Guide to Noise Control in the Music & Entertainment Industry

Prolonged exposure to loud noise can cause hearing loss or noise induced deafness (NID). This guide serves to raise the awareness of noise hazards from loud music in the music and entertainment industry. It provides guidance on practical measures to prevent and control noise hazards, and to reduce the risk of NID.

Where

Sectors / workplace include:

Food and beverage outlets where live music or recorded music is played in

- Restaurants, bars, nightclubs, discotheques, lounges or pubs.

Who

Employees include:

- Bar staff, floor staff, DJs (disc jockeys), security officers, managers, bouncers / door supervisors.

Why

Concern of Hearing Loss

Unlike manufacturing industries, where noise is a hazardous by-product i.e. unwanted sound, noise is actually the desired product of the music entertainment industry. However, the damaging effects of exposure to loud noise are alike, whether the noise is desired or unwanted.

The permissible exposure limit for noise is 85 dBA over an 8-hr workday. The daily noise exposure level ($L_{eq,8h}$) in pubs and clubs range from 89 to 100 dBA (Ref 1). The corresponding permissible exposure time is 2.5 hours to 15 minutes. Persons working in the entertainment industry are at a higher risk due to longer working hours and exposure to loud music.

What

Legal Requirements

Since 1 March 2008, hotels, food and beverage sectors have been covered under the Workplace Safety and Health Act (WSHA) and its subsidiary legislation.

Under the Act, all stakeholders must proactively manage the safety and health risk at their workplace, and take reasonably practicable measures to ensure the safety and health of employees and other people that are affected by the work being carried out. The relevant regulations are as follows:

1. WSH (Risk Management) Regulations
   - Assess the safety and health risks at workplace including risks from excessive noise, and take reasonably practical measures to eliminate or reduce the risks.

2. Factories (Noise) Regulations*
   - Take practical measures to control noise and ensure that employees are not exposed to noise exceeding 85dBA over an 8-hr workday.

3. Factories (Medical Examinations) Regulations*
   - Send employees who are exposed or likely to be exposed to excessive noise for pre-employment and annual audiometric examinations.

4. WSH (Incident Reporting) Regulations
   - Report accidents and occupational diseases (including NID) that occur at workplace.

* The WSH (Noise) Regulations and the WSH (Medical Examinations) Regulations will be gazetted and will come into effect when the WSHA is extended to cover all workplaces in September 2011.

How

Achieving the right balance between protection of employees and customers' enjoyment does not necessarily mean the end of the sound of music. Providing a conducive and safe environment for both customers and employees makes good business sense.

Assessing the Risk

Hazard identification is performed to identify employees who may be exposed to excessive noise – 85 dBA or higher. This can be qualitative or quantitative in nature. If the outcome of the qualitative assessment suggests that a noise problem exists, a quantitative assessment should be carried out to determine the exposure.

1. Qualitative assessment
   - Assess the workplace using a checklist or through visual inspection to identify employees who may be exposed to excessive noise. One simple test to check is if employees need to raise their voice for normal conversation at 2m apart.

2. Quantitative assessment
   - Engage a competent person to conduct noise measurements or monitoring to identify noisy areas, and to determine the noise exposure level taking into account the noise level and exposure time.

Controlling the Noise

1. Design of work areas

   - Separate staff from loud music by
     - Positioning bars away from dance floor to quieter areas
     - Providing quiet areas or “chill-out” rooms for resting
     - Placing acoustic screens (hard and dense panels) to protect employees from direct noise sources e.g. by enclosing or partitioning off DJ booth or bar areas

   - Reduce noise level in other areas by directing the music to desired areas. This can be done by
     - Distributing sound evenly over the dance floor using directional speakers
     - Increasing the number of directional speakers to avoid hot spots
     - Reducing the volume of peripheral speakers
     - Pointing speakers away from the bar and other work locations

   - Reduce the reverberant noise by
     - Carpeting hard floors
     - Lining the ceiling above dance floors with acoustic absorbent materials (made of soft, porous or fibrous materials)
     - Lining walls with acoustic absorbent materials
     - Lining workstations with absorbent materials

2. Reduce the music volume

   - Install a sound limiter to prevent the music volume from exceeding a pre-set level; a warning is given when the pre-set level is reached.

   - The pre-set level is determined by the type of venue, effectiveness of venue design, and type of music played.

3. Maintenance of equipment

   - Maintain noise control equipment e.g. noise limiters, acoustic screens and sound absorbers in good working conditions.

Protection of Employees

1. Administrative measures

   - Reduce the duration of employees' exposure (if it is not possible to reduce the noise level) by
     - Rotating staff between noisy and quiet areas
     - Rotating staff between noisy and quiet shifts
     - Rotating staff between noisy and quiet tasks
     - Providing regular 'quiet' breaks

2 Providing hearing protectors

   - Provide and ensure proper usage of hearing protectors when all practicable measures have been taken but are not sufficient to reduce employees' exposure to excessive noise.

   - Hearing protectors should be suitable for the job, comfortable, and not overly protected.

   - Select the right type of hearing protectors for adequate hearing protection whilst enabling staff to communicate with customers. For example:
     - Earmuffs with sound restoration devices fitted for DJs to enable them to monitor the music and isolate them from the ambient noise in the venue
     - Communication equipment with built-in hearing protection for door supervisors and security officers
     - Uniform attenuator earplugs or pre-mould earplugs for bar staff who need to communicate

Training and Education

- Educate employees on the effects of noise on their hearing. They need to understand the risk, the need for noise control and the importance of wearing hearing protectors.

- Train employees on the proper use and maintenance of hearing protectors.

- Ensure that employees understand the relevant provisions of the regulations and the need to follow instructions on the control measures taken.

- Conduct training for all employees exposed to excessive noise, and within 3 months of job commencement for new employees.

Audiometric Examinations

- Conduct pre-employment and yearly audiometric examinations for all employees who are exposed to excessive noise.

- Ensure that employees are examined by Designated Factory Doctors to detect any early hearing impairment.

Further Information

1. Health and Safety Laboratory 2002, Noise levels and noise exposure of workers in pubs and clubs – a review of the literature, Research Report 026, health and Safety Executive, UK.

2. WorkSafe Western Australia Commission 2003, Code of Practice - Control of Noise in the Music Entertainment Industry, Government of Western Australia.

3. Guo J. and Gunn P. 2005 Noise in WA Music Entertainment Venues – A Follow-up Study, WorkSafe Western Australia.

4. Sound Advice– Control of Noise at Work in Music and Entertainment. Health and Safety Executive, HSE, 2008. (http://soundadvice.info/)

5. Listen While You Work – Hearing Conservation for the Arts. For performers and other workers in art and entertainment. Canadian guidance, Safety Health Arts and Production Entertainment, SHAPE.

Case study

(Source: Sound Advice- Control of Noise at Work in Music and Entertainment, HSE 2008)

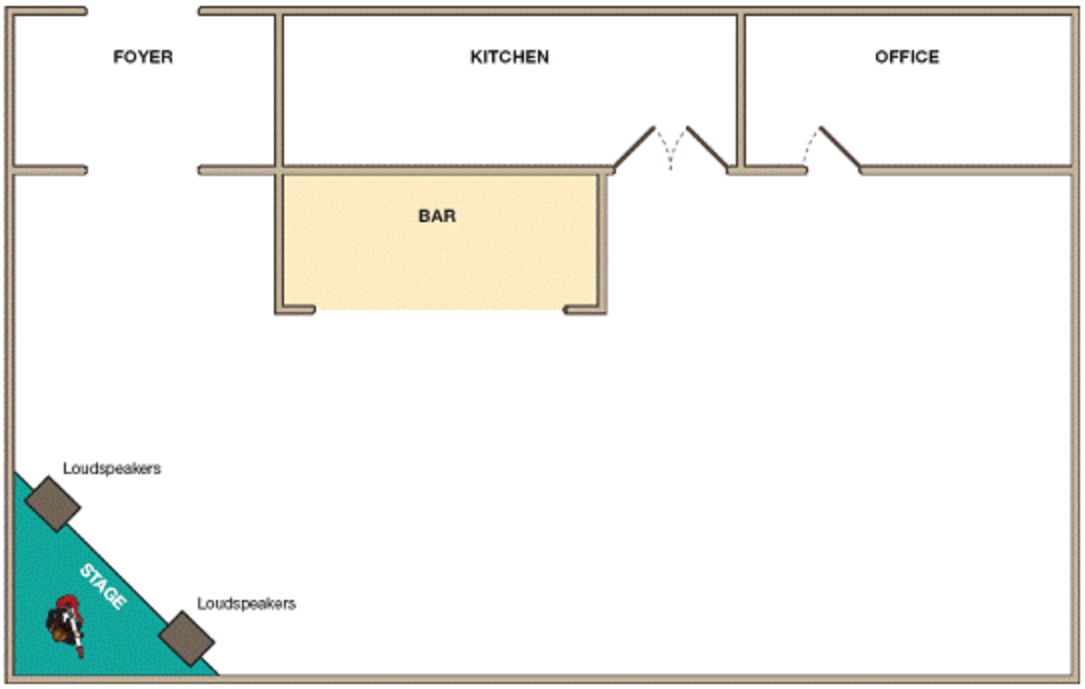
A venue owner engages live bands on five nights a week. After consultation with health and safety representatives, he arranged for some noise measurements to be made. With a reference position 5 m away from the loudspeakers, a level of 103 dB was measured. It was clear that the staff were being exposed to excessive noise.

A number of minor architectural changes were made:

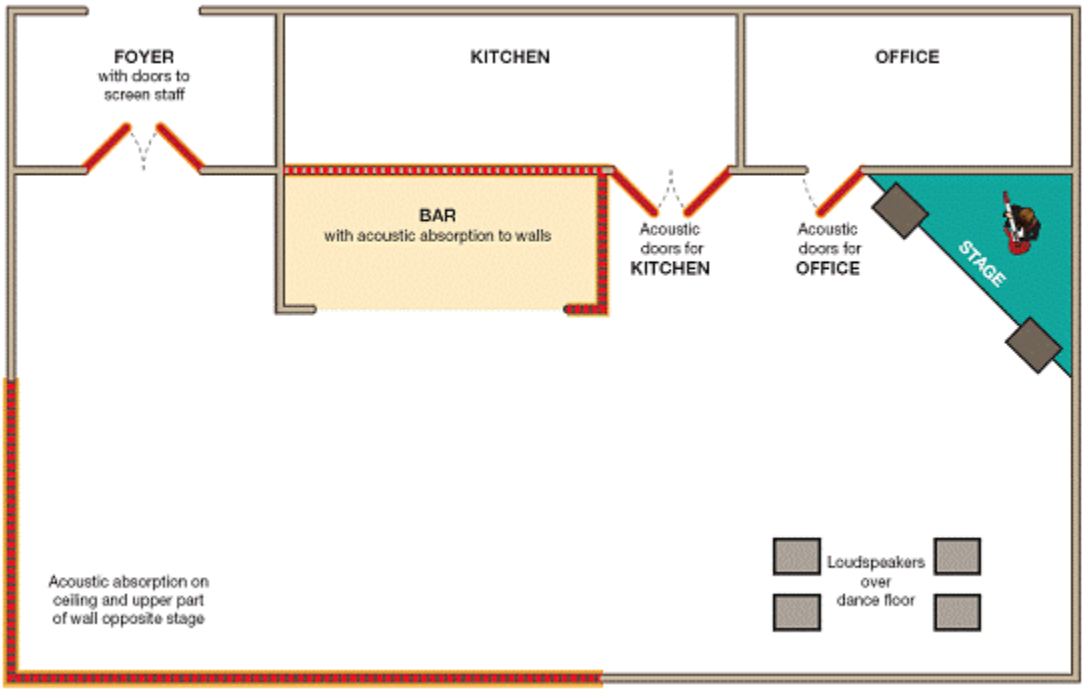
- Changed location of the stage.
- Provided loudspeakers directly above the dance floor.
- Put acoustic absorption material on the ceiling and upper part of the walls opposite the stage and on the wall behind the bar.
- Fitted an acoustic screen to the end of the bar nearest the stage.
- Replaced doors to kitchen, office and foyer with acoustic doors.
- Some management changes were made.
- Bands were limited to a maximum of 103 dB.
- Job rotation for glass collectors.

The levels of exposure are below.

	Before $L_{eq,8h}$ (dBA)	**After $L_{eq,8h}$ (dBA)**
Bar staff	92	86
Glass collector	94	88
Door staff	91	84
Reference point	103	100



Before changes were made



After changes were made