Noise at Work Procedure

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Contents

1 Introduction

MLP Traffic Ltd cares about the health and safety of its people and accepts its responsibility to do all that is reasonably practicable to ensure that people who may suffer from noise at work are managed within current legislative requirements.

This directive outlines the MLP Traffic Ltd policy relating to requirements imposed by the Health and Safety at Work etc. Act 1974, The Control of Noise at Work Regulations 2005 as well as The Management of Health & Safety at Work Regulations 1999 as amended.

2 Scope

This Policy outlines procedures and plans to remove or reduce risk to MLP Traffic Ltd people who may be exposed to excessive levels of noise at work.

2.1 Employers' Responsibilities

Underlying the policy should be the communication to employees of the management's positive attitude to health, safety and welfare.

3 Policy

Elimination of risk is the corner stone and key factor in all work activities and MLP Traffic Ltd's Policy reflects our standards and safe systems of work. In the hierarchy of controls elimination of the hazard is the first action to be taken, this followed by substitution, engineering controls (i.e. containment), administrative controls (i.e. reduction in exposure, training and supervision) and lastly personal protective equipment (PPE).

The Control of Noise at Work Regulations 2005 replaces the 1989 Noise Regulations and introduces new requirements for action to be taken by employers. For example, the 2005 Regulations require employers to take action to protect workers at levels of noise 5 decibels lower than in the 1989 Regulations and now require health surveillance (hearing checks) for workers regularly exposed above 85 decibels

The aim of the Noise Regulations is to ensure that workers' hearing is protected from excessive noise at their place of work, which could cause them to lose their hearing.

Hearing loss
Noise at work can cause hearing loss which can be temporary or permanent. People often experience temporary deafness after leaving a noisy place. Although hearing recovers within a few hours, this should not be ignored. It is a sign that if you continue to be exposed to the noise your hearing could be permanently damaged. Permanent hearing damage can be caused immediately by sudden, extremely loud, explosive noises, e.g. from guns or cartridge-operated machines. But hearing loss is usually gradual because of prolonged exposure to noise. It may only be when damage caused by noise over the years combines with 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), a distressing condition which can lead to disturbed sleep.

Remember: Young people can be damaged as easily as the old

4 Management Responsibilities

It is the responsibility of Management to ensure that this Policy is appropriately communicated, understood and implemented. This will be achieved by the local managers carrying out regular one to ones, team briefs and toolbox talks etc.

5 Policy Objectives

The regulations have been developed in order to comply with the Physical Agents (Noise) Directive, which aims to protect workers from risks to their health arising from exposure to noise and this policy intends to mirror these requirements.

The main change from the previous regulations is the reduction by five decibels (dB) of the exposure levels at which action has to be taken.

The new exposure level at which employers must provide hearing protection and hearing protection zones is now 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 now 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.

The priority is for noise to be reduced below these levels and hearing protection should only to be used as a last resort whilst noise reduction improvements are being made or where such reductions are not possible by other means.

6 Risk Assessment

The Health & Safety at Work etc Act 1974 and the Management of Health and Safety at Work Regulations 1999 impose a duty on employers to carry out suitable and sufficient assessment of risk to which employees and people who may be affected by their activities are exposed. With the assistance of the Health and Safety Manager, it is the responsibility of each manager to complete task specific assessments for all work activities their people carry out.

The Control of Noise at Work Regulations 2005 require that if there is a problem with noise, the risks need to be assessed to decide whether any further action is needed, and if so plan how it will be done.

The aim of the risk assessment is to help to decide what needs to be done to ensure the health and safety of employees who are exposed to noise. It is more than just taking measurements of noise – sometimes measurements may not even be necessary. The risk assessment should:

- identify where there may be a risk from noise and who is likely to be affected
- contain a reliable estimate of employees' exposures, and compare the exposure with the exposure action values and limit values
- identify what is needed to be done 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.

7 Arrangements

Compliance with the following arrangements will ensure the achievement of the Mervyn Lambert Plant Ltd policy objectives above.

Many jobs involve exposure to noise. Any activity where it is suspected that noise levels reach the action levels set out in the 2005 Regulations will require a proper assessment. The range of noise levels that may be encountered at work is vast — from a 20dB whisper in a hospital ward at night to a 120dB hydraulic press one metre away. Very short duration but intensive noises, such as loud

explosive noises, for example from guns, cartridge operated fixing tools or drop forges, can cause damage even though total exposure time may be very limited.

Many jobs involve machinery that creates noise. As a rough guide, if there is a need to shout to be clearly heard by someone two metres away, or if a ringing sound in the ears after leaving the workplace is experienced, exposure levels may be too high.

Protective Equipment
There are four main ways of limiting or controlling noise:

- Reduction of noise at source
- Isolation from the source of noise
- Ear protection for workers at risk
- Reduction of time to which personnel are exposed to noise.

All possible measures should be taken to ensure noise is controlled at the source. However, should it prove impossible or impracticable to reduce noise levels to within safe limits, then, as a last resort it will be necessary to supply exposed workers with some personal form of hearing protection to further reduce exposure to the hazard as a last resort.
Hearing protection equipment constitutes the last line of defence in preventing high levels of noise from penetrating into the inner ear. Such equipment can be simple and inexpensive, and its systematic and correct use may prevent hearing impairment and other disorders resulting from exposure to intense noise.

Three forms of hearing protection equipment are available:

- Ear plugs
- Ear defenders
- Helmets incorporating hearing protection.

Each form of protection has its own specific characteristics. However, all types should provide effective noise attenuation, be comfortable and safe to use, be aesthetically acceptable, not provoke a toxic reaction in the wearer and not impair speech communication.

What does the law require employers to do?
Employers are required to:
Provide employees with hearing protectors if they ask for them and their noise exposure is between the lower and upper exposure action values; (80 – 85db)

- provide employees with hearing protectors and make sure they use them properly when their noise exposure exceeds the upper exposure action values;
- identify hearing protection zones, i.e. areas where the use of hearing protection is compulsory, and mark them with signs if possible;
- provide employees with training and information on how to use and care for the hearing protectors;
- ensure that the hearing protectors are properly used and maintained.

How can hearing protection be used effectively?
Do:

- make sure the protectors give enough protection – aim at least to get below 85 dB at the ear;
- target the use of protectors to the noisy tasks and jobs in a working day;
- select protectors which are suitable for the working environment – consider how comfortable and hygienic they are;
- 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.

Don't:

- provide protectors which cut out too much noise – this can cause isolation, or lead to an unwillingness to wear them;

- make the use of hearing protectors compulsory where the law doesn't require it;
- have a 'blanket' approach to hearing protection – better to target its use and only encourage people to wear it when they need to.

What about maintenance?
Ensure that hearing protection works effectively and check that:

- it remains in good, clean condition;
- earmuff seals are undamaged;
- the tension of the headbands is not reduced;
- there are no unofficial modifications;
- compressible earplugs are soft, pliable and clean.

7.1 STANDARDS OF PROTECTION
Different forms of protection and variations in design within the same types can offer varying levels of noise reduction. Suppliers should provide test data showing the attenuation claimed (measured in accordance with BS 5108). Any protectors conforming to BS 6344 will be supplied with this data.

7.2 Assumed Protected Level
The data, in the form of a table showing assumed protection at different frequency bands, can be compared with the noise levels measured in the workplace at the corresponding frequencies. Any total noise is made up of a wide range of frequencies and the measurement of these is often referred to as "octave band analysis". For example, if the noise at 500 Hz (Hertz or cycles per second) is 86dB(A) and a protector is chosen which has an assumed protection at 500Hz of 14dB(A) then the resulting level of noise at the ear for this frequency would be 86–14 = 72dB(A). A similar process at each of the frequencies has to be carried out to achieve the best match between the protectors and the characteristics of the noise to which persons are being exposed.
Selection can be quite complicated at higher noise levels especially where there are particular characteristics, and several computer software packages have been developed to help match protectors to individual noise environments. Many hearing protector suppliers will advise on the selection of suitable protectors.

7.3 Extreme Noise Levels
Where there are extremely high noise levels, one protector alone may not provide adequate protection, even when carefully matched to the noise characteristics. In such cases, use of dual protection may be necessary. Using earplugs with ear defenders will give a higher level of protection than only using one of the two types. However, there is no general rule for the use of the test data to estimate the assumed combined protection.

7.4 Duration of Use
At high noise levels, hearing protection must be worn at all times during periods of exposure. If a protector with an assumed protection of 20dB(A) is worn for a full eight hours in an eight-hour shift, it provides 20dB(A) protection. Therefore, if the average noise exposure is 100 dB(A), the dose to the wearer is 100–20 = 80dB(A). If the protection is removed for only 30 minutes, the level of actual protection over an eight hour exposure is reduced to 12dB(A), and the resulting dose will be 100–12 = 88dB(A). If the same protectors are only worn for six hours during an eight-hour shift, the actual protection is reduced to only 6dB(A) and the dose remains too high at 94dB(A).

7.5 TYPES OF HEARING PROTECTOR

7.5.1 Ear Defenders
Ear defenders are the most obvious type of protection, usually consisting of hard plastic cups that sit over the ears. A soft seal containing plastic foam or a viscous liquid limits noise leakage through to the ears and the inner surfaces. These are normally covered in noise absorbing materials, again often a soft plastic foam. Cotton covers can be used over the cup seals in particularly hot environments as an aid to comfort.

Various kinds of headband are used to hold the cups in place, the selection of which may depend on the situation the ear defenders will be used in. A simple sprung plastic or steel band over the head is the simplest form, which may be adjustable for pressure. Unfortunately this type is difficult to wear with a helmet of any kind. Soft bands that pass over the top of the head, utilising a pressure band behind the neck can be used with helmets, but these can be inconvenient to use if they need to be removed frequently.
Where head protection is necessary, it may be beneficial to use earmuffs directly attached to the helmet and many manufacturers produce this type. If spectacles of any type are worn at the same time they may interfere with the cup seals. The same is true for long hair or jewellery. In these cases an alternate design, such as earplugs, may need to be used.
Personal stereos are often seen used with ear defenders by placing the earpieces within the cups. This can lead to levels of noise at the ear at or even higher than the levels outside the defenders and should be prevented where possible. Personal stereo headsets or earpieces are unlikely themselves to provide any significant noise reduction and should not be used as a substitute for correct hearing protection.

7.5.2 Ear Plugs

Earplugs fit into the ear canal. They may be separate or connected by a cord or neckband, which can prevent loss (This may be important in hygiene sensitive area), plugs may be intended for prolonged use (permanent), used a small number of times (re-usable) or for use once only (disposable). Earplugs are not suitable for all persons. If the user has experienced ear infection or irritation, care should be taken in their use and any medical opinion on suitability should be noted.

Some disposable and re-usable plugs are made from compressible material such as plastic foam or fine mineral down. They should fit most users but care in their correct fitting into the ear canal is necessary for best performance (see Appendix 4a). Permanent types of plug are usually made of plastic or rubber, and to obtain a good seal the size should be carefully selected. Sometimes each ear will require a different size. Universal plugs are available but are unlikely to fit every user, thus giving lower than planned levels of protection. This type of plug can be retained in the ear even when not fully inserted, therefore giving little protection so that the need to increase supervision of use may outweigh the possible benefits. Specially moulded plugs for individuals, usually of silicone rubber can give good results and are comfortable. They must be made by a properly trained person.
All re-usable plugs must be kept clean and be replaced when their "elasticity" or ability to fit correctly is reduced. Failure to keep them clean can result in ear infections and irritation.
Semi-inserts are pre-moulded caps that fit over the entrance to the ear canal, using a headband to press them into place. As the headband pressure has to be sufficient to provide an effective seal, they can become uncomfortable over extended periods of time. Although normally this form of protection does not provide a high level of attenuation the rigid headbands can make them very convenient for intermittent use as they can be slipped off and held around the neck when not needed.
Special types of protector are available to deal with particular problems and their selection requires specialist advice.

7.6 SELECTION, ISSUE AND MAINTENANCE

7.6.1 Selection

An outline of selection of hearing protection is given under Standards of Protection above. Further details of the selection process are given in Noise Guide 5 produced by the Health and Safety Executive (HSE) (see Further Information below) and care must be taken to choose those most appropriate. Ear defenders have been known to be selected for their colour to fit in with company colour schemes, ignoring the actual attenuation characteristics. As manufacturers may use colour to differentiate between different models for varying circumstances, this can result in protection being far lower (or higher) than desired.
Whatever form of protection is intended, the user should be allowed a choice. Some people cannot wear plugs for long as they experience irritation and discomfort after short periods. Others may find the pressure from ear defenders uncomfortable and prefer plugs. The level of comfort experienced by the user can significantly affect the level of use, and therefore the level of protection.

7.6.2 Issue

Disposable and re-usable earplugs need no special procedure for their issue. They do have to be readily available and instruction and training issues are as important as with the other forms of protection. They are especially useful for visitors or those infrequently exposed to noise.
Ear defenders do not need specialist fitting but a check on complete coverage of the ears and completeness of the seal should be made.

7.6.3 Maintenance

Hearing protectors must be in good condition to provide the designed noise reduction.
Regular checks should be made to ensure that:

- The condition of ear defenders seals: they can become torn, detached and liquid seals can become hard or leak
- Tension of headbands is sufficient
- Whether there have been unauthorised modifications, such as holes drilled in ear muff cups, noise absorbing material removed or personal stereo speakers fitted
- The protectors are generally in good condition
- Resilience and softness of ear plugs has not deteriorated
- The equipment is kept clean and correctly stored.

These simple checks can be carried out by the users, and the use of a set of new protectors for comparison is good practice. Spare replaceable parts should be kept in stock and repair or replacement carried out immediately defects are discovered. Cleaning should be carried out regularly and scrupulous attention must be paid to this with re-usable and permanent plugs. It is important to have clean hands when inserting plugs to prevent contamination of the outer ear canal during fitting. If ear defenders are to be reissued to another person they must be carefully cleaned and sanitised first.

Proper facilities for storage must be provided to keep ear protectors secure. For plugs this could be a small plastic container in which they are often supplied, for ear defenders a locker or small individual container in a convenient location may need to be provided. Cleanliness of the storage facilities is also important.

7.6.4 Medical Supervision of Employees

Legislation requires companies to provide facilities whereby workers exposed to noise at or above the first action level, can have their hearing checked. This requirement has not been incorporated into the 1989 Regulations as the facilities available through the National Health Service are considered acceptable compliance, without the need for specific statutory support.
It is good practice to encourage employees to have their hearing checked regularly, where they are exposed to significant levels of noise at work over 80dB

8 Training

All requests for training and Occupational Health consultation must be made via Human Resources. Competent preferred suppliers and/or in-house personnel will deliver approved training. On completion of training HR will update central records and training details will be added to personnel files.

9 References

Noise at Work Regulations 2005

HSE Guidance Note L108

Management of Health & Safety at Work Regulations 1999 as amended.

The Health and Safety at Work etc. Act 1974

The Workplace Health, Safety & Welfare Regulations 1992 as amended

Croner Health and Safety
BS 4196: Sound power levels of noise sources
BS 5228: Noise and vibration control on construction and open sites
BS 6812: Airborne noise emitted by earth-moving machinery

BS 6916: Chain saws Part 6: 1988 (1993): Method of measurement of airborne noise at the operator's position
BS EN 352: Industrial hearing protectors. Safety requirements and testing
352-1: 1993: Ear defenders
352-2: 1993: Ear plugs
352-3: 1997: Ear defenders attached to an industrial safety helmet
BS EN 24869: Acoustics. Hearing protectors
BS EN 61252:1997: Electro-acoustics. Specifications for personal sound exposure meters

10. Useful Addresses

Association of Noise Consultants
6 Trap Road
Guilden Morden
Nr Royston
Hertfordshire SG8 0JE
Tel: 01763 852958

Institute of Acoustics
77A St Peter's Street
St. Albans
Hertfordshire AL1 3BN
Tel: 01727 848195
Website: www.ioa.org.uk

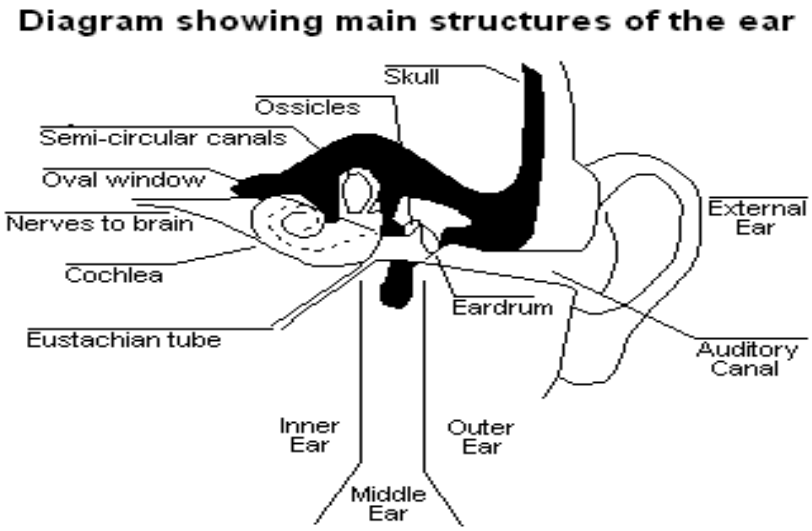
11 Enquiries

For additional information regarding this document contact your REGIONAL Health & safety Manager.

12 Appendix 1 PHYSIOLOGY OF THE EAR

Sounds are transmitted through the air as pressure waves. The function of the ear is to receive these waves and to convey information on their amplitude and frequency to the brain. The ear can be divided into four main parts; the external ear, the outer ear, the middle ear and the inner ear.
Diagram showing main structures of the ear

The external ear (the visible part) channels sound pressure waves into the outer ear ending at the eardrum. The pressure waves cause the eardrum to vibrate and these vibrations are transmitted via three small bones (the ossicles) to the cochlea where the vibrations are transformed into nerve impulses by the organ of Corti.



The External Ear
The main function of the external ear is to protect the internal parts of the ear. This is achieved by fine hairs, which prevent the ingress of dust and liquids.

The Outer Ear
The outer ear consists of the auditory canal. This allows pressure waves to reach the tympanic membrane or eardrum, which separates the auditory canal from the middle ear cavity.

The Middle Ear
The cavity behind the tympanic membrane forms the middle ear and contains the ossicles, three small bones individually called malleus, incus and stapes. The ossicles form a system of tiny bone levers connecting the tympanic membrane to an aperture in the bony wall between the inner and outer ear, called the oval window. The middle ear is ventilated by the Eustachian tube, which connects to the throat and enables the pressure in there to be equalised with that of the atmosphere.

The Inner Ear
The inner ear consists of the cochlea and the semi-circular canals (which are concerned with balance). The cochlea consists of a liquid filled tube, which is coiled like a snail shell. The receptor organ in the cochlea is called the organ of Corti and is made up of three or four rows of external hairs and one row of internal hairs. The auditory sensory nerve fibres, which form part of the auditory nerve, start around the base of the hair cells.

Mechanism of Hearing

The two most important qualities of noise are its frequency and its intensity.

Frequencydetermines the number of vibrations over a period of time, usually seconds, made by sound in the air and is measured in Hertz (Hz).
Intensity determines the strength with which sound vibrates the eardrum and is measured in decibels (dB).

13 Appendix 2 Examples of typical noise levels

14 Appendix 3 Simple Noise Measurement

1. Initial measurement should be done as soon as a noise risk is first recognised, followed thereafter on a two-year cycle.

2. Surveys may be carried out as part of the routine site safety audit/inspections if this does not result in significant delay.

3. The equipment used for survey purposes must be manufactured to BS (EN) 60651 TYPE 2. The results of the survey are to be recorded and kept by the Health and Safety Manager.

4. Care should be taken that a representative sample is taken of the noise level as experienced by a person's ears. The meter should be held roughly at ear level and not thrust into the machine, which would achieve an unrealistic figure. Hearing protection is to be worn by the surveyor, and any persons accompanying them.

5. Many plant rooms have more than one piece of equipment that emits a significant amount of noise. Where this is the case a noise reading should be taken with all the plant running to establish if the noise is above the first action level (80 dB). If this is the case then further readings should be taken to establish the levels, which various plant configurations give. It may well become apparent from this if operating regimes can be put in place to limit the total noise generated in the space. It must be remembered that some equipment (chillers, ICEs etc) are often at their loudest when on full load so if possible readings should be taken with the plant in this condition.

6. When any reading is obtained that is above the first action level, correct signage making the wearing of hearing protection mandatory must be displayed. These signs must be displayed at all entrances to the area in such a way as persons are instructed to don protection before they enter an area where they will be at risk.

7. Equipment may have a noise reduction enclosure fitted. If the machine may be run with the enclosure removed (for fault finding/maintenance etc) additional readings should be made and noted with said enclosure removed.

8. If appreciable noise can be heard external to the room it should also be recorded. If possible a reading should also be taken externally with the plant shut down to ascertain the background, or ambient, noise level.

9. Record in a sketch format the location of each reading relative to the machine and the surrounding equipment/walls etc.

10. If any noise level is recorded above 110 dBA (or you have any doubt concerning the survey, or its result), you should consult the Health and Safety Manager to ensure a safe system of work is employed.

15 Appendix 4 The Fitting of Personal Noise Protection

Correct Incorrect

The problems of fitting earmuffs (e.g. with long hair, safety glasses or jewellery)

16 Appendix 5 Fitment of Foam Ear Plugs

1. With clean hands, roll (don't squeeze) the ear plug between your thumb and first 2 fingers until the diameter of the plug is as small as possible.

2. Reach over your head with the opposite hand and pull the top of your ear to open the ear canal.

3. While you are holding the ear open, quickly push the rolled end of the plug into your ear, leaving enough of the ear plug outside the ear to allow removal.

4. Here is the disposable ear plug properly positioned in the ear canal. For best fit, at least 1/2 to 3/4 of the ear plug should be inside your ear canal.

Removing ear plugs:
For greater comfort, twist the plug gently to break the seal before removing the plug.

Checking the fit of Your Ear Plugs
1. Always fit your ear plugs so that they seal the ear closed. Once you put both plugs in, check the fit by talking out loud. Your voice should sound hollow, as if you are talking in a barrel. The noises around you should not sound as loud as they did before you put the plugs in.
2. Gently pull on the ear plug; it should not move easily. If the plug moves easily, remove it and re-insert it deeper into the ear canal making sure that 1/4 of the plug is outside the ear.
3. Re-check the fit often during the time that you wear the ear plugs. If necessary, leave the hazardous noise area and readjust the fit. If they become loose, you may lose your protection from noise.
4. The size and shape of each ear is unique. If you are unable to fit these ear plugs correctly and comfortably in both ears, notify your supervisor or consider wearing a different size or type of hearing protection.