehicles etc. You also need to make sure that it can be used properly with any other personal protective equipment workers have to wear (e.g. eye protection, safety helmets etc.).

You must maintain hearing protection so that it works effectively - factors that affect the level of protection (e.g. headband tension or condition of seals), should be checked as part of your maintenance regime. Your workers also have a duty to wear hearing protection and to report any defects – ensure you explain this to them, as well as how to identify defects, as part of their training.

Where you have identified an area where wearing hearing protection is compulsory you must identify 'hearing protection zones' and restrict the access to the area to persons wearing hearing protection only. Each hearing protection zone must have the following signage displayed:



INFORMATION, INSTRUCTION, TRAINING AND SUPERVISION

Where employees are exposed to noise levels above the Lower Exposure Action Value, you need to provide them with training so that they understand the risks they may be exposed to, and their duties and responsibilities. The information, instruction and training should at least include the following:

- Their likely noise exposure and the risk to hearing that this creates;
- What you are doing to control risks and exposures;
- Where and how to obtain hearing protection;
- How to fit hearing protection correctly;
- How to inspect, store and maintain their hearing protection;
- How to identify and report defects in noise-control equipment and hearing protection;
- What their duties are under the Noise Regulations;
- How their actions and ways of working may contribute to the noise levels and how they can help;
- What they should do to minimise the risk, such as the proper way to use noise-control equipment and hearing protection;
- Details of your health surveillance systems (see separate Occupational Health guidance note for details).

You can give HSE's pocket card "Noise: Don't lose your hearing!" to your employees to supplement the training you give (see 'Further Guidance').

It is important that workers are appropriately supervised. Effective supervision can help you monitor the effectiveness of the training that people have received, and whether employees have the necessary competence to do the job.

FURTHER GUIDANCE

- HSE website 'Noise at Work'
www.hse.gov.uk/noise/
- INDG 363(rev2) 'Noise - Don't lose your hearing!'
www.hse.gov.uk/pubns/indg363.pdf
- L108 –'Controlling Noise at Work'
www.hse.gov.uk/pubns/books/l108.htm
- Various Industry specific noise leaflets
www.hse.gov.uk/pubns/noisindx.htm

These documents are available to download free of charge from www.hse.gov.uk/pubns/books

NOISE CONTROL CHECKLIST

This check-list is designed to help you decide which noise control technique might best to solve your noise problem.

Observe, listen to and touch (where safe) the machine in question

- What is the problem?
- Where is it?
- Is a vibrating part the source of noise?
- Am I sure where the main source of noise is coming from?
- Am I treating the most dominant noise source first? (There is little point in treating the easiest or cheapest first if it is not the main source of noise)?
- How many employees will benefit from the noise control measure?
- What will be the cost per protected employee?

Consider the source of noise

- Is it reasonably practicable to replace the machine with one with lower noise emission?
- Could the machine be removed from the occupied working area without disrupting production?
- Could the working area be altered so that the main noise source is moved where it least affects employees?
- Could worn or faulty parts be replaced, particularly if the machine is getting increasingly noisier?
- Is it possible to modify parts of the machine (e.g. by replacing components with ones designed to operate more quietly)?

Consider how the source radiates noise

- Is the source vibrating the machine's panels? Isolate the panels or add damping materials to them.
- Can vibrations be felt in the structure of the building? Isolate the machine from the building with isolation mounts or isolated foundations.
- Is the noise caused by continuous impacts from falling material? Add damping material to receiving trays and chutes etc.
- Are solid guards attached to the machine around noisy components? Line guards with absorbent material.
- Is the major noise source caused by either the inlet or exhaust of air or gas from the machine? Fit an appropriate silencer to the inlet or exhaust (or both).
- Is the noise caused by a sudden release of air from a compressed air system? Fit proprietary silencers or feed the exhaust away from the working area.

Consider the path of the noise

- Could you position the worker away from the noise source? (Doubling the distance can reduce the effect of noise by 6 decibels.)
- Could you fit a suitably designed enclosure around a machine that does not require 'hands on' operation? Include access panels where periodic inspection is required.
- Could you acoustically treat openings in the machinery into which material is placed or from which the product is removed?
- Could you fit acoustic ducts or position quiet fans in enclosures where there may be a build-up of heat?
- Could a noise haven be built for employees supervising the operation of large machines where enclosure is too difficult (e.g. a large printing press)?
- Could you erect barriers or screens between different elements in the production process to separate quieter operations from noisy ones? Add absorptive material to the building to soak up reverberant noise (echoes).
- Would active noise control be appropriate where the noise level is constant and is made up of a major low-frequency tonal component (for example, dryers or exhaust fans)?

Finally, measure the new noise levels after the control method has been fitted.

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