



# Noise in agriculture

## Identification, assessment and control

### Noise facts

Noise from agricultural tools and machinery can cause permanent hearing loss and tinnitus. Repeated exposure to noise will lead to permanent damage. The damage can occur gradually over a number of years and remain unnoticed until it is too late.

Hearing loss can lead to a loss in quality of life. Some early warning signs of hearing loss include:

- ringing in the ears after work;
- difficulty understanding a normal conversation;
- turning up the volume on radio or television when others appear to be able to hear adequately; or
- failing to hear background noises, such as a ringing telephone or doorbell.

Typical noises in agriculture that can damage hearing include:

- tractor 95-100 dB(A);
- header 88-90 dB(A);
- orchard sprayer 85-100 dB(A);
- angle grinder 95-105 dB(A);
- bench grinder 90-95 dB(A);
- chainsaw 105-120 dB(A);
- pig shed at feed time 95-105 dB(A); and
- shotgun over 140 dB(C).

### 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 item further away, 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.

### 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.

### 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](http://www.worksafe.wa.gov.au)

### Is there a quieter process?

Before you buy 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.**

## How can noise levels of loud machines and equipment be reduced?

Depending on the source, noise can be reduced in several ways, as follows:

- buying quiet machinery and equipment;
- maintaining machinery and equipment routinely;
- reducing machinery and equipment vibration;
- muffling engine and compressed air noise;
- isolating the noise source in an insulated room or enclosure;
- placing a barrier between the noise source and the employee; or
- isolating the worker from the source in an insulated booth or room.

### 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.

### 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.

## Noise issues specific to agriculture

Source: Noise in agriculture Health and Safety Executive UK

### Tractors

Most modern tractors are now fitted with sound-reducing cabs so the levels are likely to be below 80 dB(A). In older cabs and tractors with roll bars, levels may be as high as 95-100 dB(A). Remember that how much noise the operator is exposed to will also depend on the equipment the tractor is using.

- Keep doors and windows closed to achieve the lowest noise levels.
- Use the opening provided on many tractor cabs for routing cable and electrical controls rather than leaving the rear window open.
- Tractors operating near to maximum power or with other mounted or towed machinery may generate higher noise levels, particularly when using powered equipment such as forage harvesters, mowers, vacuum tankers, straw choppers and balers.
- Non-powered (towed) work equipment can be noisy.
- Don't forget to take account of noise levels when working with tractor-powered stationary equipment such as portable grain dryers, grain blowers and saw benches.

### Timber management

Some of the noisiest working environments are found where woodworking machines are used. Noise levels can vary widely from machine to machine depending on conditions of use. Circular saws and band re-saws are likely to operate at 100 dB(A).

- Look for low-noise features when buying machinery. Always ask suppliers about noise levels.
- Wood chippers can be very noisy (up to 120 dB(A)) when processing timber waste or cuttings.
- Woodworking machinery such as circular saws, bandsaws and planers need to be properly maintained. A well-maintained band re-saw may have a 10 dB difference between idling and cutting noise levels, but a poorly maintained machine may show hardly any difference.
- Cutter sharpness is important as dull knives and worn blades and bands exert more force on the timber and so make more noise.
- Out-of-balance tools create vibration, reduce cutting efficiency and increase noise levels.
- Don't forget to assess the noise from hand-held equipment such as brush cutters.

## Chainsaws

Always wear hearing protectors when operating a chainsaw. Noise levels measured at the operator's ear can be as high as 110 dB(A) and so a very high level of protection is required.

- Don't forget anyone working nearby may also need protection.
- Chainsaws should carry a prominent warning sign to remind users of the hazard.
- Make sure the silencer is in good working order.

## Shed and process machinery

Machinery such as milling and mixing plant, grain drying (up to 95 dB(A)) and transportation equipment is very noisy. Running it inside buildings can make the problem worse and intensify the noise. If possible reduce the noise at source, but if this cannot be done then use the following controls.

- Prevent noise being transmitted by using acoustic enclosures, screens and sound-insulating panels.
- Fit controls in separate rooms or away from the noise.
- Fit silencers on exhaust systems.
- Eliminate the need for operators to be present with the equipment running, eg by rearranging the work so that no one needs to be in the noisy area, or restricting the time workers are exposed to the noise.
- Ensure machinery is properly maintained as worn parts, poor lubrication and loose panels may increase noise.

## Livestock

Large numbers of pigs in a building can create noise levels of 100 dB(A) or above, especially at feeding time. So even short-term exposure can be harmful, particularly if workers are exposed to other sources of noise during the day.

- Use mechanical or automated feeding systems to reduce the need to enter the building when it is noisiest, eg at feeding time.
- Make sure any work requiring entry is done during quieter periods.
- Fit the controls for the feed system away from the noise or in a protected area.

## Workshop

- Make sure you buy or hire low-noise tools and machinery so that you do not have to apply noise controls to noisy machinery afterwards.
- Mufflers or silencers can reduce noise transmitted along pipes or ducts, eg fit exhaust and intake silencers on internal combustion engines.
- Direct exhaust emissions well away from workers, eg by fitting a flexible hose to discharge several metres away from them.
- Place movable acoustic screens between the source of the noise and workers elsewhere in the workshop, eg when using abrasive wheels or portable grinders. Cover the screen with noise-absorbing material on the side facing the noise source to reduce the amount of noise reflected back into the area where the work is carried out.
- Increase the distance between the source of the noise and workers, eg by locating air compressors in separate rooms.
- Carry out quiet inspection tasks away from noisy repair areas.

## Shooting

Guns produce pulses of noise that can damage hearing immediately. Even people who only use guns occasionally may suffer permanent hearing damage. For clay pigeon shooting, it is important that shooters and trap operators wear suitable hearing protectors because of the prolonged and repetitive nature of the shooting.

# Noise Checklist

Check	yes	no	n/a
<b>Identification of noise hazards</b> - 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?			
<b>Noise risk assessment</b> - 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.			
<b>Hazard Controls</b> - 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?			
<b>Personal hearing protectors</b> – 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?			
<b>Information and training</b> – S19(1) CoP section 8 Are information & training on noise hazards, effects and controls provided?			
<b>Hearing tests</b> – 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
- Standards Australia  
Australian New Zealand Standard AS/NZS 1269 Occupational noise management Parts 0-4
- Useful links
  - WorkSafe website  
[www.worksafe.wa.gov.au](http://www.worksafe.wa.gov.au)  
Search for 'noise'
  - Noise in Agriculture website  
[www.agrinoise.com](http://www.agrinoise.com)
  - Farmsafe WA Alliance website  
[www.farmsafewa.org](http://www.farmsafewa.org)