

How Do I Know If I'm Exposed to Noise?

Noise exposure in the workplace is a significant hazard that affects about a quarter of a million workers in B.C. It is considered a big problem because so many workers are exposed to it and because prolonged exposure can cause a permanent, untreatable disease called “noise induced hearing loss”.

The first step in dealing with noise is to determine IF the hazard exists at all. Can this be done without expensive noise measurements or hiring an engineering firm? The short answer is “maybe”.

The hazard noise poses is dose-related. That is, the higher the dose of noise a worker receives, the greater the risk to hearing.

A worker's noise dose depends on three major factors:

1. intensity (also known as loudness), measured by a noise level meter and expressed in decibels. The abbreviation for decibel is “dB”.
2. frequency (also known as pitch), measured using an “A” weighted filter on the noise level meter. When A-weighting is selected on a meter, only noise that is hazardous to the human ear is measured.
3. duration (also known as time), measured by the clock.

All three factors combine to result in a noise dose. Change one of the factors, and the noise dose changes.

What does the *Regulation* say? Workers whose noise exposure exceeds **85 dBA Lex** must be included in a “Noise Control and Hearing Conservation Program”. 85 dBA Lex means 85 decibels of sound (intensity), measured with “A” weighting network on a sound level meter (frequency), lasting for 8 hours (duration), *or the equivalent*.

Here are some equivalent noise doses:

<u>Noise Level</u>	<u>Duration</u>
85 dBA	8 hours
88 dBA	4 hours
91 dBA	2 hours
94 dBA	1 hour
97 dBA	30 minutes
100 dBA	15 minutes
103 dBA	7.5 minutes

All of these combinations of noise level and duration have the **same** noise dose--they all have the same risk to an exposed worker's hearing. The exposure does not have to be continuous; it can be a few minutes here and a few minutes there. It all adds up over the day.

You can clearly see that when the noise level goes up by 3 dB, if the duration is cut in half, the factors are balanced—the noise dose remains the same. If the noise level increases by 3 dB, but the **duration stays the same**, then the noise dose would be doubled. This is actually called “3 dB doubling”. In other words, 88 dBA of noise for 8 hours is double the noise dose, of 85 dBA for 8 hours.

Here are some examples of rough approximations of noise dose in some common industries. NOTE: these are examples only, actual exposures in a specific workplace may vary.

- a. sawmill—average noise exposure in a mill is about 93 dBA, so if a worker is present for about an hour and a half (90 minutes), then he/she is likely overexposed. That one was easy! What about...
- b. small woodworking shop—average noise is about 91 dB, so over-exposure is reached at about 2 hours of exposure in a day. It does not have to be continuous exposure—it could be 15 minutes here and there. If it adds up to 2 hours in a day, then that's excessive noise
- c. auto body shop—noise levels can vary a lot, depending on the work being done. An auto body technician has about 90 dBA of noise levels, so about 2 hours and 15 minutes in a day can result in over exposure.
- d. nightclub—noise levels vary a lot in this industry. However, a typical average exposure is 93 dBA. Over-exposure can occur after just over 1 hour of work.

Is there some ‘rule of thumb’ to help me decide quickly if I’m at risk of over-exposure? If you have to raise your voice to be understood by someone who is an arm’s length away, then you should be concerned. Talk to your employer about a risk assessment.



See also the *Occupational Health and Safety Regulation*, Part 7 “Noise and Hearing Conservation” as well as other resources on the WorkSafeBC.com website, Safety At Work, Hearing Loss Prevention