

Guide to managing noise on site

Protecting workers' hearing for life

What happens when damage occurs:

There are about 18,000 hair cells in an ear. Each hair cell has a patch of stereocilia ("hairs") which move back and forth in response to sound. If the sound is too loud, the stereocilia can be bent or broken, and the affected hair cells then die. These no longer send sound signals to the brain and don't grow back. The high-frequency hair cells are most easily damaged – this affects hearing high-pitched sounds, like birds singing.



Healthy stereocilia on a hair cell.

Broken stereocilia, showing hearing damage.

Photo credit:
www.dangerousdecibels.org

How noise on site affects workers

Noise at work can interfere with communications, making warnings harder to hear. It can also reduce people's awareness of their surroundings, creating issues which can lead to safety risks. Exposure to noise at high levels results in damaged hearing and may occur over time, or result from sudden, extremely loud noise. For example, your hearing would be damaged after hearing noise of 85dB for eight hours. In contrast, sounds measuring 130dB instantly cause damage.

The costs of hearing damage



Hearing damage is permanent and can be disabling, causing people to be unable to understand speech, keep up with conversations or use the telephone. They may develop tinnitus (ringing, whistling, buzzing or humming in the ears), a distressing condition

which can lead to disturbed sleep. Also, those affected are often reluctant to acknowledge the problem and get help. Studies have linked untreated hearing loss to social and psychological effects, including: irritability, fatigue, tension, stress, depression, avoidance or withdrawal from social situations, loneliness, reduced alertness and increased risk to personal safety, impaired memory and ability to learn new tasks, and reduced job performance and earning power.

Signs that you need to address noise

- The noise is intrusive, or worse, for most of the work day, e.g. as noisy as a vacuum cleaner.
- People have to raise their voices to carry out a conversation when about 2m apart for at least part of the day;
- Noisy powered tools or machinery are used for more than half an hour each day.
- Your sector is one known to have noisy tasks, eg construction, engineering.
- There are noises due to impacts (such as hammering, drop forging, pneumatic impact tools etc), explosive sources such as cartridge-operated tools or detonators, or guns.

The proactive approach to managing noise

Plan your noise control measures at each pre-work phase to minimise noisy work, plan how the site will be managed and the risks controlled, ensure that contractors meet their legal requirements, and assess the risks, then eliminate or control them, and finally review the assessment.

Before work starts on site:

- Implement a low-noise procurement policy (purchase and hire) for machinery and work equipment.
- Set desired noise-control requirements in the tender specifications.
- Plan the work process to minimise worker exposure to noise.
- Implement a noise-control programme (e.g. via planning, training, induction, site layout, maintenance activities). A competent person should assess the noise risks and review the work conditions. If there are any changes in the work, they should amend the assessment and control measures accordingly.



Tackling noise – the hierarchy of control

The Hierarchy of Controls shows the proper order of controls, from most to least effective. If possible, the production of noise should be eliminated by changing the construction or work method. Alternatively, the noise should be controlled. You will need to consider the most effective form of 'attenuation' (reduction of noise strength). Cont...

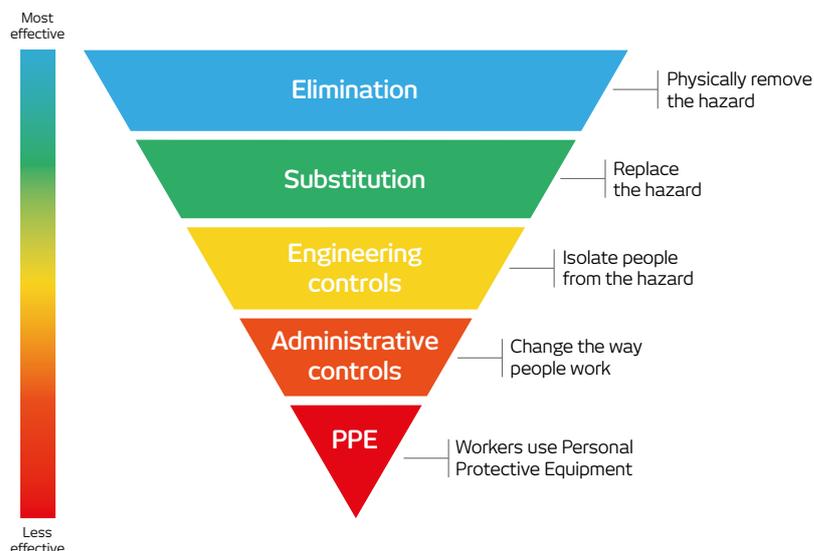
What the law says

The Control of Noise at Work Regulations 2005 (the Noise Regulations) are in place to protect workers' hearing from excessive noise and therefore require you to eliminate or reduce risks to health and safety from noise at work. The Control of Pollution Act 1974 allows councils to set times during which works can be carried out and the methods of work to be used. Contractors may apply for prior approval for their works by completing a section 61 application.

Your duties include the need to:

- make sure the legal limits on noise exposure are not exceeded;
- maintain and ensure the use of equipment you provide to control noise risks;
- provide your employees with information, instruction and training;
- carry out health surveillance (monitor workers' hearing ability).

The hierarchy of control

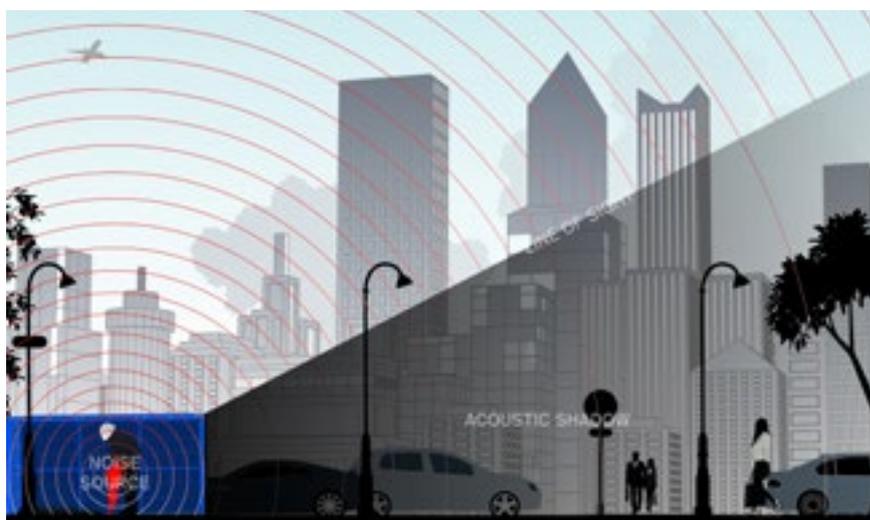


1. Eliminate or substitute:

- Use quieter equipment or a different, quieter process.
- Implement engineering or technical changes to equipment to reduce the noise at source.
- Design the noise out by having materials supplied pre-cut, to avoid on-site noise.

2. Control at source:

- Use screens, barriers, enclosures or absorbent materials. A barrier within the sound path (between the source and the receiver) must be positioned as close as possible to the noise source. This maximises the Shadow Effect which blocks the free flow of sound waves. The barrier should interrupt the 'line of sight' between the noise source and the receiver, so that only refracted noise is heard.



Cont...

The guidelines in decibels

• The assessment level: 80dB

When noise of this level is predicted to occur, employers must assess the risk to workers' health and provide them with information and training.

• The noise limit: 85dB

At this level – average daily or weekly exposure – employers must provide hearing protection and hearing protection zones. The 2005 regulations require health surveillance (hearing checks) for workers regularly exposed above 85dB.

• Exposure limit value: 87dB

Workers must not be exposed to noise above this level, taking into account the reduction in noise that hearing protection issued will provide.

3. Safe work procedures:

- Design a workspace that includes quiet workstations and break areas.
- Provide training to increase awareness of work methods that reduce noise levels
- Limit the time that workers spend in a noisy area.

4. Personal Protective equipment

Personal protective equipment should be considered as a last resort.



A noticeable difference in sound level

Changing sound levels by 1dB can barely be detected by humans and even a change of 2-3dB will not make a significant difference. However, due to the decibel scale being logarithmic not arithmetic, a 5dB change is readily noticeable and a decrease of 10dB is perceived as reducing the noise by half, therefore a reduction of 15-20 dB represents a dramatic change.



Control measures, such as the noise enclosure above, can be used to significantly reduce noise for those in the vicinity of works being carried out, who are not wearing personal noise protection equipment.