



Noise in music entertainment

Identification, assessment and control

Loud music can damage your hearing

Every time you leave a music venue with ringing in your ears, it's a sign that some hearing damage has occurred.

One of the unique features of the music industry is that sound levels loud enough to cause noise-induced hearing loss are often thought to be needed for the music to appeal to patrons.

Permanent hearing loss from excessive noise exposure, and in some cases tinnitus (ringing in the ears), is often suffered by people who have worked in or with the music industry over a number of years.

The general duty of care embodied in the *Occupational Safety and Health Act* places responsibilities on employers, persons in control of the workplaces, musicians and people who work with or near musicians, such as sound mixers and bar staff, to ensure as far as practicable that they themselves and others in the area are not exposed to hazards.

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.

Reducing the noise

Consider reducing the noise at source, ie reduction of the music level. This may be approached through a process of consultation with the entertainment providers, relevant safety and health representatives and committees. Also find out if there are any restrictions on the music level needed to comply with the Environmental Protection (Noise) Regulations 1997. When a maximum music level is decided on, this can be included in contractual agreements with the entertainment providers.

If the noise cannot be sufficiently reduced at source then try to stop it from reaching workers. This may be done by moving the workers further away, by creating quieter work areas or by using sound-absorbing materials to reduce the build-up of noise. For more information see the following pages and the Code of practice Control of noise in the music entertainment industry.

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.

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. In addition, where immediate changes cannot be made to solve the noise problems, suitable models of personal hearing protectors for the situation can be determined.

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

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.

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

Strategies for the music entertainment industry

Venue owner

As an owner you are responsible for ensuring the practical architectural changes which may be needed to reduce the noise exposure of people in the venue are implemented. Whilst you have no direct responsibility to provide advice or information about safety and health, it may be advisable to bring the following matters to the attention of the venue operator:

- your safety and health policy
- the legal requirements of the Occupational Safety and Health Act and regulations
- the codes of practice for Managing Noise at the Workplace and Control of Noise in the Music Entertainment Industry

Note the Environmental Protection Act 1986 and Environmental Protection (Noise) Regulations 1997 may also apply in these circumstances.

Venue operator

Noise Assessment - Identify situations and areas of the venue where noise is likely to be above the exposure standard. As a rule of thumb, if a person needs to speak in a raised voice to be understood one metre away, the A-weighted sound level is likely to be above 85 decibels.

Arrange for a noise assessment to be carried out by a competent person during a performance typical of louder performances in the venue.

Noise reduction - If '8 hour exposures' exceed the exposure standard for noise:

- consider reducing the noise at source by reducing the level of the music;
- consider reduction of noise though increasing the 'room loss' eg by changing the lay-out and adding acoustic absorption;
- seek professional assistance from architects and acoustical consultants;
- reduce '8 hour exposure by reducing the amount of time staff are exposed to noise

Personal hearing protectors – If it is not practical to avoid exposing workers at the workplace to noise above the exposure standard, provide appropriate personal hearing protectors, training and hearing tests to all affected workers.

Entertainment provider

Music level - Identify if your performance is likely to produce exposures above the standard. As a rule of thumb if a person needs to speak in a raised voice to be understood by another 1 metre away, the A-weighted sound level is likely to be above 85 decibels. If so, find out the 'music level' of a typical performance under typical conditions (you may wish to combine your efforts with a venue operator).

Duty to employees

If you employ workers such as sound mixers/engineer, lighting/road crews or musicians, you will need to consider the following to prevent excessive noise damaging their hearing:

- increase the distance between non-performing employees and stage area or loudspeakers;
- reduce the 'music level' within the workable range;
- reduce the 'foldback' levels on the stage to lower (but still workable) levels;
- reduce sound output for individual instruments, eg damping drums, using smaller amplifiers to reduce sound levels on stage; and
- provide hearing protectors, training and hearing tests.

Strategies for the music entertainment industry cont...

Employers of service staff

- Consult with venue operator
- Find out if your employees are likely to be exposed above the exposure standard for noise
- Instruct staff in administrative measures to reduce noise exposure such as avoiding noisy areas, rotating staff between noisy and quiet positions;
- Provide staff with appropriate personal hearing protectors as advised by the venue operator;
- Provide training sessions on noise; and
- Arrange hearing tests.

Suppliers & installers of equipment

Information – Provide information to customers at point of supply on potential noise hazards including:

- operation conditions likely to result in a noise hazard
- the need to monitor 'music level'; and
- any areas where the peak noise level is likely to exceed 140 decibels.

This could take the form of verbal advice to the receiver of the equipment, written information accompanying the equipment or a hazard warning sign affixed to a prominent part of the system.

Installation – arrange the placement and orientation of the loudspeakers to minimise as far as practicable the sound directed to employee locations.

Arrange the placement of loudspeakers to enable restriction of access where peak noise levels are likely to exceed 140 decibels.

Operation – Find out if there is an agreed maximum 'music level' for the venue and don't exceed it.

Arrange for the music level' to be monitored and advise venue operator.

Arrange training for employees in monitoring and methods of achieving specified levels.

Workers in music venues

- Find out if noise exposure is likely to be excessive.
- Follow your employer's or the venues operator's instructions on control strategies including:
 - instructions relating to achieving any agreed 'music level'; and
 - abiding by any agreed arrangements for job rotation or restriction of access to noisy areas.
- Do not wilfully misuse or damage any equipment provided to reduce noise in the venue.
- Use personal hearing protectors provided in the manner instructed.
- Report any new hazardous noise situations or any hearing loss or tinnitus (ringing in ears) resulting from exposure to noise in the venue to your employer.
- Request annual hearing tests.

Noise Checklist

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 - Reg 3.1(c) or 3.46 CoP sections 5 and 6 Is the hierarchy of controls used? – elimination, substitution (“buy quiet” policy), isolation, engineering (at source where practicable or otherwise in noise transmission path), administrative.			
Are noise sources and noise controls maintained so as to minimise 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

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

Further information

- Code of practice Managing noise at workplaces
- Code of practice Control of noise in the music entertainment industry
- Links
 - WorkSafe website
www.worksafe.wa.gov.au
Search for 'noise'
 - Sound Advice website
www.soundadvice.info
 - Don't Lose the Music website
www.dontlosethemusic.com