



## Hearing Protection Standard Selection and Use

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### SCOPE:

Any worker who may be exposed to potentially hazardous noise levels during the course of work at the University.

*Note: In this standard, "worker" includes faculty, staff, students, contractors, and visitors*

### RESPONSIBILITIES:

#### Principal investigators/supervisors:

- Identify noise hazard areas, equipment and situations where hearing protectors are required. This generally means areas or tasks where workers may be exposed to noise levels above 85 dBA).
- Assess the hazard and implement controls to reduce noise levels following the hierarchy of controls (substitution, engineering controls, administrative controls and hearing protectors as last resort or where other forms of reducing the noise is not feasible)
- Determine (using this standard or in conjunction with the Office of Environmental Health and Safety) the type of hearing protection required
- Provide employees with appropriate hearing protection
- Ensure that workers are informed in the proper use, care and maintenance of hearing protection
- Ensure that workers wear appropriate hearing protection at all times in noise hazard areas or when performing tasks which generate potentially hazardous noise levels
- Ensure that all noise-exposed employees attend training on noise

#### Workers:

- Wear appropriate hearing protection at all times in noise hazard areas or when performing tasks which generate potentially hazardous noise levels
- Maintain hearing protection in good condition
- Attend noise training as required
- Report noise concerns to the supervisor

### HEARING PROTECTION DEVICES:

Appropriate hearing protection must protect against the level of noise hazard, provide a comfortable fit, and comply with CSA Standard Z94.2- 02 (R2011) "*Hearing Protection Devices – performance, selection, care, and use*".



**Appendix A** outlines the recommended hearing protection to be worn when exposed to different levels of noise hazards.

There are several types of protectors (plugs, muffs, etc.) and many variations within each type. The selection of the appropriate hearing protection devices should be based on a hazard or risk assessment, the conditions of the workplace and on compatibility with other personal protection equipment. The following sections outline the two general categories of hearing protection devices:

### **1) Earmuffs**

Earmuffs are external hearing protection devices consisting of rigid moulded plastic earcups that seal around the ear using foam-, fluid-, or gel-filled cushions. The earcups are cushioned and are intended to fit snugly (but not uncomfortably tight) against the side of the head. The earcup must completely encircle the ear in order to provide a good seal and thereby protect the noise-sensitive inner ear. Earmuff fit can be compromised by the use of other safety equipment such as hard hats, goggles, glasses, etc. so care must be taken to ensure a proper fit. Earmuffs must comply with CSA Standard Z94.2- 02 (R2011) "*Hearing Protection Devices – performance, selection, care, and use*".

Earmuffs must not be modified (e.g. by drilling ventilation holes in the earcups or reducing headband tension) as this can drastically reduce the noise attenuation and protection for the user.

The user must regularly inspect and maintain the earmuffs in good condition. For example, earcup cushions which are cracked or hardened, or a headband with inadequate tension must be replaced.

Earmuffs must be properly fitted and worn at all times in noise hazard areas or when performing activities which pose a noise hazard.

### **2) Earplugs**

Earplugs are hearing protection devices which are inserted into the ear canal. Earplugs must fit snugly and seal the ear canal to provide adequate noise attenuation and to protect the noise-sensitive inner ear. Earplugs must comply with CSA Standard Z94.2- 02 (R2011) "*Hearing Protection Devices – performance, selection, care, and use*".

There are a variety of different earplugs that can generally be categorized as foam, premoulded, formable, custom-moulded, and semi-insert styles, but the most common ones are expandable foam or preformed plugs with flanges. To get the best fit, the ear should be pulled back with the opposite hand to straighten the ear canal and the earplug should be properly inserted with clean hands. Earplugs can work loose through the day (from talking, eating, etc.) and therefore should be resealed periodically.

Earplugs are either disposable (used only once) or reusable (following proper care and manufacturer information). Reusable earplugs must be regularly inspected and cleaned (washed in mild soap and allowed to dry in a clean environment). If the earplug material becomes hard or is not able to provide a good seal, the earplugs must be replaced.



Earplugs must not be modified (e.g. by removing flanges) as this can drastically reduce the noise attenuation and protection for the user.

Earplugs must be properly fitted and worn at all times in noise hazard areas or when performing activities which pose a noise hazard.

### **Use of Recreational Earphones**

Recreational earphones (i.e. music earphones) are **not** a replacement for properly fitted and appropriate hearing protection. In fact, studies indicate that, even in areas where noise levels are not hazardous, unless a user maintains the volume at a conservative (low) level, these earphone devices can contribute to non-occupational noise-induced hearing loss.

### **Low Frequency Noise**

For noise which is predominantly low frequency, specific hearing protectors which carry an "L" designation should be used. These particular hearing protectors meet the requirements for either Class A or Class B but also provide better low frequency attenuation and so are labelled as AL or BL, respectively.



**Appendix A**

**Selection of Hearing Protection**

A worker is **noise-exposed** if he/she experiences regular exposure to sound levels greater than an 8 hour time-weighted average of 85 A-weighted decibels (dBA) or an "equivalent" noise exposure (using a 3 decibel exchange rate). Please refer to the University's Noise Control and Hearing Conservation Program for "equivalent" noise exposures.

<b>Time-Weighted Average (TWA) Noise Exposure (expressed in dBA)</b>	<b>Recommended Class of Hearing Protection<sup>1</sup></b>
TWA less than 85 dBA	Hearing protection not required <sup>2</sup>
TWA up to 89 dBA	Class C hearing protector
TWA up to 95 dBA	Class B hearing protector
TWA up to 105 dBA	Class A hearing protector
TWA up to 110 dBA	Class A earplug + Class A or Class B earmuff
TWA greater than 110 dBA	Class A earplug + Class A or Class B earmuff and limited exposure

Courtesy: The Canadian Standards Association Standard Z94.2- 02 (R2011) "*Hearing Protection Devices – performance, selection, care, and use*".

<sup>1</sup> Classification of hearing protectors as Class A, B or C is based on the minimum noise attenuation at various assigned frequencies. Class A provides the highest level of attenuation across the test frequencies, Class B provides the next highest level of attenuation and Class C provides the least attenuation (virtually no attenuation below 500 Hz).

<sup>2</sup> It must be stressed that there is no dividing line whereby regular noise exposure below a TWA of 85 dBA is considered "safe" and above this level is "unsafe". The majority of individuals who are regularly exposed to noise levels between 80-85 dBA will not experience noise-induced hearing loss but there may be some susceptible individuals who will experience this loss. This possibility should be discussed with any individual whose TWA is between 80-85 dBA and appropriate hearing protection should be provided on request.