Noise in construction

Identification, assessment and control

Effects of noise at the workplace

Noise at the workplace is the major cause of noise-induced hearing loss in Western Australia. Noise can also create stress, and can be a safety hazard at work, interfering with communication, acting as a distraction and making warnings harder to hear. Reducing noise levels at the source provides the most effective way of protecting workers' hearing as well as providing numerous other benefits to workplaces.

WorkSafe has a number of publications available on its website to assist you in meeting these requirements as well as a checklist on page five of this publication.

Are you at risk?

If the noise around you makes it necessary for you to raise your voice to make yourself heard to somebody one metre away, your hearing is probably at risk.

Repeated exposure to excessive noise will eventually lead to permanent damage.

How big is the problem? - the noise assessment

When a problem has been identified but cannot be removed immediately, the extent and magnitude of the noise should be determined through a noise assessment. An assessment details the levels present, the items causing the most noise and the people affected by the noise. Thus, priorities for noise control can be worked out. Where immediate changes cannot be made to solve the noise problems, suitable personal hearing protectors for the situation can be identified.

Organisations offering noise assessment services are listed on the WorkSafe website www.worksafe.wa.gov.au under Services.

What is the exposure standard for noise in WA?

In WA legislation sets a workplace exposure standard equivalent to 85 dB(A) averaged over eight hours, or a peak noise level of 140 dB(C). Where these values are exceeded, all practicable measures should be taken to reduce the noise level by engineering noise control. Failing this, ways should be explored to reduce the exposure time by half for every 3 dB the level is above the exposure standard.

Is there a QUIETER PROCESS?

Before you buy or hire plant or equipment, ask yourself if there is a quieter way of doing the job. For example, before buying a pneumatic impact wrench, consider the various hydraulic and torque-controlled units now available. While these units may cost more, they last longer and cause less damage to the nut, as well as lowering noise and hand-arm vibration levels.

Buy quiet
If you think the machine you are buying may be noisy, ask for noise level information from the supplier. The information is almost always available to the supplier from the manufacturer.

Remember, noise does not have to be painful to be doing damage.

Reducing the noise at source

The most effective and acceptable way to reduce noise in the workplace is to change the noise source (such as a machine) so that it makes less noise. This may mean using a quieter process instead of a noisy one (such as pressing rather than hammering), reducing the amount of metal to metal impact, treating radiating panels or using vibration isolation mountings. Regular maintenance is also important.

Some processes, such as metal and stone cutting and grinding produce very high noise levels. Noise reduced saw blades and clamping the work piece can help reduce noise levels but hearing protectors may still be needed.

If the noise cannot be sufficiently reduced at source then try to stop it from reaching people. This may be done by moving the noisy work away from others, by enclosing it or partitioning it off from quieter areas, by using sound-absorbing materials to reduce the build-up of noise or by using silencers. For more information see the following pages.

Using personal hearing protectors

When all practicable control measures have been taken, but the reduced noise is still above the exposure standard, personal hearing protectors must be supplied and worn all the time the noise is excessive. They must also be
supplied while control measures are being planned and implemented.

It is important that they should be chosen for their noise reduction characteristics, comfort and suitability for the job. Remember! Uncomfortable equipment will not be worn.

Regular hearing tests

A valuable check on the success of the noise control program can be obtained through the regular (audiometric) testing of workers exposed to excessive noise. The reason for any hearing loss found between tests should be investigated and action taken to remedy the situation.

Noise management in the construction industry: a practical approach

Construction workers are among the most affected by industrial deafness. Safe Work Australia research shows that the construction industry is the third noisiest industry sector.

The types of workers at risk include:

- Users of impact equipment and tools (eg piling hammers, concrete breakers, manual hammers).
- Users of explosives (eg blasting, cartridge tools).
- Users of pneumatically powered equipment.
- Operators of plant powered by internal combustion engines.
- Workers in the vicinity of noisy plant.
- Operators and others in enclosed spaces where there are noisy activities or lots of machinery.
- Service and equipment maintenance workers.

It is very important for the construction industry to adopt a preventive management program aimed at the reduction of workers' noise exposures. The best ways to achieve this reduction are to employ quiet work practices (like quiet piling systems) and use quiet construction equipment (like silenced compressors). When quieter alternatives are not available, consideration should be given to a site layout to arrange noisy processes away from workers not involved in their operation. Portable barriers can be used around static equipment like generators and concrete pumps.

To achieve better results, noise control aspects should be included in all four stages of any construction project: client's specifications, tenderer's proposal, site planning and construction phase.

A client should include noise control requirements for both occupational and environmental noise early in the planning stage for a new project. The desired noise control requirements may be included in a client specification list in the tender document. This can help to avoid unexpected and often very expensive noise control during the construction phase. It allows tenderers to plan how to overcome noise problems in advance. The client's specifications may include: • Specified noise exposure levels during the construction phase, as per legislative requirements or company policy. • Use of quiet/ silenced equipment. • Adoption of quiet alternative techniques. • Use of noise control measures like silencers, barriers, enclosures. • Erection of warning signs identifying noise hazard areas. • Time restrictions. • Provision of personal hearing protectors and training.	STAGE 1 - Client's specifications
The tenderer's proposal should cover all the client's specifications. The tenderer should prepare a noise control policy and a noise control plan to be included in the site specific safety management plan. The noise control plan may be a set of actions required to achieve the noise control policy and to reduce noise exposure. It may also include information on how the company is planning to meet its obligations, like: • List of equipment to be used - with noise levels at operator position and/or at 1 m. • Methods undertaken to lower noise exposure, eg maintenance, barriers, enclosures. • Restricted hours, rotation of workers in noisy places, special time arrangements like noisy work done after hours. • Identification of noisy equipment and processes by signs. • Site induction for employees and contractors to include noise levels, noise controls and correct use and maintenance of personal hearing protectors. • Selection and provision of appropriate personal hearing protectors. • Audiometric tests.	STAGE 2 Tenderer's proposal

The main contractor should plan to coordinate subcontractors so that the activities of one do not unnecessarily expose employees of another to noise hazards. It is good practice to nominate one person as the noise coordinator for all noisy activities. Site planning should include: • Preparation of guidance for workers on hazards and the methods to reduce noise. • Preparation of schedules of noisy plant and exposure estimates for each phase of work. • Laying out the site to separate noisy activities from quieter ones. • Scheduling noisy activities to take place when the minimum number of nearby workers are present (out of hours noise needs to be carefully planned to avoid neighbourhood annoyance). • Rostering workers to minimise exposure times. • Ensuring that workers are well trained, instructed and supervised in noise matters and responsibilities including correct use and maintenance of personal hearing protectors.	STAGE 3 Planning of site
Once the construction work is in progress, it is essential to monitor the implementation of the noise control plan. This could be carried out by the client or the main contractor and could include the following: • Checking if equipment brought onto site complies with specifications. This could be done by obtaining information available from suppliers or by noise assessments. • Reducing noise from identified noise sources by exchanging equipment and/or processes for a quieter alternative or by engineering control methods to quieten the existing one. • Ensuring that all plant is properly maintained eg all noise control measures like silencers and enclosures are intact. • Monitoring work schedules to check that noisy work is carried out as specified, away from other workers, outside hours, etc. • Monitoring if noisy areas are identified and well marked so employees and contractors can avoid entering them unnecessarily. • Monitoring whether training and hearing tests have been carried out and if personal hearing protectors are adequate and are being worn and maintained correctly. • Ensuring that the cause of any hearing loss shown up by audiometry is investigated. • Utilising safety toolbox meetings to provide feedback on effectiveness of noise control measures and personal hearing protectors to workers, employers and contractors. • Posting on safety notice boards results of noise assessments conducted and additional noise information.	STAGE 4 Construction

.

Noise Checklists

Check	yes	no	n/a
Identification of noise hazards - Reg 3.1(a) CoP section 4			
• Is there a noise hazard at the workplace? e.g. need to raise voice to speak with someone 1m away, very loud impact noises, workers have hearing loss or tinnitus.	☐	☐	☐
• Have there been any workers' compensation claims for hearing loss?	☐	☐	☐
Noise risk assessment - Reg 3.1(b) CoP section 4			
• Has a noise risk assessment been carried out by a competent person?	☐	☐	☐
• Any workers exposed above the exposure standard?	☐	☐	☐
• Is the noise risk assessment current? – ie less than 5 years ago and noise exposure has not substantially changed since.	☐	☐	☐
Hazard Controls - S19(1), Reg 3.46 or Reg 3.1(c) CoP sections 5 and 6			
• Is there a "buy/hire quiet" policy to choose quieter tools and equipment? (Eg noise reducing circular saw blades)	☐	☐	☐
• Does the site layout position noisy work well away from quiet work? (Eg tile cutting, brick cutting)	☐	☐	☐
• Are tools/equipment and noise controls maintained so as to minimise noise?	☐	☐	☐
• Is work planned to minimise the time workers are exposed to excessive noise?	☐	☐	☐
Personal hearing protectors – Reg 3.34, 3.35, 3.47 CoP section 7			
• Are compliant hearing protectors supplied to and correctly worn by workers who may be exposed to a noise hazard?	☐	☐	☐
• Are hearing protector areas signed in accordance with AS1319?	☐	☐	☐
• Are workers trained in fitting, use, selection, maintenance, replacement and storage of hearing protectors?	☐	☐	☐
Information and training – S19(1) CoP section 8			
• Are information & training on noise hazards, effects and controls provided?	☐	☐	☐
Hearing tests – Reg 3.1(b) CoP section 9			
• Is an audiometric testing program made available to workers exposed above the exposure standard?	☐	☐	☐
• Are appropriate actions taken if hearing loss is found to occur?	☐	☐	☐

Legend

CoP	Code of practice for managing noise at workplaces
Reg	*Occupational Safety and Health Regulations 1996*
S19(1)	Section 19(1) of *Occupational Safety and Health Act 1984*
AS	Australian Standard

Further information

- Code of practice for managing noise at workplaces (available on the WorkSafe website)
- **Standards Australia**
  - AS/NZS 1269 Occupational noise management Parts 0-4
  - AS 2436 Guide to noise and vibration control on construction, demolition and maintenance sites
- WorkSafe website
  www.worksafe.wa.gov.au
  Search for 'noise'

Noise Levels and Exposure Times Equivalent to the Exposure Standard

Noise Level dB(A)	Exposure Time
82	**12 hours**
85	**8 hours**
88	**4 hours**
91	**2 hours**
94	**1 hour**
97	**30 min**
100	**15 min**
103	**7.5 min**
106	**3.75 min**

A6712148