

# Draft Canadian Guidelines for Machinery Noise Emission Labelling

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## INTRODUCTION

Occupational noise-induced hearing loss (NIHL) is a significant public health problem in Canada. Statistics obtained from Provincial and Territorial Workers' Compensation Boards indicated that, for the years 1991-93, there were about 7000 new noise-induced hearing disability claims accepted annually. During this period, the direct cost to employers of all noise-induced hearing disability claims was approximately 25 to 30 million dollars in compensation each year.

An effective way of ameliorating this situation is to ensure that, the actual noise level in a workplace is as low as reasonably achievable. This is the most reliable way to reduce noise exposure and, thereby, the risk of NIHL. The method does not interfere with the worker, unlike administrative controls and personal hearing protection, and it can improve the ability of workers to communicate on-site and hear warning sounds.

This paper describes draft Canadian guidelines for the voluntary labelling of machinery noise emission levels for use in the reduction of noise in new or significantly modified workplaces. At the time of writing, the document has been prepared by the Radiation Protection Bureau, Health Canada for development as a National Standard of the Canadian Standards Association (CSA).

## PROPOSED LABELLING RECOMMENDATIONS

Machinery noise emission labelling is a standardized declaration of the emission sound pressure level of a machine and, if required, its sound power level. This information is not affixed to the machinery; rather, it is included in the instructions and technical information accompanying machinery being offered for sale. Both noise emission quantities are measured under typical operating and mounting conditions. The emission sound pressure level is usually measured near the operator's ear position and excludes contributions from background and reflected noise.

To facilitate international trade, the draft labelling recommendations are consistent with the regulatory requirements of the European Union (EU)[1-3]. The draft recommendations for non-impulsive noise are: (i)the A-weighted, equivalent continuous (time averaged) emission sound pressure level is labelled if it is greater than 70 dB(A), (ii)if this quantity is less than 70 dB(A), only a statement of this fact is needed, (iii)the A-weighted sound power level is labelled if the equivalent continuous emission sound pressure level is greater than 85 dB(A). For impulsive noise, the peak C-weighted emission sound pressure level is labelled if it is greater than or equal to 130 dB(C). The above criteria were chosen so that labelling would be needed only for machines that could create potentially hazardous occupational exposure levels [4].

The intent of the labelling is to facilitate, during either the construction or significant modification of a workplace, the purchase of quieter machinery and the prediction of noise exposure levels. This enables noise control to be cost-effective. For example, the purchase of quieter machinery reduces or eliminates the need for costly noise controls after the plant is operational. In addition, the requirements and effectiveness of noise controls, such as absorbing panels or enclosures, can be ascertained ahead of time [5]. Furthermore, the use of quieter machinery can cut maintenance costs and improve product quality because such equipment often has a smoother action, greater reliability and a longer life [6].

## IMPLEMENTATION STANDARDS

There are a number of standards of the International Organization for Standardization (ISO)[7] which can be used to meet the draft Canadian recommendations. The standards have been prepared to provide methods for the determination, disclosure and use of the sound power and emission sound pressure levels, primarily to enable compliance with EU Directives[1-4]. Two types of standard are available for measuring a noise emission level. They are: (i)test codes, which prescribe the accuracy, operating and mounting conditions of the measurement for a particular type of machine and, (ii)basic standards, of which there are 14, for describing the methods for making the measurements.

The draft Canadian guidelines recommend that measurements of noise emission levels should be made according to test codes, if available. However, the choice of the basic measurement standard is up to the person responsible for the measurement. The draft Canadian guidelines contain guidance for choosing the appropriate basic measurement standard to determine sound power level and emission sound pressure level. The guidance is provided principally as a series of tables, which enables the reader to examine, in a systematic way, the compatibility of a measurement standard with 8 criteria: (i)background noise, (ii)instrumentation, (iii)measurement accuracy, (iv)size and average absorption coefficient of the room available for the measurement, (v)character of the noise, eg., impulsive or steady, (vi)frequencies to be measured, (vii)mounting surface, and (viii)measurement speed. This guidance is intended to alleviate the complexity that can arise in choosing one standard, of the 14 available, according to 8 different criteria.

## CONCLUSIONS

Reductions in the risk of occupational noise-induced hearing loss are facilitated through machinery noise emission labelling. International trade considerations and the availability of a suitable system of International Standards have increased the feasibility of implementing machinery noise emission labelling for workplace noise reduction in Canada. To help interested parties meet this goal, Canadian Guidelines have been drafted providing recommendations for labelling and guidance on the selection of available standards.

## REFERENCES

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