

Controlling Noise: Typical Site Equipment

Typical noise levels associated with site activities:

- Running power packs/ compressors: 85-91dB
- Grinding: 85-109dB
- Breaking concrete, asphalt and similar with hand operated breakers: 96-105dB
- Abrasive disc cutters/ angle grinders: 98-104dB
- Driven piling: 115-132dB

By comparison:

- Typical office: 60dB
- Living room: 50dB

These figures are taken from the British Health and Safety Executive (HSE)

Certain typical construction site activities present very specific challenges when it comes to shielding both site workers and nearby residents from the noise generated. This paper examines these challenges and suggests how they can be handled. Although the challenges that each type of activity creates are very different, the fundamental principles of noise control are what each solution is designed to achieve: positioning the acoustic barrier as close as possible to the source of the noise, and blocking the line of sight between it and the people affected.



Decibels

- Sound levels are measured in decibels (dB)
- 1 decibel is the just noticeable difference (JND) in sound intensity for the normal human ear
- Decibels measure the intensity – not loudness – of sound
- The 'bel' part of decibel is named after Alexander Graham Bell
- The 'deci' part indicates that the decibel scale is based on powers of ten
- Were it not based on powers of ten, the scale would run from zero to a trillion!
- A noise measured at 100dB is ten times the intensity of one measured at 90dB
- It takes about ten times the intensity of sound for it to sound twice as loud to the human ear
- 100dB therefore sounds around twice as loud as 90dB

Sawing/Cutting

The noise generated from machines used in the process of sawing and cutting can easily exceed 100 dB(A), leading to health and safety risks for workers and disturbance to those nearby.

The process of cutting materials on-site requires the use of high powered equipment that regularly attracts complaints, owing to its distinctive, sharp sound. Though it is possible to isolate the machinery to one portion of the site, the high-decibel nature of the process means that during cutting, the sound is easily audible over general construction site activity.

To be effective in minimising the sound produced, the control equipment used must be able to contain the sound around the source. While this can take the form of acoustic panels being setup around the site of work, an even better solution is often to carry out cutting work within an acoustic enclosure. This will contain the noise on all sides - including over the cutting activity – and has the additional benefit of being easily relocated around a site as the need dictates.



In this picture, the cutting activity has been contained within our Soundex® Multi Purpose Enclosure. This collapsible enclosure can be installed within 15 minutes and provides a sizable 2.5 x 2.5m space in which to work. The acoustic body can reduce noise by up to 32.2 dB, providing minimal disruption in sensitive areas, and the robust aluminium frame ensures the enclosure is secure within a busy construction site setting.

The Work Health and Safety Act, 2011

The WHS Regulations state that workplace noise should be kept lower than the exposure standard for noise if reasonably practicable.

The Model Code of Practice for Managing Noise and Preventing Hearing Loss at work, produced in accordance with the WHS Act, provides examples of the length of time a person without hearing protection can be exposed to specific dB levels before the WES is exceeded.

These examples range from 80 dB when noise becomes hazardous, to a peak noise level at 140 dB

Workers can be exposed to **80 dB** for **16 hours** before the WES is exceeded.

In contrast, workers can be exposed to **130 dB** for **0.9 seconds** before the WES is exceeded.

(Amendments to the model WHS laws do not automatically apply in a jurisdiction. For information on the WHS laws in your jurisdiction, please refer to the law in your state.)

Hand-Held Breakers

A heavy-duty, hand-held breaker regularly operates at dangerously high decibel levels. The potential health risk posed by this piece of machinery has led to a government directive, specifying that hand-held breakers must not be able to exceed 105 dB/1 pW. As evidence suggests any exposure to sound levels in excess of 85 dB(A) can cause serious hearing loss, it is clear the hand-held breaker must be used in conjunction with sufficient noise control measures. While the breaker operator will be protected by PPE, protecting other workers and nearby members of the public requires other measures.

As the hand-held breaker is commonly used in isolated pockets of a construction site, we advise that the control measures put in place be both light weight and easily erected, so as to be adaptable to the ever-changing environment of on-site work.



This is the Soundex® Multi Barrier, a lightweight, fully waterproof acoustic enclosure that can be set up in a variety of ways around hand-held breaker work according to the specific job at hand. The compact, highly attenuated design can reduce noise by up to 32.2 dB, making it an effective solution to any form of localised high-decibel work that needs to be done.

Useful Links

Safe Work Australia: Noise

Managing noise and preventing hearing loss at work: Code of Practice

Small generators and compressors

Generators and compressors are capable of producing high levels of noise at low frequencies. The challenge that this presents is that lower frequencies of noise can travel across longer distances, resulting in greater disruption across a wider area. The use of compressors and generators often accompanies construction work in noise-sensitive areas, potentially throughout the night. This makes the use of noise control designed to counter low frequency noise crucial to ensuring minimal disruption.



This picture shows the Soundex® Machinery Enclosure. This weatherproof enclosure is designed specifically to attenuate the continual, low frequency noise produced by small generators and compressors, minimising disruption to those in the surrounding area. Exceptionally simple to set up, its acoustic technology means work can continue in sensitive areas, as high-decibel sound is effectively reduced to safe, manageable levels.

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