



NOISE AND TINNITUS

Exposure to loud noise is one of the most common causes of tinnitus and hearing loss. Noise can also make existing tinnitus louder and cause the hearing to keep getting worse, over time. Noise exposure can damage the auditory system in a slow and unnoticeable way over a period of time, or suddenly as a result of exposure to extreme noise.

Sometimes the auditory system can partly or completely recover from noise-related tinnitus or hearing loss. However, repeated exposure to high level sounds will eventually result in permanent damage to the inner ear, leading to permanent hearing loss.

Sound is transmitted by vibrations through the outer and middle ear to the inner ear. The inner ear, or *cochlea*, is made up of three chambers. The middle chamber is lined with tiny hair cells and filled with fluid. The hair cells of the inner ear are stimulated as the fluid is moved by the vibrations sent from the middle ear. Each stimulated hair cell sends a message to the brain.

Excessive exposure to noise damages these inner ear hair cells. The damage is permanent and the hair cells cannot be replaced and do not regrow. Hearing sensitivity is therefore affected and tinnitus can begin. The commencement of tinnitus can be gradual or sudden and in some cases the tinnitus will start before any loss of hearing is noticed. Some people find the tinnitus more disturbing than any hearing loss.

The degree of damage caused by noise exposure is determined by the intensity level of noise and the length of exposure time. Sound intensity level is measured in decibels (dB). This is not a linear scale so the danger of noise can be easily misinterpreted. For example an increase in intensity level from, say, 40 dB to 43 dB actually represents a doubling of the physical intensity. However, when listening to sound we actually need a change of about 10dB before we perceive the sound to be twice as loud. Generally, 85dB is the maximum allowable level at which you should be exposed to noise for an eight hour period. (As a rough guide 80-85dB is about the noise level on a busy road.) If you are exposed to sound louder than this, then the time you are subjected to the noise will need to be reduced to avoid hearing damage. The cumulative effect of *ALL* noise exposure results in damage to the auditory system.

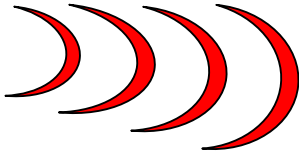
Everyday indicators that may suggest damage to the auditory system include:

- Dull hearing – feeling ‘deaf’ after noise exposure or at the end of the day
- Tinnitus or noises in the head after exposure to loud noise
- Muffled or distorted hearing
- Thinking that people are mumbling
- Loud sounds feel painful

Also if you notice:

- The car radio needs to be turned down in the morning – i.e. it was set louder when you last drove the car after work
- If you need to shout or use a raised voice in order to speak to someone at an arm’s length, the noise in that area is possibly dangerous to the ear

Remember, noise does not need to be unpleasant to cause damage to the auditory system.



"NOISE EXPOSURE"

	Very loud	120-140+ dB	Gun fire	
		130 dB	Aeroplane taking off	
		120-130 dB	Formula One car racing	
		110-125 dB	Live band/nightclub music	
		105-120dB	Chainsaw	
		100 dB	Whipper snipper	
		90-95 dB	Motorbike (approx 50km/h), Augers	
		85-95 dB	Tractor without cab	
		80-85 dB	City traffic	
		75-85 dB	Tractor with cab	
		60-65 dB	Normal conversation	
	30-35 dB	Quiet countryside, leaves rustling		
	0-15 dB	Threshold of normal hearing		
	Very Soft			

This rating is a guide and does not display exact sound intensity levels. As a general rule, noise levels above 85 dB cause noise damage to the auditory system after less exposure time



What Action Can You Take?

There are many ways to avoid hearing loss and tinnitus caused by too much loud noise. Firstly, eliminating the noise source should be considered. Removing or reducing the level of the noise at its source is the preferred and best option; alternatively, increase the distance between the noise source and the listener. This may be as simple as moving noisy equipment away from your work area, e.g. moving air compressors into an adjacent room, turning down the level of your home stereo or Walkman. Always consider the noise levels when purchasing new equipment. Purchasing quieter equipment and plant can save workers' hearing in the long term. Noise barriers or other controls can also be considered to alter the noise pathway.

Sometimes, however, the above actions are not possible. In these cases implementing job rotation can reduce the period of exposure in the workplace. Job rotation, or simply having a break, is an excellent way of reducing the amount of time spent in noisy areas. This can also reduce workers' fatigue levels.

You should wear personal hearing protection whenever you work around intense noise. There are many ear muffs and ear plugs available to protect ears from harmful noise. When selecting hearing protection consider its comfort, correct fit, the amount of blockage required to protect your ears and communication issues. There are also special plugs available for musicians, motor bike riders, night-shift workers and industrial workers.

For Further Information in South Australia

Hearing Advisory/Information Services:

Tinnitus SA	Ph: 1300 789 988
Hearing Solutions	Ph: 8203 8393

Audiological Services:

Audiology Department - Royal Adelaide Hospital	Ph: 8222 4288
Adelaide Hearing Consultants, Adelaide	Ph: 8401 2900
Adelaide Hearing Consultants, Glenelg East	Ph: 8376 0999
ONDC	Ph: 8232 4488
Ron Kendall – Modbury Hospital	Ph: 8264 6000 extn: 2571
Australian Hearing Centres - Adelaide, Marion, Modbury, Westlakes & visiting sites	Ph: 13 1797

Hazardous Noise Information:

Hearing protection for hunters	www.walkersgameear.com
Musicians and noise	headwize.com/articles/hearing_art.htm
	www.hearnet.com
Australian noise standards	www.standards.com.au
Workcover SA	www.workcover.com Ph: 13 18 55

Hearing Protection:

Associated Screw & Safety	Ph: 8352 5477
Uvex	Ph: 8376 0732