



AMHSA


Health | Safety | Environment

Updates to the Noise Exposure Legislation

March 9, 2023

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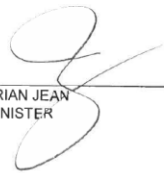
Ministerial Order

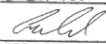

ALBERTA
JOBS, ECONOMY AND NORTHERN DEVELOPMENT
Office of the Minister
M.E. Fort McMurray - Lac La Biche

Ministerial Order No. 2022-01

I, BRIAN JEAN, Minister of Jobs, Economy and Northern Development, pursuant to section 61(1) of the *Occupational Health and Safety Act*, make the Occupational Health and Safety Code Amendment Regulation set out in the attached Appendix.

DATED at Edmonton, Alberta this 9th day of December, 2022.


BRIAN JEAN
MINISTER

FILED UNDER
THE REGULATIONS ACT
as ALBERTA REGULATION 242/2022
ON December 14 2022

REGISTRAR OF REGULATIONS

Go to: <https://open.alberta.ca/publications/jend-2022-01>

Agenda

Session Overview

1. Recognizing noise hazards and understanding the basic physics of sound
2. Health effects of noise and the mechanics of hearing and hearing loss
3. Part 16 of the Code – what it says and the changes that are coming
4. Measuring hearing loss and how audiometric testing is completed
 - Knowing when you need to do an assessment
 - Knowing how to do it properly, noise mapping versus noise dosimetry
5. Assessing noise hazards including noise assessment devices and procedures
6. Controlling noise hazards and the proper selection, use and care of hearing protective devices (HPDs).
 - Fit-testing of HPDs
7. Hearing Conservation - know what a noise and hearing conservation program (NHCP) looks like
8. Employee education and training to ensure success in managing the risk of noise exposure
9. Employer's actions to take to ensure compliance with the updated Part 16 of the Code

Recognizing Noise Hazards

Noise is any unwanted sound.

Noise can be an irritating nuisance or a disabling hazard.

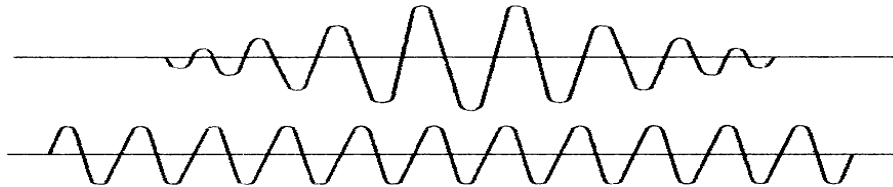
Recognizing noise hazards is the first step in controlling workplace noise.



The Physics of Sound

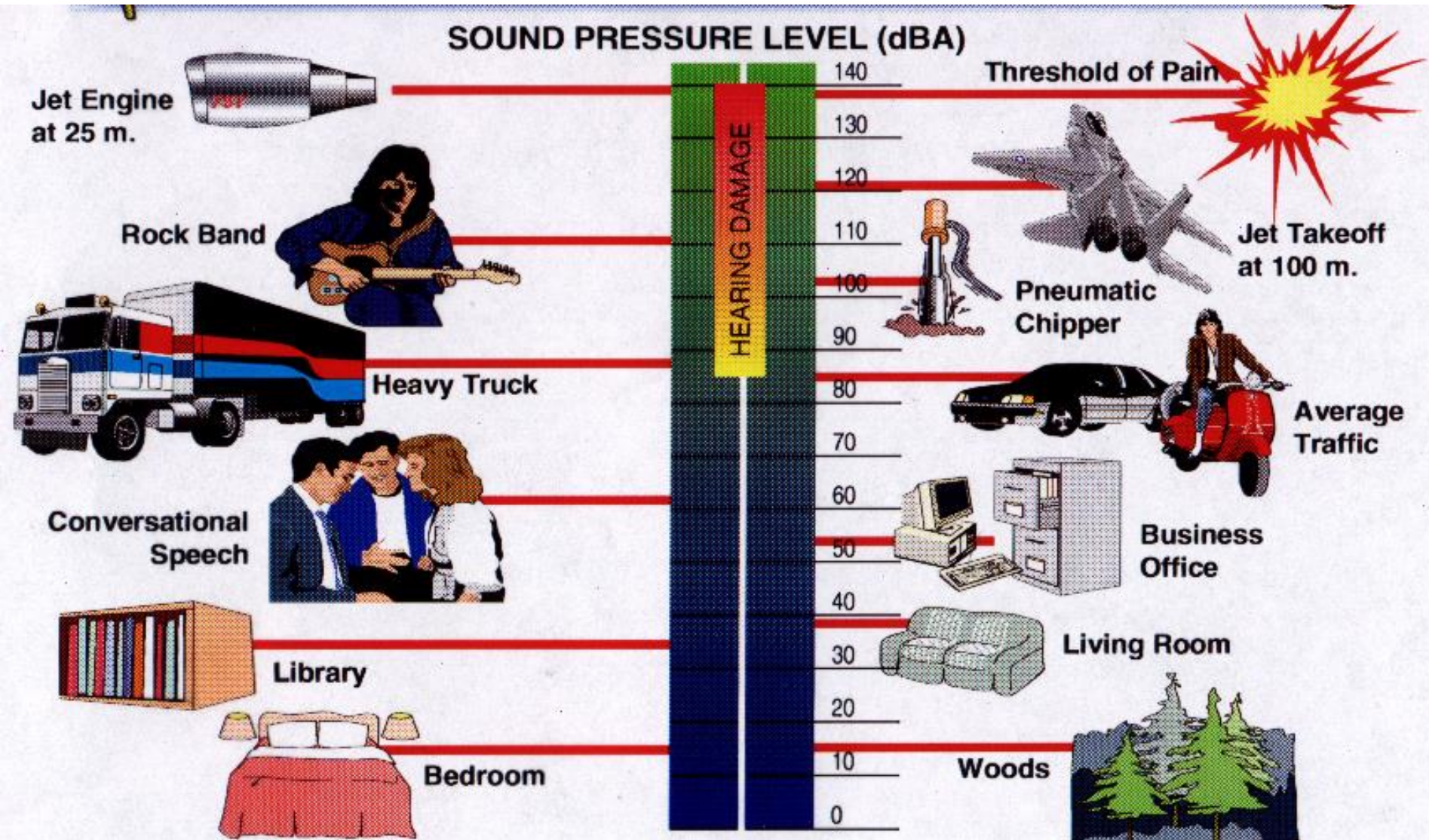
Sound is a slight rapid variation in atmospheric pressure caused by some disturbance or agitation of the air.

Sound vibration causes alternating high and low pressure impulses to travel outward in the form of longitudinal waves.

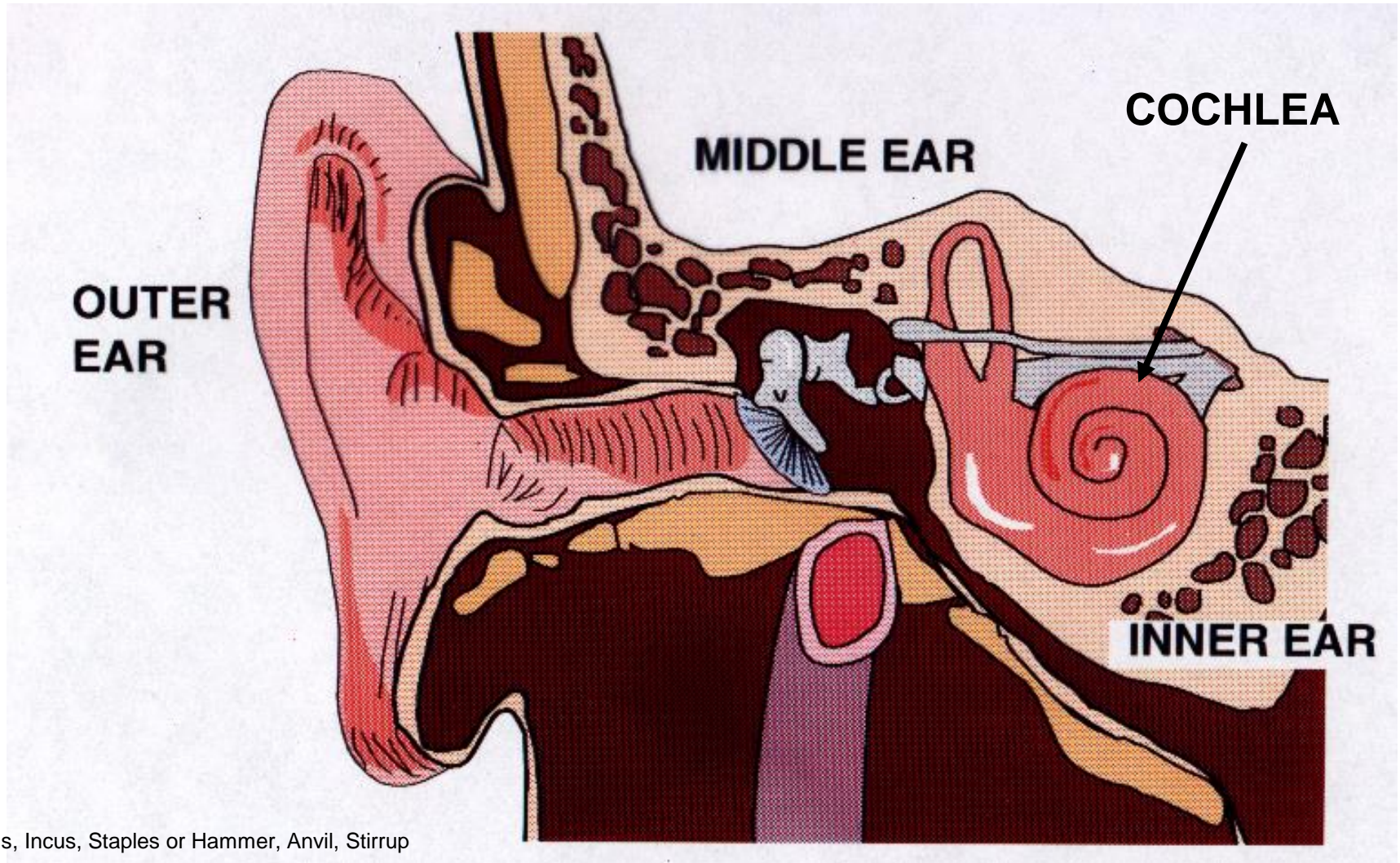


The human hearing system is remarkably sensitive and can interpret these minute alternating pressure waves as sound.

Common Noise Sources



The Mechanics of Hearing



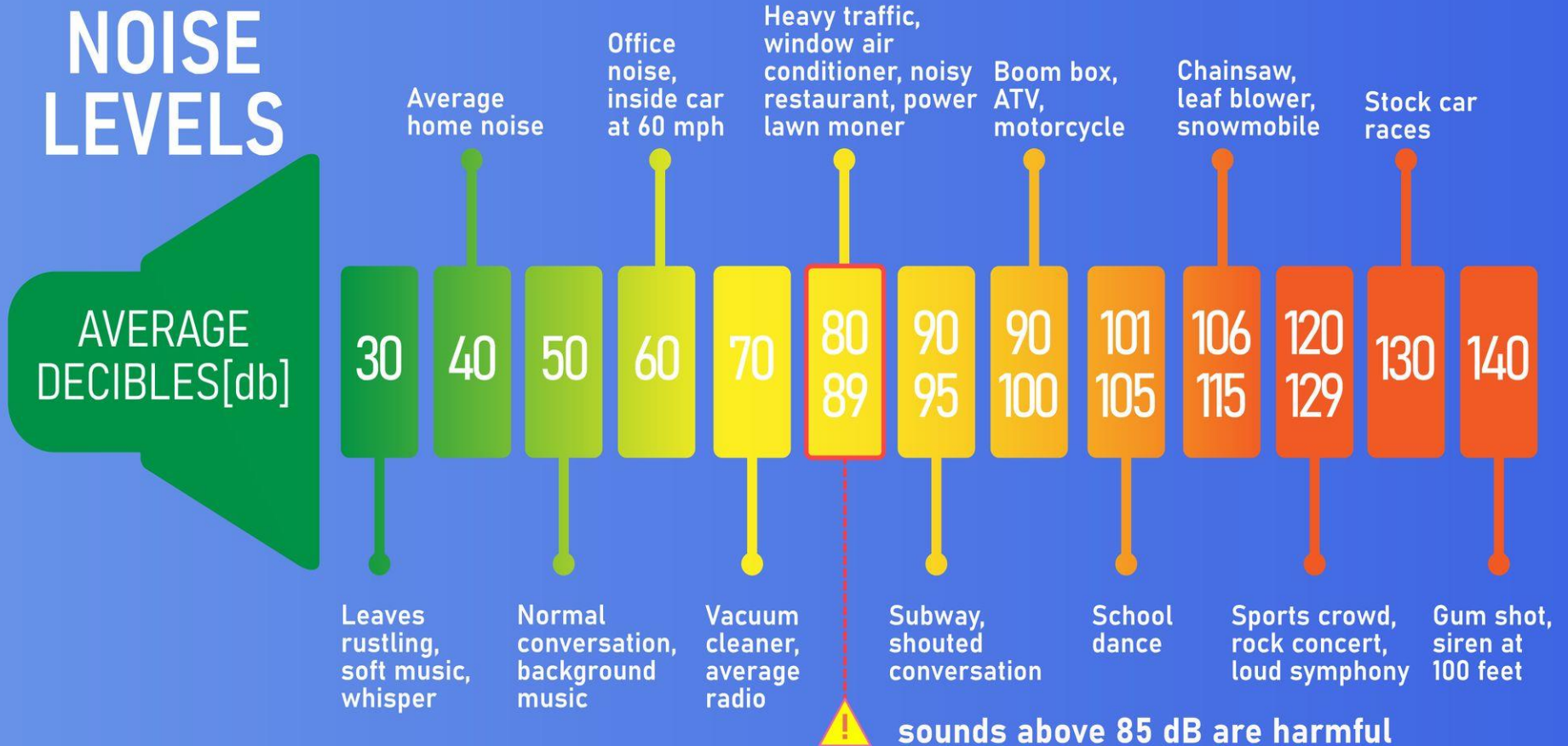
Malleus, Incus, Staples or Hammer, Anvil, Stirrup

Reasons People Lose Their Hearing

1. Appreciation of hearing not learned until hearing is lost.
2. Hearing loss progresses slowly over time (not noticeable).
3. Pain rarely accompanies overexposure.
4. Noise is not perceived as a physical threat.
5. The threat posed by lower cumulative doses is not recognized.
6. Failure to recognize overexposure occurs even when protection is used.
7. Belief exists that hearing loss goes with the job.
8. False belief hearing loss can be restored using hearing aids.
9. Site of injury cannot be viewed.
10. Lack of understanding of the role hearing assumes in old age.

Hearing loss remains a problem in Alberta workplaces

Common Noise Sources



Health Effects of Noise Exposure

Temporary and permanent hearing loss

The impairment of communication caused by hearing loss can result in other health effects.

Immediate effects include:

- ↑ heart rate;
- ↑ blood pressure;
- ↓ digestive processes;
- ↑ muscular tension; and
psychological disorders.

The Mechanics of Hearing Loss

There are three different types of hearing loss.

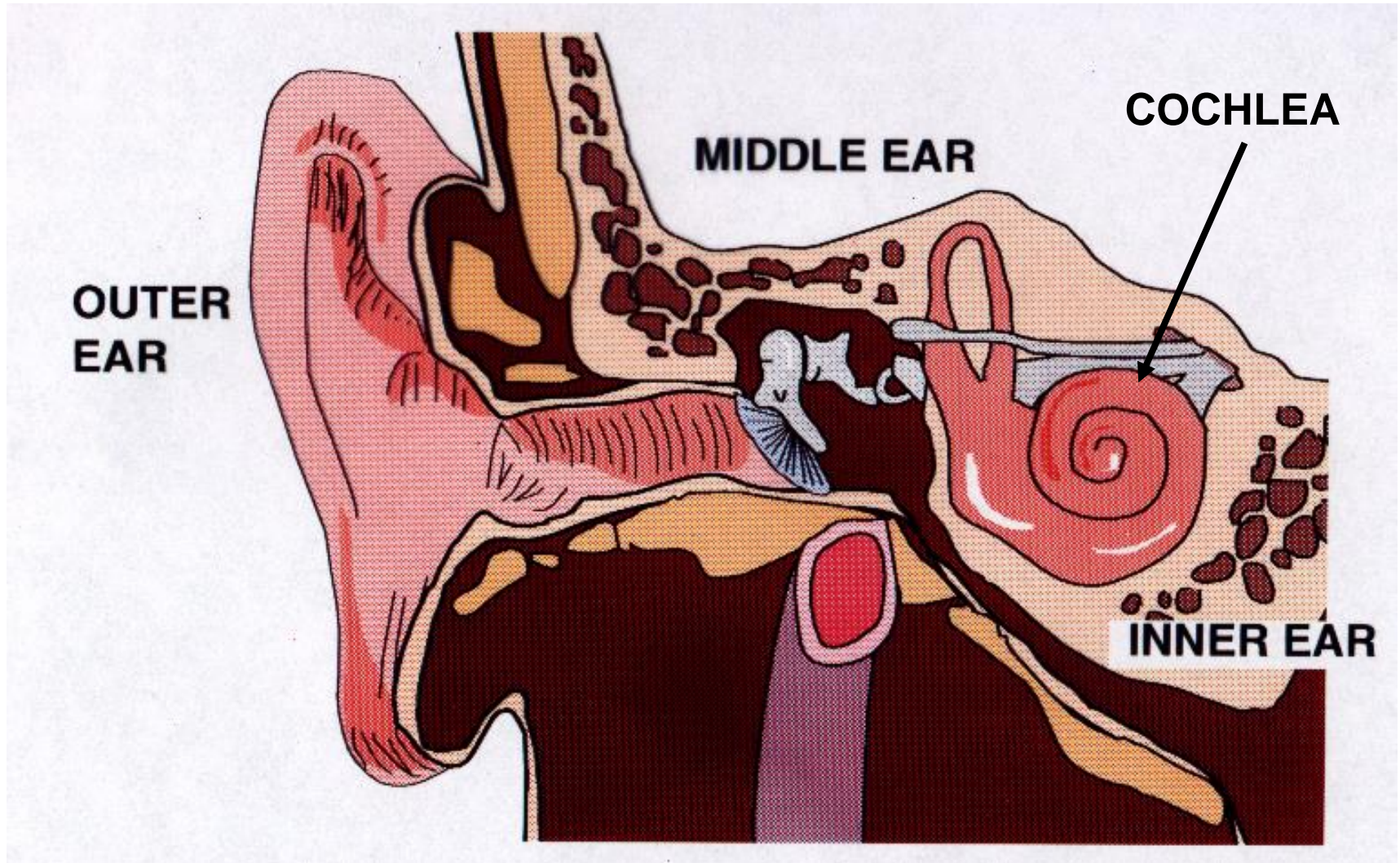
Acoustic Trauma

Conductive

Sensorineural (noise-induced hearing loss)



The Mechanics of Hearing



Noise-Induced Damage

Normal Cochlea with Undamaged Hair Cells



Noise-Exposed Cochlea with Damaged Hair Cells (Arrows)



Part 16 of the Code

Duty to reduce

216 An employer must ensure that all reasonably practicable measures are used to reduce the noise to which workers are exposed in areas of the work site where workers may be present.

Noise control design

217 An employer must ensure that the following are designed and constructed in such a way that the continuous noise levels generated do not exceed 85 dBA or are as low as reasonably practicable:

- (a) a new work site or work area;
- (b) significant physical alterations, renovations or repairs to an existing work site or work area;

Part 16 of the Code

Worker exposure to noise

218 An employer must ensure that a worker's exposure to noise at a work site does not exceed

- (a) the noise exposure limits in Schedule 3, and
- (b) 85 dBA L_{ex} .

Part 16 of the Code

Schedule 3 Noise

Table 1
Occupational exposure limits for noise
[See sections 218, 219(1)]

Exposure level (dBA)	Exposure duration
82	16 hours
83	12 hours and 41 minutes
84	10 hours and 4 minutes
85	8 hours
88	4 hours
91	2 hours
94	1 hour
97	30 minutes
100	15 minutes
103	8 minutes
106	4 minutes
109	2 minutes
112	56 seconds
115 and greater	0

Part 16 of the Code

Noise exposure assessment

219(1) If workers are, or may be, exposed to noise at a work site or work area in excess of 82 dBA L_{ex} , an employer must ensure a noise exposure assessment is conducted in accordance with CSA Standard Z107.56-18, *Measurement of noise exposure*.

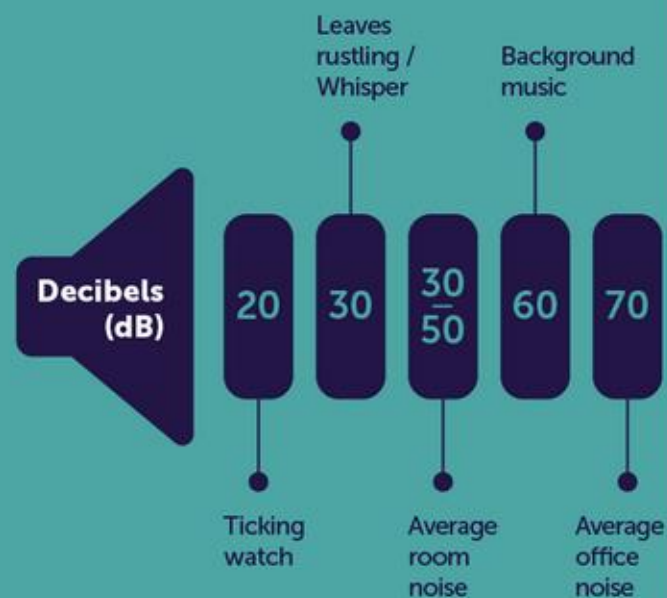
219(2) An employer must ensure a noise exposure assessment at a work site is performed using

- (a) a noise dosimeter meeting the requirements for a Type 2 instrument as specified by ANSI/ASA S1.25-1991 (R2020), *Specification for Personal Noise Dosimeters*, or IEC

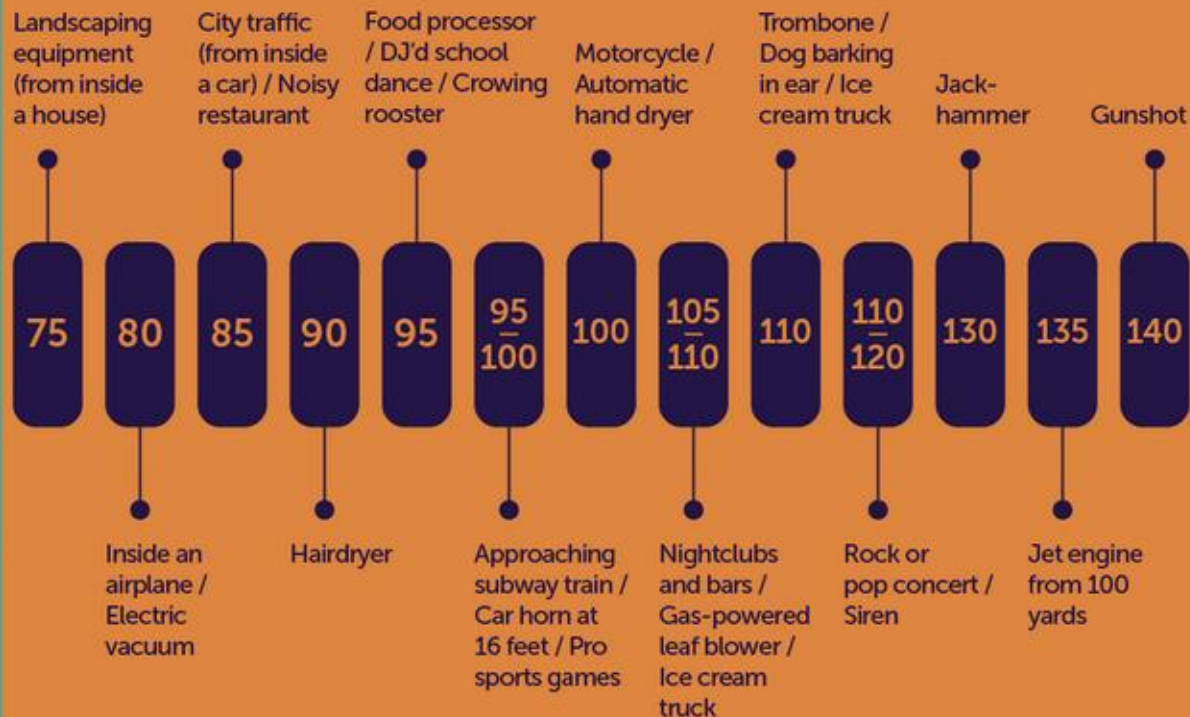
Part 16 of the Code

NOISE LEVELS

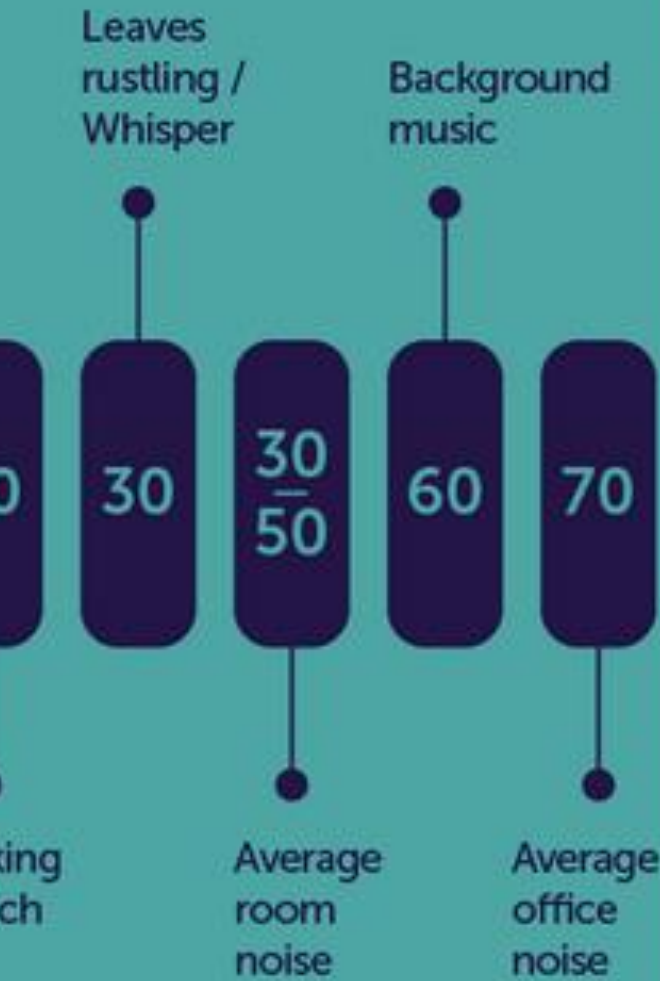
Sounds at or below 70 dB are safe.



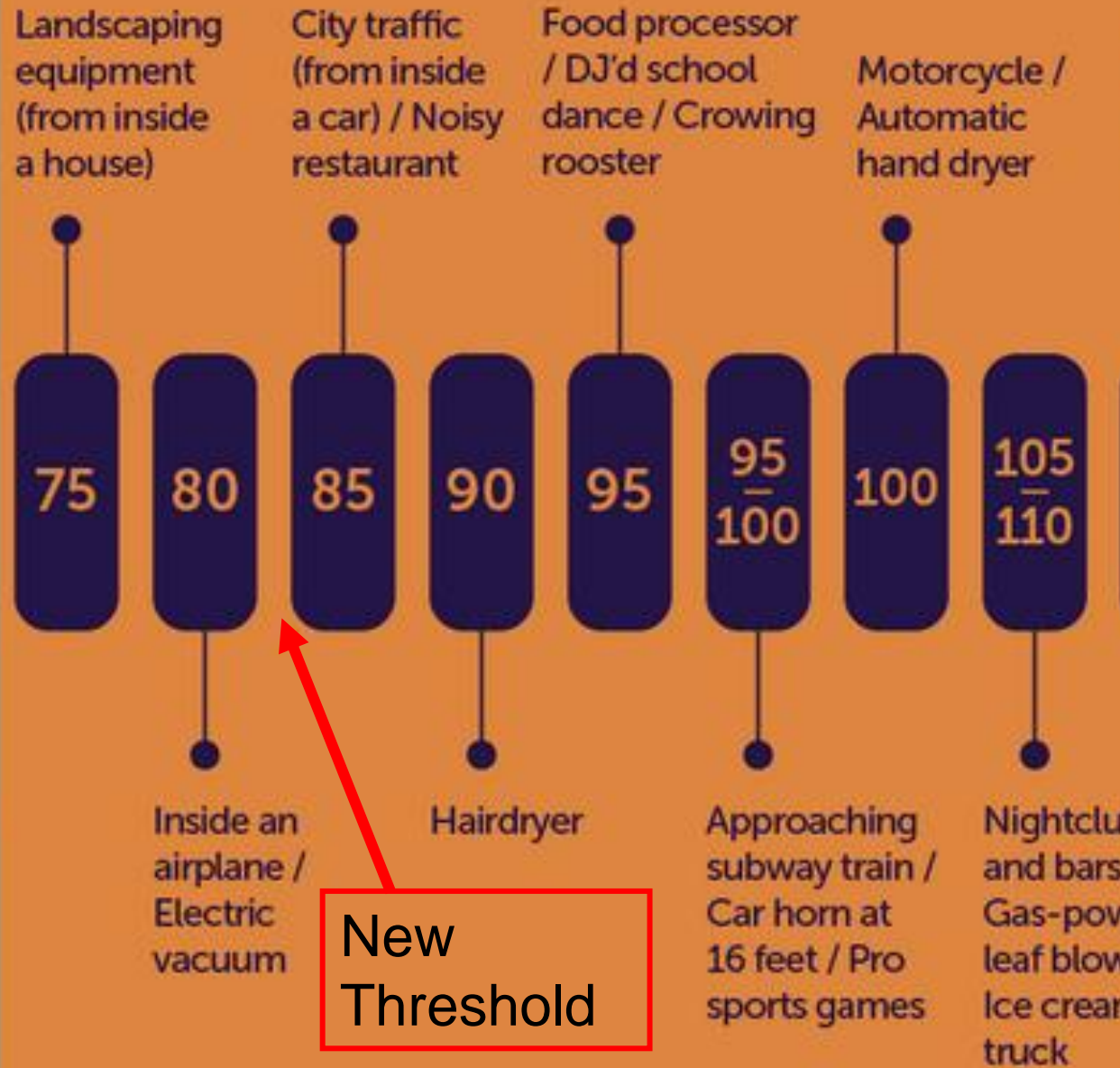
Sounds above 70 dB are harmful.



Sounds below 70 dB are safe.



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Part 16 of the Code

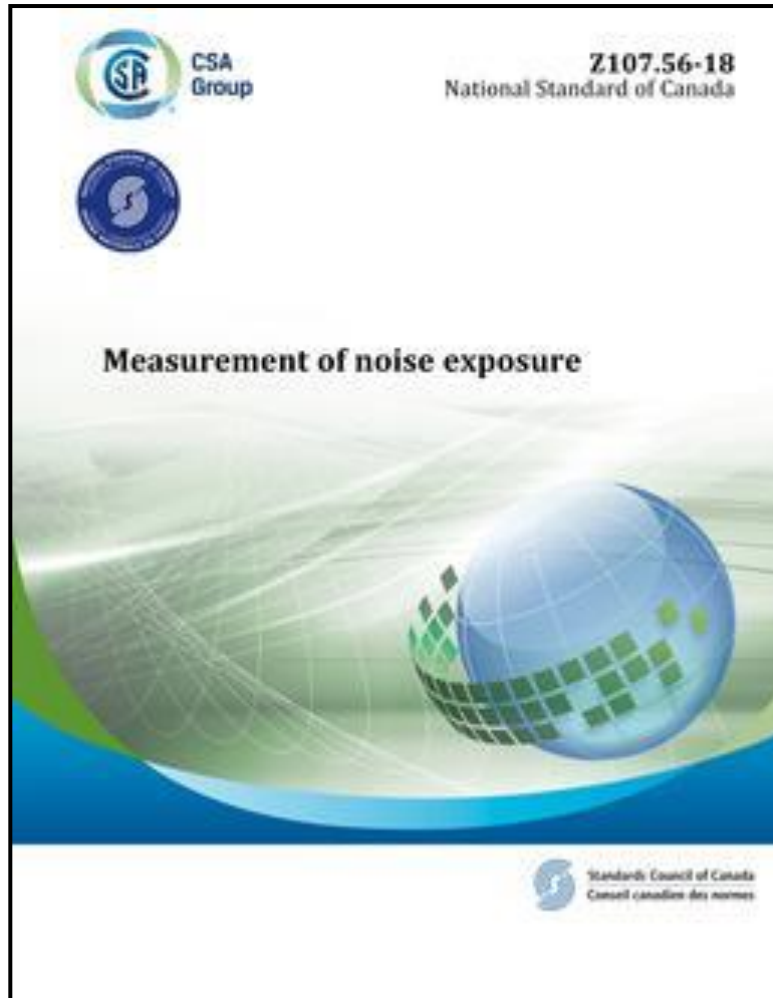
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Noise Assessment



Noise Assessment

Preliminary Survey

- used to identify areas/job functions that require a more detailed investigation



Formal Survey

- used to document worker exposure in potentially high noise areas
- used to identify who are noise exposed workers



Part 16 of the Code

219(3) An employer must ensure that a noise exposure assessment is

- (a) conducted and interpreted by a competent person who
 - (i) is trained in conducting noise exposure assessments,
 - (ii) is trained in the calibration, operation and maintenance of the equipment used in conducting noise exposure measurements, and
 - (iii) can demonstrate an understanding of the method used for measurement,

Part 16 of the Code

- 221** If a noise exposure assessment confirms that workers are exposed to excess noise at a work site, an employer must develop and implement a noise management program that includes
- (a) procedures for addressing noise at the work site,
 - (b) identification of the work area at the work site where noise may exceed the noise exposure limits,
 - (c) procedures for measuring worker exposure to noise,
 - (d) procedures for educating workers in the hazards of exposure to excess noise,
 - (e) the methods of noise control to be used,

Part 16 of the Code

- (f) training workers in the correct use of noise control measures and hearing protection devices,
- (g) the selection, use and maintenance of hearing protection devices to be used and worn by workers,
- (h) posting of suitable warning signs in any work area where the noise level exceeds 85 dBA,
- (i) the requirements for audiometric testing and the maintenance of audiometric test records, and
- (j) an annual review of the noise management program that includes consideration of the data received under section 223(6).

Noise Control – Hearing Protection

222 An employer must ensure that hearing protection devices used and worn by workers at a work site or work area

- (a) meet the requirements of CSA Standard Z94.2-14 (R2019), *Hearing protection devices — Performance, selection, care, and use*, and
- (b) are fit tested in accordance with CSA Standard Z94.2-14 (R2019), *Hearing protection devices — Performance, selection, care, and use*.

Noise Control – Hearing Protection



Look for the CSA Class markings on all hearing protective equipment

Special consideration is needed if using US OSHA NRR-rated hearing protective equipment

Noise Control – Hearing Protection

Table 2
Selection of hearing protection devices
 [See subsection 222(1)]

Maximum equivalent noise level (dBA Lex)	CSA Class of hearing protection	CSA Grade of hearing protection
≤ 90	C, B or A	1, 2, 3, or 4
≤ 95	B or A	2, 3, or 4
≤ 100	A	3 or 4
≤ 105	A	4
≤ 110	A earplug + A or B earmuff	3 or 4 earplug + 2, 3, or 4 earmuff
> 110	A earplug + A or B earmuff and limited exposure time to keep sound reaching the worker's ear drum below 85 dBA L _{ex}	3 or 4 earplug + 2, 3, or 4 earmuff and limited exposure time to keep sound reaching the worker's ear drum below 85 dBA L _{ex}

Part 16 of the Code

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Fit-testing – Quantitative and Qualitative



Figure 1



Figure 2



Figure 3

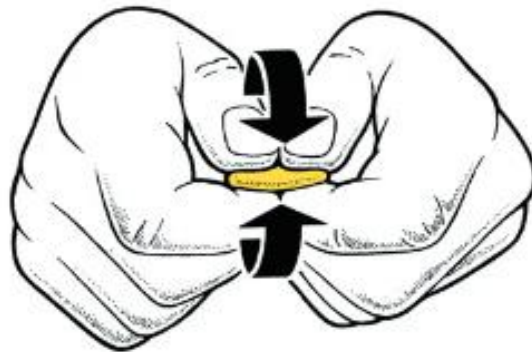


Figure 4

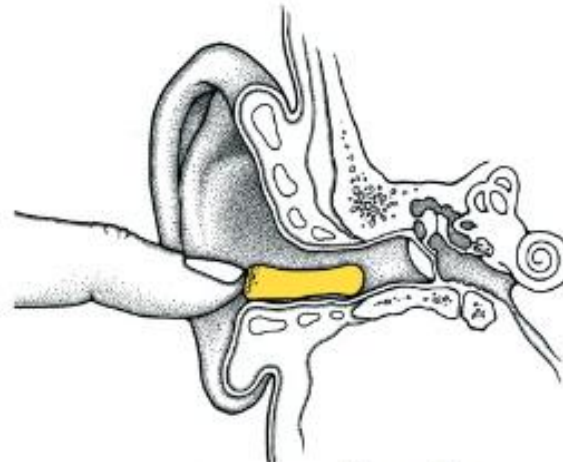


Figure 5

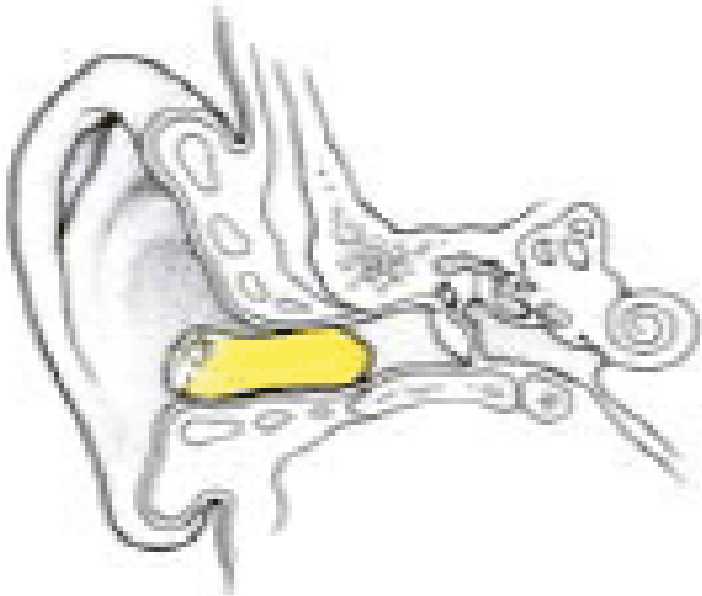
Fit-testing – Quantitative



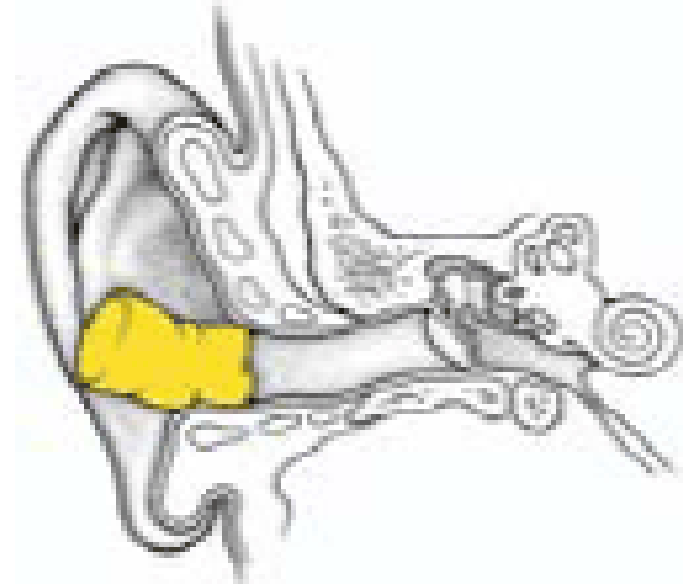
Fit-testing – Quantitative



Fit-testing – Qualitative



Good



Poor

Fit-testing – Qualitative



Improper



Poor



Correct

Audiometric Testing

223(1) An employer must provide, at the employer's expense, the following audiometric tests for a worker who is or may be exposed to excess noise at a work site or in a work area:

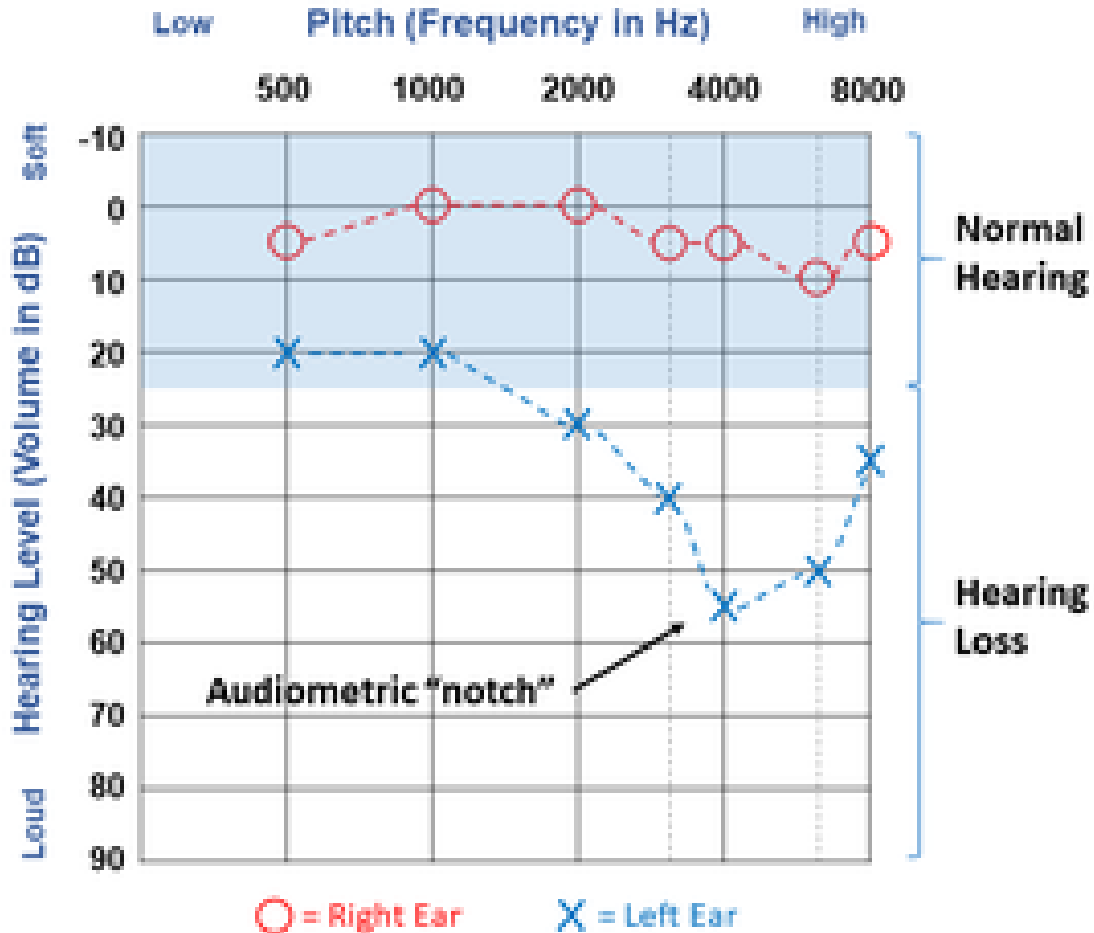
- (a) an initial baseline test as soon as reasonably practicable, but not later than 6 months after the worker is employed or within 6 months after a worker is or may be exposed to excess noise because of a change in the worker's duties or process conditions;
- (b) a test not more than 12 months after the initial baseline test;
- (c) a test at least every 2nd year after the test under clause (b).

Measuring Hearing Loss



Audiometric Testing

Audiometric Testing



Audiometric Testing

223(2) An employer must ensure that audiometric tests are administered by an audiometric technician who

- (a) works in consultation with a physician, audiologist or occupational health nurse familiar, to the extent possible, with the work site or work area, and
- (b) prior to testing, arranges for an assessment of any results that indicate a significant threshold shift to be conducted
 - (i) where the person consulted under clause (a) is a physician or audiologist, by the physician or audiologist, or

Audiometric Testing

A case history is taken during a baseline hearing test. This can identify reasons why you may be at high risk for hearing loss, such as:

poor blood circulation;

diabetes;

heart disease;

high blood pressure;

stroke; and

smoking.

Audiometric Testing

Table 3
Permissible background noise conditions
during audiometric testing
[See subsection 223(2)]

Octave band centre frequency (Hz)	Maximum level (dB)
500	22
1000	30
2000	35
4000	42
8000	45

Noise Management Programs

- 221** If a noise exposure assessment confirms that workers are exposed to excess noise at a work site, an employer must develop and implement a noise management program that includes
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 - (e) the methods of noise control to be used,

Noise Management Programs

- (f) training workers in the correct use of noise control measures and hearing protection devices,
- (g) the selection, use and maintenance of hearing protection devices to be used and worn by workers,
- (h) posting of suitable warning signs in any work area where the noise level exceeds 85 dBA,
- (i) the requirements for audiometric testing and the maintenance of audiometric test records, and
- (j) an annual review of the noise management program that includes consideration of the data received under section 223(6).

Hearing Conservation Program

A written hearing conservation program includes the following elements;

- noise exposure monitoring;
- engineering, administrative and PPE controls;
- audiometric evaluation; and
- employee education and training.

Employer's Action Planning

1. Get out all of your old noise data
2. Undertake area instantaneous noise measurements during all normal and upset conditions in all work areas
3. If any levels above 82 dBA are measured:
 - Undertake noise mapping of the work area
 - Complete a program of noise dosimetry on affected employees
 - Introduce (or re-introduce) a noise and hearing conservation program
 - Fit-test all employees working in the high noise areas



Questions??

Please feel free to contact me directly



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