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DESIGNATED OFFICER
Director, Human Resources

1. Introduction

Hazardous noise in the workplace can affect workers (and others) in a variety of ways, from making it difficult to hear sounds necessary for working safely, to noise induced hearing loss. Noise induced hearing loss occurs gradually, so often goes unnoticed until the degree of hearing loss affects the worker's quality of work and life in general. Noise induced hearing loss cannot be repaired, but it can be prevented.

2. Purpose

The overall purpose of this guideline is to prevent noise induced hearing loss in employees and/or other stakeholders (eg students, visitors, volunteers and contractors) as a result of exposure to hazardous noise levels from activities occurring at the USC, or resulting from the conducting of USC business. In accordance with "Managing Noise and Preventing Hearing Loss at Work: Code of Practice 2011" (The Code), the aim is to provide relevant managers with information regarding how to:

- identify noise hazards/risks
- recognise the need to monitor noise in a work area
- determine when audiometric testing is required
- control the identified risks
- monitor and review these controls to ensure that they are effective

The Code is an approved Code of Practice under the Work Health and Safety Act 2011 (WHS Act 2011) and the Work Health and Safety Regulations 2011 (WHS Regulations 2011).

3. Scope

All workers, students, volunteers and contractors at USC must comply with this guideline when performing any tasks associated with hazardous noise.

4. Responsibilities

4.1 Executive Staff of the USC

Senior staff have an overarching responsibility for ensuring the health and safety of workers, students, and other persons in USC workplaces, or as a result of the undertaking of USC business.

4.2 Managers and Supervisors

Managers and Supervisors have a responsibility to know their statutory obligations regarding work in their area impacted by hazardous noise issues.

Managers and Supervisors are to:

- ensure that adequate resources (time, equipment, personnel) are allocated for the effective implementation of this program
- ensure the Hearing Conservation Program Guidelines are adhered to for works undertaken in their area
- provide supervision, information and training to manage risks encountered with work associated with hazardous noise
- adhere to the requirement for, and organisation of audiometric testing
- ensure implementation of Hearing Conservation Program Guidelines for all relevant contracted work in their area
- monitor work practices in their area and maintain records

4.3 HR (HSW)

Advise and inform USC, its workers and students on the development, implementation and delivery of:

- Hearing Conservation Program Guidelines
- programs for the identification, assessment and management of risk associated with hazardous noise

4.4 Workers, students and contractors

Understand and follow the requirements of:

- Hearing Conservation Program Guidelines
- audiometric testing and any required training

5. Program description

The Hearing Conservation Program consists of five steps:

- hazard identification
- assessment and monitoring
- audiometric testing
- control of the risks
- monitoring and review of controls

5.1 Hazard identification

The potential for noise to be hazardous is not always obvious, especially as exposure to noise is cumulative and the onset of noise induced hearing loss insidious.

Hazardous noise is defined as:

- an average continuous exposure to noise greater than 85dB(A) for 8 hours (or L Aeq,8h)
- an instantaneous noise level of 140 dB(C) or greater

Note: It must be remembered that dB (Decibels) are logarithmic, so unlike normal numbers you cannot simply add, subtract and average out an individual's exposure over a period of time. Eg 85 dB(A) over 8 hours is the equivalent exposure to 97 dB(A) for 30 minutes. Please see Appendix 1 for a table of equivalent noise exposures.

To assist in ascertaining if noise levels sound as loud as or louder than 85dB(A), Appendix 2 lists common noise sources and their typical sound levels to compare to noise in the workplace. Regular workplace inspections/audits can assist in identifying noise hazards, eg: during inspections, if you observe workers having to raise their voice to be heard, it is a good indication that there are hazardous noise levels in the workplace. Inspections can be done in conjunction with a noise hazard identification checklist (Appendix 3) to assist in identifying the presence of hazardous noise.

If activities are identified that may expose workers, students or others to hazardous noise, a risk assessment must be performed and controls implemented (refer section 5.4 of this guideline) to reduce the noise to a safe exposure level, without the use of personal protective equipment (PPE), eg earplugs. The aim at this stage is to reduce the noise levels. If controls cannot be implemented to effectively reduce noise levels it will be necessary to have a noise assessment and noise monitoring performed.

5.2 Assessment and monitoring

If it is believed that noise remains at a hazardous level, noise level testing must be performed in the workplace by competent persons trained as per Australian Standard 1269.1:2005 (R2016) Measurement and assessment of noise emission exposure, and in accordance with The Code (page 13).

If it is confirmed that the noise levels are equal or above 85 dB(A) for 8 hours (or the equivalent):

- audiometric testing must be performed
- further control measures must be implemented

5.3 Audiometric testing

If noise is found to be above the safe threshold (85dB(A)), all workers exposed to this noise must undergo audiometric testing. This testing is to be done in consultation with the effected workers. The hierarchy of controls should be used to further reduce the level of noise to below the safe threshold. If this cannot be achieved without the use of PPE, audiometric testing must be repeated at least every two years, in accordance with The Code.

In accordance the Work Health and Safety Regulation 2011, USC must provide audiometric testing for any employee who is required to wear personal hearing protectors as a control measure for noise that exceeds the exposure standard.

Any new worker to an area that has been identified as having hazardous noise, must undergo baseline audiometric testing prior to commencing work in that area.

Audiometric testing will be conducted at USC's expense and costed to the employee's cost centre manager.

5.4 Control of the risks

Work areas found to have noise levels equal to, or greater than the safe noise threshold must use all practicable means to reduce noise emissions in the areas. Methods of controlling noise emissions are prioritised below using the hierarchy of controls:

- Elimination – removing or eliminating the hazard or its source.
- Substitution – swapping to a hazard or source with a lower risk level.
- Engineering – removing the hazard from the employee or the employee from the hazard – isolation of hazard and/or employee. Physically altering the work environment.
- Administration – job design to reduce exposure, training.
- PPE – use of personal hearing protection devices.

Generally no one control can effectively reduce noise levels (unless you can eliminate the noise and/or its source), you will need to implement a combination of controls.

Obviously the use of PPE is the least effective means of control and should never be used in isolation of other controls.

5.4.1 Elimination

This is the most effective control measure as it will eliminate the source of noise completely. This may involve ceasing the noise producing activity altogether. It is not always practical to eliminate the source of noise, it may therefore be necessary to use a combination of the below techniques to reduce noise to a safe level.

5.4.2 Substitution

This may entail substituting a noisy machine or process for one with less noise emissions. This is more easily achieved in the “planning/design” stage, when noise emissions can be taken into consideration with the purchase of new plant and equipment, or when planning processes.

5.4.3 Engineering

Engineering controls can be implemented to reduce noise at the source and/or along the path of noise transmission. This will often require physical changes to the equipment or the environment. For example:

At the source:

- application of noise dampeners/silencers, to machines/equipment
- redesign of the process to make it less noisy
- changing fan or component speeds
- changing materials used for certain components (eg use plastic instead of metal parts)
- use of flexible mounts and connections (eg rubber)
- preventative maintenance, well maintained plant and equipment can reduce noise levels
- use of impact absorbers

Along the path of noise transmission:

- isolation/enclosure of the noisy plant/equipment
- erection of noise barriers
- use of sound absorbing material
- locating noise sources further away from workers

5.4.4 Administration

Administrative controls refer to: changing work methods, organisation of tasks, review of work routine and training, and can include:

a) Designing jobs to reduce employee exposures:

- plan work schedules so that noisy work is done when there are less workers around
- job rotation to ensure that continued exposure to noise does not occur
- sign-posting noisy areas and restricting access

b) Training – Training is an integral part of a preventative strategy. The objectives of the training are to provide an understanding of the health effects caused by noise and should include:

- how hearing can be affected by exposure to noise
- the responsibilities of each party at the workplace (including the reporting of noise hazards)
- examples of tasks at the workplace that have the potential to expose workers to hazardous noise
- how to use noise control measures
- how to select, fit, wear, maintain and store personal hearing protectors
- how and when hearing is tested

5.4.5 Personal Protective Equipment (PPE)

This control is the last resort and can only be used if the application of higher order controls has not effectively reduced noise emissions. PPE should never be considered as an alternative to higher order controls.

Areas where hazardous noise cannot be practicably reduced to a safe level by any, or a combination of any, of the above controls, shall be designated "hearing protection areas" and require sign posting (in accordance with AS 1319-1994 (R2018): Safety signs for the occupational environment).

No employee, student, visitor, volunteer or contractor should enter a hearing protection area during normal operation even for brief periods, unless they wear appropriate personal hearing protection.

Personal hearing protectors should be selected and maintained in accordance with AS/NZS 1269.3: 2005 (R2016) Occupational noise management – hearing protector program.

A guide to the selection of personal hearing protection can be found in Appendix 4.

As previously mentioned, USC must provide audiometric testing for any employee who is required to wear personal hearing protectors as a control measure for noise that exceeds the exposure standard.

5.5 Monitoring and review of controls

In order to ensure that these guidelines continue to be effective and applicable to USC they must be monitored, reviewed and if necessary revised.

To monitor and review the implemented controls, the noise hazard identification checklist can be used (Appendix 3) as discussed in section 5.1 of this guideline and the subsequent steps of the Hearing Conservation Program followed as required. This should be done at regular intervals, to be determined in consultation with employees.

This should also be done under the following circumstances:

- changes in the work environment that may affect noise levels
- introduction of new plant/equipment or processes
- requirement for increased production that may increase noise levels
- audiometric testing has indicated a deterioration in the hearing of an employee
- change in shift length or increased time employees spend in noisy environments

6. Records

All relevant records are to be kept in accordance with the University's Information and Records Management - Procedures.

For more information about information and records management, visit MyUSC

(staff-only service) or contact records@usc.edu.au

Appendix 1.

Demonstrates the length of time a person without hearing protection can be exposed before the standard (safe noise level exposure) is exceeded. (Managing Noise and Hearing Loss at Work: Code of Practice 2011, p9)

Equivalent Noise Exposures L Aeq,8h – 85 dB(A)

NOISE LEVEL DB(A)	EXPOSURE TIME
80	16 hours
82	12 hours
85	8 hours
88	4 hours
91	2 hours
94	1 hours
97	30 minutes
100	15 minutes
103	7.5 minutes
106	3.8 minutes
109	1.9 minutes

112	57 seconds
115	28.8 seconds
118	14.4 seconds
121	7.2 seconds
124	3.6 seconds
127	1.8 seconds
130	0.9 seconds

Appendix 2.

Common noise sources and their typical sound levels to compare whether noise in the workplace sounds as loud or louder than 85dB(A).

Table 1. Common noise sources and their typical sound levels

TYPICAL SOUND LEVEL IN DB	SOUND SOURCE
140	Jet engine at 30 meters
130	Rivet hammer (pain can be felt at this threshold)
125	Balloon popping
120	Rock drill
115	Emergency vehicle siren
110	Chain saw
100	Sheet-metal workshop
90	Lawn mower
80	Kerbside heavy traffic
	Lathe
75	Flushing toilet
	Vacuum cleaner
70	Loud conversation
	Bathroom shower
	Dishwasher
60	Normal conversation
40	Quiet radio music
30	Whispering
	Hearing threshold

Adapted from Managing Noise and Preventing Hearing Loss at Work: Code of Practice 2011 p.12 and <http://www.noisehelp.com/noise-level-chart.html>

Appendix 3.

Noise Hazard Identification Checklist. (Managing Noise and Hearing Loss at Work: Code of Practice 2011, p33)

Description of work location: _____

Activities at workstation: _____

Assessed by: _____

Date: _____

'Yes' to any of the following indicates the need to carry out a noise assessment if exposure to the noise cannot be immediately controlled.

HAZARD IDENTIFICATION QUESTIONS

YES NO

1. Is a raised voice needed to communicate with someone about one metre away?

2. Do your workers notice a reduction in hearing over the course of the day? (This may only become noticeable after work, for example, needing to turn up the radio on the way home)
 3. Are your workers using noisy powered tools or machinery?
 4. Are there noises due to impacts (such as hammering, pneumatic impact tools) or explosive sources (such as explosive powered tools, detonators)?
 5. Are personal hearing protectors used for some work?
 6. Do your workers complain that there is too much noise or that they can't clearly hear instructions or warning signals?
 7. Do your workers experience ringing in the ears or a noise sounding different in each ear?
 8. Do any long-term workers appear to be hard of hearing?
 9. Have there been any workers' compensation claims for noise-induced hearing loss?
 10. Does any equipment have manufacturer's information (including labels) indicating noise levels equal or greater than any of the following:
 - (a) 80 dB(A) LAeq,T (T= time period over which noise is measured)?
 - (b) 130 dB(C) peak noise level?
 - (c) 88 dB(A) sound power level?
 11. Do the results of audiometry tests indicate that past or present workers have hearing loss?
 12. Are any workers exposed to noise and ototoxins in the workplace?
 13. Are any workers exposed to noise and hand-arm vibration?
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Appendix 4.

A Guide to the Selection of Personal Hearing Protection (Managing Noise and Preventing Hearing Loss at Work: Code of Practice 2011. Page 18)

When selecting personal hearing protectors you should consider:

- the degree of attenuation required in the worker's environment (see Table 4). Do not provide protectors that overprotect by cutting out too much sound – this can cause difficulties hearing verbal instructions and other sounds needed to work safely
- the suitability for the type of working environment and the work tasks. For example, ear-plugs are difficult to use hygienically for work that requires them to be inserted with dirty hands and in these circumstances, ear-muffs are more appropriate, but ear-muffs can be uncomfortable to wear in hot environments and can make it difficult for the wearer to enter a confined space or to wear a helmet
- the comfort, weight and clamping force of the personal hearing protector.

TABLE 4: RECOMMENDED CLASS OF HEARING PROTECTOR

Measured exposure LAeq,8h dB(A)	Class
Less than 90	
90 to less than 95	
95 to less than 100	
100 to less than 105	
105 to less than 110	

Individual fit of personal hearing protectors is critical for optimum protection. Several devices are available to assist with this. Wearing work equipment—such as hard hats, dust masks and eye protection—may affect the performance of the protector. The fit of hearing protectors should be checked while the user is wearing regular work equipment. Workers wearing spectacles should be fitted with hearing protectors while wearing the spectacles.
