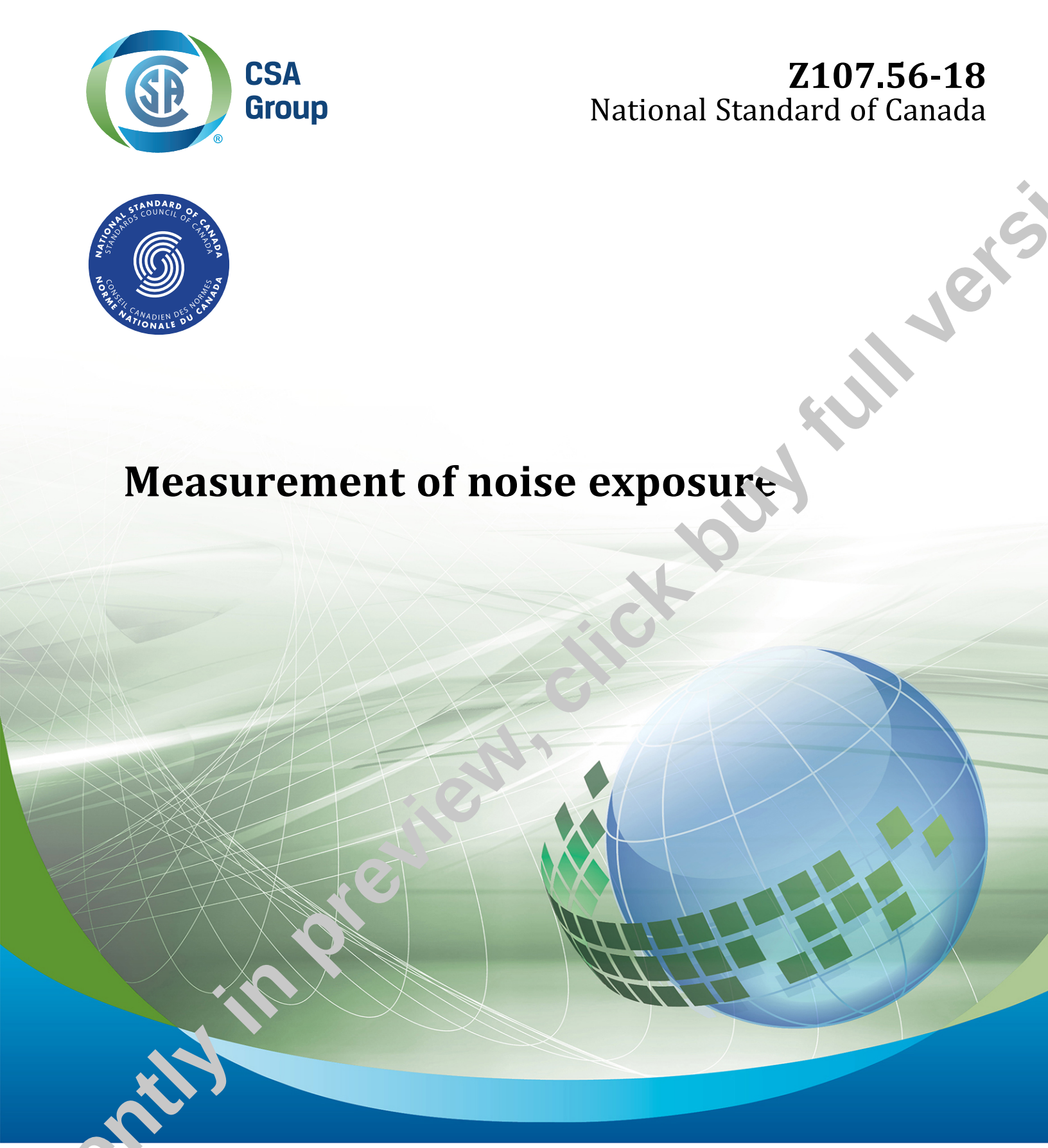
CSA Group

**Z107.56-18**
National Standard of Canada

# Measurement of noise exposure





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*National Standard of Canada*

# *Z107.56-18*
# ***Measurement of noise exposure***



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# Contents





  

  

# Preface

This is the fifth edition of CSA Z107.56, *Measurement of noise exposure*. This edition supersedes the previous editions published in 2013, 2006, 1994, and 1986.

Key changes to this edition include the following:

a) instrument selection and requirements for noise-measuring equipment including removal of non-integrating sound level meters for measuring noise exposure have been updated;
b) the microphone in a real ear (MIRE) method has been extended to hearing protectors with built-in noise monitoring capabilities;
c) the artificial ear method (admissible types and procedures) for sources close to the ear has been updated;
d) the calculation procedure (A-weighted effective speech level for one-sided and two-sided headsets) of the estimation method for sources close to the ear has been updated;
e) Annex B has been updated to provide clarity on the use of an energy average instead of an arithmetic average when studying distributions of measured noise levels. Addition of new Tables B.1 and B.2 to align with current methods of calculating uncertainty of noise exposure harmonizes the approach with ISO 9612;
f) a new informative annex (Annex D) on walk-through surveys and noise level surveys has been included;
g) the procedure for the use of $L_{OSHA}$ has been removed and is no longer recommended
h) the definitions have been updated; and
i) the reference publications (Clause 2) have been updated.

This Standard should be used in conjunction with CSA Z1007 *Hearing loss prevention program (HLPP) management*, which deals with all aspects of the creation and management of hearing conservation programs. This Standard complements other CSA hearing conservation standards, including CSA Z94.2 (hearing protection), CSA Z107.6 (audiometric testing for use in hearing loss prevention program), CSA Z107.58 (noise emission declarations for machinery), CAN/CSA-ISO 5349 (hand-transmitted vibration), and ISO 2631 (whole-body vibration).

This Standard was prepared by the Subcommittee on Noise Exposure Assessment and Control, under the jurisdiction of the Technical Committee on Occupational Hearing Conservation and the Strategic Steering Committee on Occupational Health and Safety, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

**Notes:**

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
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4) *To submit a request for interpretation of this Standard, please send the following information to inquiries@csagroup.org and include "Request for interpretation" in the subject line:*
    a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*

b) *provide an explanation of circumstances surrounding the actual field condition; and*
c) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

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a) *Standard designation (number);*
b) *relevant clause, table, and/or figure number;*
c) *wording of the proposed change; and*
d) *rationale for the change.*

# *Z107.56-18*
# *Measurement of noise exposure*

## 0 Introduction

Detecting noise hazard is an important element of a hearing loss prevention program (HLPP) as described in CSA Z1007 (see Figure 1). Measuring workers' noise exposure is necessary to determine the risk of occupational hearing loss and to identify what noise sources are causing noise hazards and need to be controlled.

These methods, which can be applied to individuals or groups, are designed to give results representative of workers' noise exposure while minimizing the number and duration of measurements.

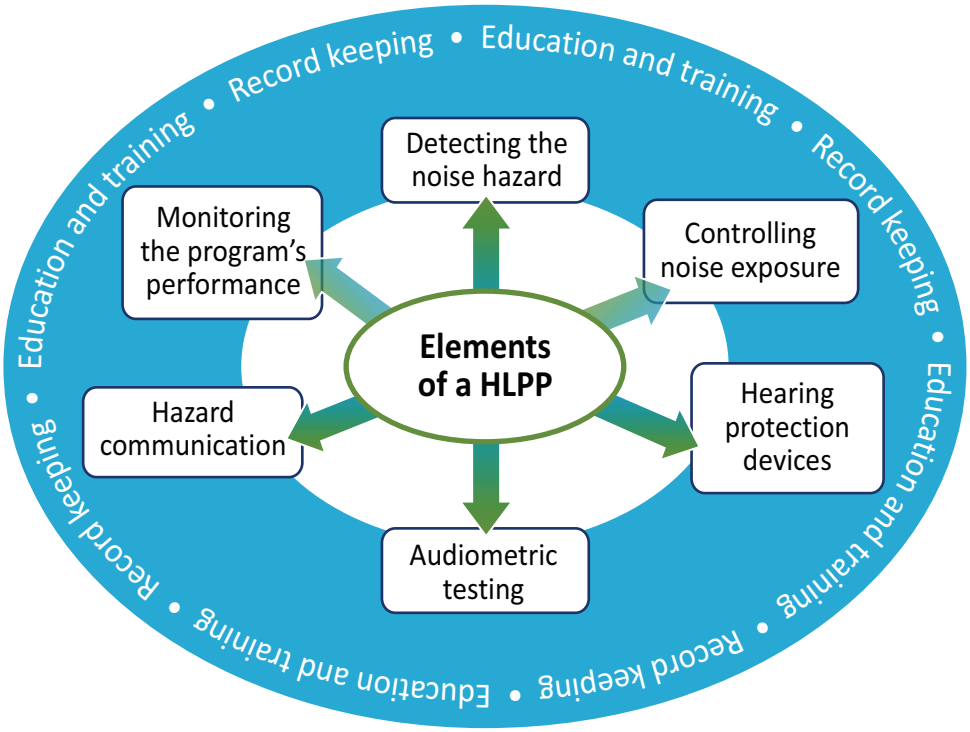
In a hearing loss prevention program, the results of a noise exposure survey are used to

a) determine if individuals or groups are at risk of hearing loss by comparing the $L_{ex,T}$ with provincial and federal regulations;
b) provide information on the contribution of various noise sources to the overall $L_{ex,T}$ in order to decide on which further noise sources need to be controlled and by how much. For this purpose, it is useful to collect octave or 1/3-octave band information. In addition, identifying the noise sources which contribute to the $L_{eq}$ from individual activities is also needed. Annotating dosimeter logs with the worker's memories of what sources were present during times of higher noise exposure is one way to collect this information. When integrating sound level meters are used, the noise sources present during each measurement should also be identified; and
c) provide information to users and professionals to choose the best hearing protection for their job and environment. For this purpose it is useful to measure both A and C weighted $L_{ex,T}$ as well as octave or 1/3-octave band $L_{ex,T}$.



**Figure 1**
**Elements of a hearing loss prevention program (HLPP)**
(See Clause 0.)




# 1 Scope

## 1.1

This Standard describes methods for determining the occupational noise exposure level of workers ($L_{ex,T}$) using sampling techniques. $L_{ex,T}$ represents the long-term noise exposure of workers and is calculated from measurements of $L_{eq,t}$ (3 dB exchange rate) in the workplace.

**Notes:**

1) *The methods in this Standard are based on established definitions, units, instrumentation, and industry practice. Noise exposure has been expressed as % dose in the past. However, the $L_{ex,T}$ should be used, as it is more convenient and less likely to be misunderstood. Refer to Clauses C.1, C.2, and C.4 to convert $L_{ex,T}$ to dose and vice versa.*
2) *The methods in this Standard normally form part of any occupational hearing conservation program. Users of this Standard should be proficient in noise measurement.*

## 1.2

This Standard complements other CSA Group and ISO hearing loss prevention standards (see Figure 2), as follows:

a) CSA Z1007 for guidance to the person(s) responsible for implementing and managing a hearing loss prevention program (HLPP);
b) CSA Z94.2 for hearing protection;
c) CSA Z107.6 for audiometric testing for use in hearing loss prevention programs;
d) CSA Z107.58 for noise emission declarations for machinery;