In this paper we will examine what noise is, and how you can improve your knowledge of noise levels in order to take a simple yet practical approach to your hearing conservation programme.
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About us

HSL offers health and safety research, expert advice and consultancy, specialist training and products and have been developing health and safety solutions for over 100 years.

The Health and Safety Laboratory (HSL) is one of the world’s leading providers of health and safety solutions to industry, government and professional bodies. We are an independent agency of the Health and Safety Executive (HSE), and working with the regulator gives us a unique insight into workplace health and safety.

The main focus of our work is on understanding and reducing health and safety risks, whether that’s for HSE, other parts of government or for the increasing number of our private sector customers.

We offer health and safety research, expert advice and consultancy, specialist training and products and have been developing health and safety solutions for over 100 years.

The knowledge and expertise accumulated through our long history means that we’re uniquely placed to understand the changing health and safety landscape, and anticipate future issues.

HSL employs over 350 scientific, medical and technical specialists, who help make working environments and working lives safer, in the UK and around the world.

3M captures the spark of new ideas and transforms them into thousands of ingenious products.

With 80,000 people in more than 70 countries, 3M captures the spark of new ideas and transforms them into thousands of ingenious products.

3M is continually driving innovation in industry. We’ve developed materials that can make our products stronger, safer, more reliable and easier to use. We’ve created products that open up new markets and potential, and we’ve pioneered technologies that can streamline your costs, enhance your productivity and efficiency by safeguarding your workforce.

This innovation plays a key part in our drive to improve worker safety and protection across all technologies, disciplines and industries and leads to comfortable and robust Personal Protective Equipment (PPE) that employees will feel good about wearing. Our product portfolio comprises a broad spectrum of personal protective equipment including: Respirators, Eye Protection, Hearing Protection, Protective Coveralls and Welding Solutions. As experts in our field, we offer holistic safety solutions covering detection to selection through to training and validation. Our approach to PPE is that it be suitable for the hazard, comfortable for the wearer and good value for our customers, in order to deliver compliance and operational efficiency.

In addition to offering a broad portfolio of PPE, we have developed a range of adjacent services and educational tools to support our customers. Our team of PPE sales specialists and technical service engineers are on hand to help you make informed decisions, and to ensure you get the most out of your 3M PPE.
Elizabeth Brueck
Liz Brueck is a Noise Scientist with HSL. She has over 30 years of experience in the field of noise in the workplace extending across industry, forestry, music and the armed forces. She has contributed to the guidance for the European Directive and the UK Regulations and is passionate about making people aware that with imagination and common sense most of us can achieve a quieter, safer workplace.

Karen Roberts
Karen Roberts is a Product Manager at HSL. Karen works with the Laboratory's scientific and technical experts to produce product solutions that help organisations become healthier, safer and more productive. These include HSL's Safety Climate Tool, ACT Behaviour Change Toolkit, Safe Deal play cards, and GRIP footwear rating scheme.

Prior to her current role, Karen was a Business Development Manager at HSL, focusing on the UK chemical, pharmaceutical and manufacturing sectors.

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Emma is a Senior Scientist in noise and hand-arm vibration at HSL. Emma's work portfolio ranges from carrying out commissioned research for HSE through to providing practical advice and guidance to industry working groups, as well as participating in school educational programmes as a STEM (Science, Technology, Engineering and Mathematics) Ambassador.

Emma is the HSE representative on UK standards committees for hearing protection and the British Standards Institution representative on European standards working groups for the same topic. This particular interest originates from her early career at Salford University, where she also covered building and architectural acoustics in the in-house acoustic test laboratories.
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Introduction

Hearing damage from noise at work is still a major issue. According to HSE, research estimates that over 2 million people are exposed to noise levels at work that may be harmful (Controlling Noise at Work — Guidance on the Control of Noise at Work Regulations 2005).

The damage to our hearing from too much noise is usually gradual and we only become aware when serious and irreversible damage has occurred. And it’s not just noise at work but noise during our leisure activities that adds to the risk.

Employer responsibility is detailed within the Control of Noise at Work Regulations, where duties kick in at and above defined exposure values. Failure to demonstrate compliance may lead to civil claims against the employer for damaged hearing.

Hearing protection (earmuffs and earplugs) is often seen as the only solution to noise. In fact, under the law, hearing protection should never be used as a substitute for action to reduce the noise. While supplying hearing protection is simple, it is can be ineffective if issued without due care. It can also increase the risk of accidents because wearers fail to hear what is going on around them.

Many employers are unaware of the risks of reliance on hearing protection alone. An HSE research report estimates that 40% of workers who use hearing protection are not adequately protected due to ineffective use (www.hse.gov.uk/research/rrpdf/rr720.pdf). And where hearing protection is used, the majority of those using heavy-duty protection are overprotected and exposed to excessive safety risks due to the inability to hear essential sounds in the workplace.

Controlling noise exposure by reducing the volume of the noise itself as well as the time spent in noisy surroundings is the only way to ensure the risks to health and safety are minimised. But this is seen as difficult.

The most simple noise controls in the workplace are often neglected, yet we instinctively deal with noise in our personal lives every day; we retreat into a quiet room when we want peace and quiet, we add soft furnishings to make indoor spaces quieter, we find quiet ways of doing things about the house when we don’t want to disturb a sleeping child.

So why is it that we find it harder to tackle noise at work?

In this paper we will look at what noise is, and how you can improve your knowledge about it in order to take a simple yet practical approach to your hearing conservation programme.
First of all, let’s go back to basics and look at what noise is and how it affects our hearing.

**What is noise?**

Quite simply, a noise is a sound, especially one that is loud, unpleasant or causes a nuisance. In today’s world, noise is inevitable, but exposure to noise that is too loud, for too long, often leads to hearing loss.

**How does noise lead to hearing loss?**

The healthy function of the hair cells in the inner ear is vital to your hearing ability. We know that noise, both brief and intense like an explosion, or long and continuous such as noise in a working environment can damage these hair cells.

Extreme high intensity sound can cause immediate damage, but usually hearing loss builds up over time. With occasional exposure, such as going to a loud concert, we experience temporary hearing loss. As we leave, everything sounds quiet or maybe our ears are ringing. That’s hearing damage. Given time, most of our hearing will recover, but not all. When excessive noise exposures are repeated day after day, more and more of our hearing is lost forever. We call this Noise Induced Hearing Loss (NIHL).

The damage is irreparable.

**Why is noise often neglected?**

Noise is part of most people’s hectic lifestyles, so it’s no wonder we take risks with it.

At work, we often take precautions when dealing with tangible hazards such as chemicals, but because noise is invisible, and because we are used to it and even expect it to some degree, many people don’t appreciate that noise can also be a significant hazard.

Another part of the problem is that it can take years to develop a disabling hearing loss, and because hearing loss is also part of the ageing process, many people accept that it’s inevitable.

Another issue is that noise exposure occurs outside the workplace. Our leisure activities and social lives can be a source of significant exposure. We become complacent about noise risks and although we know it causes hearing loss, we don’t think it will happen to us.

Sadly by the time you notice there’s a problem it’s too late. You already have a disabling hearing loss. Most occupational health screening will only pick up the loss when significant damage has already occurred. We all tend to stick our heads in the sand.

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In 2011, 10 million people experienced hearing loss - that’s 1 in 6 people in the UK; 3.7 million of these were working age (Action on Hearing Loss).

What we forget with hearing loss is that it isn’t just deafness that is the disability, but the social isolation it can cause. Relationships thrive on communication, but deafness can be responsible for the breakdown of family relationships, friendships and of careers. It can wreck lives and is a major cause of depression.
What is the extent of NIHL?

The extent to which workers are affected is difficult to quantify. According to ‘Controlling Noise at Work’, the HSE guidance to the Control of Noise at Work Regulations 2005, over 2 million people in the UK are exposed to noise levels at work that may be harmful. Recent Labour Force Surveys (LFS) show that an estimated 17,000 individuals who worked in the previous 12 months believed their hearing problems were the most serious of their work-related illnesses (http://www.hse.gov.uk/noise/advice.htm). However as NIHL is not RIDDOR reportable, the exact number of people who are injured or at risk is unknown.

Cost to employers

Excessive noise in the workplace costs employers in terms of additional monitoring of controls, compensation claims and increased insurance premiums, health surveillance and employee ill health and disability.

Throughout all industry, industrial hearing loss remains the occupational disease with the highest number of civil claims accounting for about 75% of all occupational disease claims (HSE).

It is also increasing. In 2012 alone, AXA Insurance saw a 75% increase in the number of deafness claims. David Williams, Managing Director, Underwriting, AXA Insurance, says: “The issue for British industry is that, as we have seen with other areas of insurance in the UK, lots of claims inevitably lead to higher premiums in order to cover the cost of payouts. As British business struggles through a prolonged period of recession, the last thing they need is the added expense that this will bring.” Click here to view the full article.

Employers in known noisy industries are open to claims if they have no record of having taking adequate action to protect employees. Conducting noise risk assessments, purchasing quiet equipment, reducing the noise and the duration of exposures, and having the correct PPE in place and ensuring its proper use has never been so important.
Challenges as a health and safety professional – why are we not dealing with noise properly?

There are many challenges that both full-time health and safety professionals, as well as those who are occasionally involved, face when dealing with noise. The most common issues are as follows:

Inadequate advice

Often ‘consultants’ are giving inadequate advice. Risk assessments frequently record only how noisy it is around the workplace and just advise hearing protection.

- Your risk assessment should **identify who is at risk** and whether their noise exposure is likely to exceed action values given in Regulations.
- Your risk assessment should **advise on all the practical action** you can take to reduce personal exposure to noise, not just hearing protection.

Simple advice?

HSE’s guidance on the Noise Regulations is a free and accessible resource, but today’s health and safety professionals have constant demands on their time and sometimes several hats to wear. Our experience is that they are not always able to prioritise sufficient time to becoming fully conversant with the comprehensive advice contained within it and as such risk not being able to locate the salient points quickly.

Overreliance on hearing protection

There is often an overreliance on hearing protection, as it’s a simple, off the peg solution. However, it is frequently misused and ineffective. The following points dispel some common myths:

**Myth 1** Hearing protection is a simple solution to all noise problems. It actually requires careful selection, training on its use and fitting, and vigilant monitoring to ensure its effectiveness. Hearing protection is rarely fully effective in the workplace.

**Myth 2** Making everyone use hearing protection everywhere, in both noisy and quiet work areas ensures ultimate safety. Hearing protection protects hearing from excessive noise but also increases the risks to the wearer’s safety, due to the inability to hear. This is a particular problem in areas where there are vehicle movements or open machinery. Hearing protection should only be used when and where required.

**Myth 3** High attenuation protectors provide the best protection. High attenuation protectors make it harder to hear, so increasing the risk of accidents and making it difficult to work and communicate without removing them. Use them only where necessary. Overprotection creates more risks.

**Myth 4** An employer’s duties are fully met by ensuring everyone at risk uses the correct hearing protection. The Regulations in the UK allow you to use hearing protection only as a last resort or a temporary measure. It cannot legally be used as a substitute for achievable control of the noise.
What you should do

Every health and safety professional tackling noise at work needs to know how to take action to protect those exposed to noise and ensure they have evidence that they are compliant with the law and not negligent.

Introducing Hearing Conservation E-Learning by HSL and 3M

HSL and 3M have combined their knowledge and extensive experience to produce a comprehensive but simple e-learning resource that covers all the essential areas you need to know, in order to tackle noise at work.

There are four simple modules that take you step by step through the practical actions required by law where noise is a risk at work. They start by explaining the risks and take you through making a simple risk assessment, implementing practical noise controls, ensuring hearing protection is right for the person and the job and using health surveillance to encourage everyone to understand the risks and take responsibility for noise. They include exercises that help you take practical action and explain its purpose to other people.

Module 1: Hearing hazards and risks

It’s a legal requirement that everyone at risk of hearing damage from noise at work understands the risks. The starter module describes how we hear and the risks and consequences of harmful noise; the physical damage done to our ears, the symptoms and the handicap we experience.

Hearing damage cannot be cured, but can be prevented if we recognise where the risks are and take action to mitigate them or protect ourselves. This module helps you recognise the types of sound that can be harmful. It explains how the sound level in decibels and the duration of the sound relate to noise exposure and the measures you are required by law to assess for everyone at risk.

On completion of the module you will be able to:

- Help others to recognise the causes and symptoms of hearing loss
- Say why hearing conservation matters to everyone
- Provide an overview of the science behind hearing and sound
- Gain a perspective on exposure levels.
Module 2: Monitoring noise exposure and risk assessment

This module gives you the simple tell-tale signs of noises that can be a risk to hearing, so you can identify who might be at risk and when and where a risk assessment is required. It includes a simple step by step process for performing a risk assessment, and explains what you need to do if you find legal exposure action and limit values are exceeded. It also raises the often forgotten issue of safety in noise and recognising the risks of missing essential warning sounds.

On completion of the module you will be able to:

- Identify the tell-tale signs of noise
- Explain what should be done if the exposure action values and exposure limit value are exceeded
- Talk to colleagues about the effect that noise has on everyone
- Undertake a risk assessment for noise exposure

Module 3: Noise control and hearing protection

The risk assessment provides the springboard for identifying where control is required and where it will have the greatest benefits. This module helps you understand and use simple techniques to reduce personal noise exposure by reducing the level of the noise and the time each person spends exposed to the noise. It gives guidance on the proper use and selection of hearing protection where it is still required.

On completion of the module you will be able to:

- Explain how you can affect noise around you
- Identify noise controls that are effective: at the source of the noise; on its pathway to the person hearing the noise; and at the person hearing the noise
- Employ simple noise controls in the workplace
- Understand the use of hearing protection in the workplace

Module 4: Using health surveillance to influence behaviours

The final test of whether your noise controls are working is health surveillance. This is an essential hearing ‘MOT’ required by law for each individual who is at risk from noise. For an employer it can identify those areas where risks remain and controls are not working. For the individual it’s a personal, confidential consultation about the health of their hearing. This module takes you through the legal requirements, how often health surveillance is recommended and the practical aspects of what happens during health surveillance. It shows how it can be used to check noise controls are robust and reliable and improve the health and safety culture.

On completion of the module you will be able to:

- Explain health surveillance to colleagues
- Discuss the use of health surveillance
- Recognise how health surveillance can influence behaviour and productivity
- Identify who should have health surveillance and how often
Improve your knowledge today

These modules have been prepared by experts from both HSL and 3M, but use everyday language and illustrations so the topics are easy to understand. They aim to provide you with a simple message you can communicate with colleagues, and straightforward actions to tackle the noise at your work.

They cover the full range of topics you need to understand, to ensure compliance with regulations and give you an introduction to some of the more complex issues you may need to tackle.

They come from a trusted source. HSL experts work alongside those in the Health and Safety Executive, while those in 3M have everyday contact with the needs of health and safety professionals. Unlike a training course these modules will provide you with a resource you can use in your own time, and return to time and again.

It’s also cost effective — with access to all four modules starting at £99, can you really afford not to?

To purchase the e-learning package, please visit www.hsl.gov.uk/products

For further information or support, please visit our websites.

www.3M.co.uk/safety
www.hsl.gov.uk/products