

# Noise Induced Hearing Loss

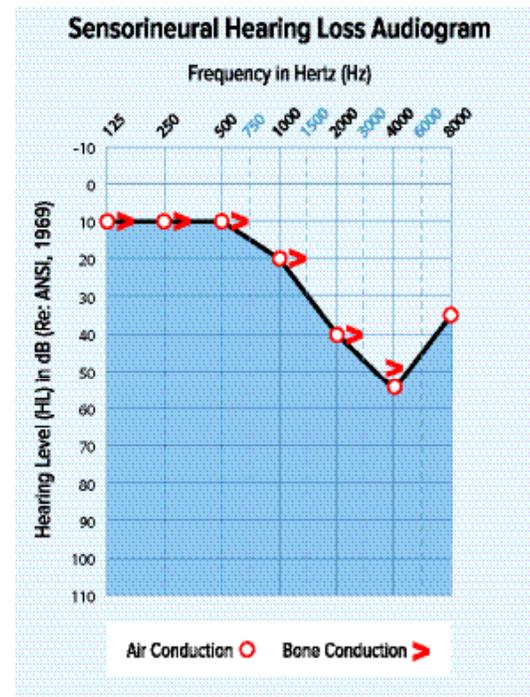
## Noise-induced hearing loss (NIHL)

Noise induced hearing loss (NIHL) is a hearing loss that typically occurs gradually over time due to prolonged exposure to excessive noise levels greater than 85 decibels (dB). It may also occur from short periods of very intense sound, such as explosive blasts or gun fire.

NIHL is usually a high frequency sensorineural hearing loss (SNHL). Sensorineural hearing loss usually occurs when the nerves that transmit sound information from the ear do not function properly due to injury or disease. SNHL may be congenital (present at birth) or acquired. Noise induced hearing loss and age-related hearing loss (presbycusis) are examples of acquired sensorineural hearing loss.

NIHL can be either occupational from exposures in the workplace or non-occupational from exposures at home (e.g., stereos, lawnmowers, power tools) or during recreational activities (e.g., guns, motorcycles, concerts, iPods, ATVs, snowmobiles). NIHL typically occurs in both ears. An individual with a history of firearm use may have a greater loss in one ear due to the positioning of the head while shooting which may expose one ear to more noise than the other (the head shadow effect).

In cases of NIHL, the hearing loss is typically greatest at 4,000 Hertz (Hz) and is usually similar in both ears. On an audiogram, the resulting configuration has a distinctive notch, sometimes referred to as a “noise notch”. NIHL increases most rapidly during the first 10-15 years of exposure with the rate of hearing loss declining over time (in contrast, the rate of hearing loss due to presbycusis, or age-related loss, accelerates over time).



[http://www.osha.gov/dts/osta/otm/noise/health\\_effects/sensorineural.html](http://www.osha.gov/dts/osta/otm/noise/health_effects/sensorineural.html)

## Occupational Noise-Induced Hearing Loss (ONIHL)

Within Alberta, the Occupational Exposure Limit for noise is 85 decibels (dBA) averaged over an 8 hour day (the 8 hour time weighted average). This means that for limited periods, a worker may be exposed to higher noise levels as long as the average exposure over eight hours remains lower.

Continuous noise exposure tends to be more damaging than interrupted exposure to noise which permits the ear to have a period of rest and recovery. Noise exposure can be reduced through the use of a variety of hearing protection devices such as earplugs and earmuffs. The risk of occupational noise-induced hearing loss (ONIHL) is low below 85 dB.

To determine whether or not the hearing loss shown on an audiogram is consistent with occupational noise-induced hearing loss (ONIHL), the WCB considers the following characteristics typical of ONIHL:

- The hearing loss is a high frequency sensorineural loss
- The hearing loss usually occurs in both ears and is similar in both ears
- Hearing is relatively normal between 250 Hz and 1,000 Hz (the loss at the low frequencies rarely exceeds 40 dB),
- There is a “noise notch” between 3000-6000 Hz, typically centered at 4,000 Hz (which rarely exceeds 75 dB),
- There is recovery (i.e. less hearing loss) at the higher frequencies of 6,000-8,000 Hz, and
- Word recognition is fairly good (greater than 75%).

The WCB also considers the following characteristics which are not typical of ONIHL:

- The presence of hearing loss in the low to mid frequencies,
- A “flat” loss (hearing loss that is fairly constant or “flat” across frequencies),
- A profound hearing loss (>80 dB),
- A hearing loss that is asymmetric
- Rapid hearing loss late in a working career (ONIHL develops gradually, but most rapidly in the first 10-15 years of exposure),
- Significant hearing loss progression in spite of appropriate hearing protection, and
- Hearing deterioration post-noise exposure (ONIHL does not progress once the hazardous exposure has stopped. If hearing loss is not experienced until well after the noise exposure occurred then the hearing loss is less likely to be related to the noise exposure and may be due to other factors).

## Determining entitlement

There are a number of causes of sensorineural hearing loss besides occupational noise exposure including recreational noise exposure, diseases, genetics and aging (presbycusis). A claim for ONIHL hearing loss may be accepted by WCB when:

- There is a clear history of prolonged occupational noise exposure in excess of the Occupational Exposure Limit while the worker was working in Alberta or was entitled to coverage under WCB Alberta while working in a place other than Alberta, and
- The pattern of hearing loss shown on the audiogram is consistent with ONIHL.