

Hearing Protection

Employers in B.C. must provide hearing protection devices (HPDs) to all workers exposed to excessive noise. The purpose of this, along with six other components of a noise control and hearing conservation program, is to prevent occupational noise-induced hearing loss, a compensable disease

HPDs are classified by the Canadian Standard Association Standard Z94.2-02, and all HPDs fall into one of three Classes- A, B, C, or one of five Grades-0, 1, 2, 3, 4. The use of the term “Grade” is new to the Standard. This Standard is specifically referred to in the Occupational Health & Safety Regulation, 7.7.

The Grade or Class of an HPD is based on the amount of sound reduction, called “attenuation”, measured in a laboratory, but says *nothing* about how well that protector stops hearing loss. For example, Grade 4, or Class A, devices have more attenuation than Grade 2, or Class B, which in turn have more attenuation than Grade 1, or Class C. Depending on the circumstances, Grade 4 protectors may not be better than Grade 2 or 3. The protection a worker gets from an HPD depends on the fit of the protector and the wearing time while in noise. Removing an HPD during noise exposure will reduce the protection, regardless of its Grade or Class.

Selecting a Hearing Protector:

A number of factors **must** be considered in deciding which HPD is adequate for a worker. In the Standard, comfort is considered equally important as noise exposure.

- daily noise exposure of worker (called “Lex”),
- worker hearing ability,
- communication demands on the worker,
- use of other personal protective equipment,
- temperature and climate,
- physical constraints of the worker or work activity.

The best opportunity to evaluate these criteria is during the annual hearing test. The tester should discuss all of these factors, make an appropriate recommendation to workers, and then provide feedback to employers.

a. daily noise exposure of worker (Lex)

The goal of wearing an HPD is to reduce the noise level reaching the ear canal, to approximately 75-80 dB—this level of protection is called “optimal”. At this level, there is enough attenuation to protect the wearer’s hearing as well as allow the wearer to work safely and productively.

If the noise level reaching the ear canal is LESS than 75-80, then the wearer has too MUCH attenuation. **This is called “overprotection” and is not desirable.** The wearer may not be able to hear important safety information. If the noise level under the device is over 85 dBA, then this is “insufficient” protection and unacceptable. At this level, the wearer may sustain permanent hearing loss. Noise levels under the device of 70-75 and 80-85 dBA are called “acceptable”. So, noise levels, under the HPD, of between 70-85 dBA are all acceptable.

The CSA Standard recommends certain Grades or Classes of hearing protection for certain daily noise exposures.

<u>Daily Noise Exposure</u>	<u>Recommended Grade/Class of HPD</u>
less than 85 dBA	no HPD needed
85-89 dBA	Grade 1 or Class C
90-95 dBA	Grade 2 or Class B
95-100 dBA	Grade 3 or Class A
100-105 dBA	Grade 4 or Class A

Note: these are recommendations only, not minimum or required. Also, the recommendation is based on the daily average noise exposure of the worker, not the noise levels of a piece of machinery. For example, a faller's chainsaw may produce levels of up to 115 dBA, but a faller's average daily noise exposure is about 102 dBA Lex, due to work stoppages throughout the day.

Most occupations have Lex less than 95 dBA and according to the CSA Standard, Grades 1 or 2/Class B protection is recommended.

b. worker hearing ability

Hard of hearing workers often do not like to wear conventional, highly attenuating hearing protection. Frequently, they report feeling unsafe, due to their inability to hear warning signals. Less attenuating protectors should be used, for example, Class B instead of Class A. Additionally, a protector with flatter, or more uniform attenuation (provides the same noise reduction for all pitches--something regular earmuffs and earplugs DO NOT) is desirable. There are many specialty HPDs that provide a better listening environment for the hard of hearing.

c. communication demands on the worker

The more demanding the worker's listening environment, the more important it is that a lower attenuating protector is used, even if the worker has normal hearing. See also the comments under b. above, regarding flat, or uniform, attenuation HPDs.

d. use of other PPE.

Earplugs may be preferable for workers who wear a lot of other protective equipment, particularly respirators, safety glasses, and/or hard-hats.

e. temperature and climate

Workers may prefer earmuffs in cold winters and earplugs in hot summers, or indoors. The more comfortable the protector, the more likely it is to be worn consistently.

f. physical constraints of the worker or work activity

This includes small, very large, or hairy ear canals, prominent cheekbones, large head, large outer ears, etc. as well as required movements in a job. For example, workers who must do a lot of climbing in and out of equipment or other objects may prefer earplugs to earmuffs.

If a worker likes a hearing protector, regardless of what it is, he/she will wear it. Comfort will determine wearing time. There is no single universal protector which will take into account all selection criteria, so an employer must provide a choice of hearing protection devices – both earmuffs and earplugs, and of all Grades/Classes.

See also the WorkSafeBC *Occupational Health and Safety Regulation*, Part 7 "Noise and Hearing Conservation", as well as the Canadian Standards Association Standard Z94.2-02 "Hearing Protection". Visit the WorkSafeBC.com website for the *Regulation* as well as more information about Hearing Protection and Hearing Loss Prevention. (in the Health & Safety Centre).