

THE USE OF ENVIRONMENTAL NOISE STANDARDS AND GUIDELINES IN CANADA

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1. INTRODUCTION

This paper presents a summary of the environmental noise standards and guidelines currently in use in Canada. The Canadian Standards Association (CSA) currently administers a number of standards dealing directly with environmental noise and there is ongoing activity to endorse or adopt standards prepared by other organizations for use in the Canadian Context. Input was received from members of the Environmental Noise Subcommittee of the Z107 Technical Committee of the CSA illustrating how the various standards are guidelines presently used. Suggestions for future standards activities are provided.

2. ENVIRONMENTAL NOISE STANDARDS CURRENTLY IN USE IN CANADA

The environmental noise standards currently administered by the CSA include the following:

1. **Z107.53-M1982 (R1994)** Procedure for Performing a Survey of Sound Due to Industrial, Institutional, or Commercial Activities. (To be replaced by ISO1996 below)
2. **CAN/CSA – ISO 1996-1**, Description, Measurement and Assessment of Environmental Noise. Part 1: Basic Quantities and Assessment Procedures
3. **CAN/CSA – ISO 1996-2**, Description, Measurement and Assessment of Environmental Noise. Part 2: Acquisition of Data Pertinent to Land Use
4. **CAN/CSA – ISO 1996-3**, Description, Measurement and Assessment of Environmental Noise. Part 3: Application to Noise Limits
5. **CAN3-Z107.54-M85 (R1993)** Procedure for Measurement of Sound and Vibration Due to Blasting Operations.
6. **CAN/CSA-Z107.55-M86** Recommended Practice for the Prediction of Sound Levels Received at a Distance from an Industrial Plant.
7. **CAN/CSA-Z107.9-00:** Standard for Certification of Noise Barriers.
8. **ISO 9613-1:** Attenuation of Sound during Propagation Outdoors – Part 1: Calculation of the Absorption of Sound by the Atmosphere
9. **ISO 9613-2:** Attenuation of Sound during Propagation Outdoors – Part 1: General Method of Calculation
10. **ISO 4872:** Acoustics - Measurement of Airborne Noise Emitted by Construction Equipment Intended for Outdoor Use – Method for Determining Compliance with Noise Limits.
11. **ISO 6393**, Acoustics - Measurement of Airborne Noise Emitted by Earth-Moving Machinery – Method for Determining Compliance with Limits for Exterior Noise Stationary Test Condition
12. **ISO 6394**, Acoustics-Measurement of Airborne Noise Emitted by Earth-Moving Machinery Operators Position-Stationary Test Condition
13. **ISO 6395**, Acoustics-Measurement of Airborne Noise Emitted by Earth-Moving Machinery Dynamic Test Conditions
14. **SAE J919**, Sound Measurement-Earthmoving Machinery – Operator Position
15. **SAE J1096**, Measurement of Exterior Sound Levels for Heavy Trucks
16. **ISO 2922**, Measurement of Noise Emitted by Vessels on Inland Waterways and Harbours
17. **ISO 5130**, Measurement of Noise Emitted by Stationary Road Vehicles – Survey Method
18. **ISO 7188**, Measurement of Noise Emitted by Passenger Cars under Conditions Representative of Urban Driving
19. **ISO 14509**, Measurement of Airborne Sound Emitted by Powered Recreational Craft

Input from a number of committee members resulted in the following list of standards and guidelines in common use in addition to the above. This is not meant to be a comprehensive list.

20. **ANSI B113.8, (ISO 6190)**, Measurement of sound pressure levels of gas turbine installations for evaluating environmental noise – Survey method
21. **IEEE 656**: IEEE standard for the measurement of audible noise from overhead transmission lines.
22. **ANSI S12.9-1988**, Part 1 and 3: Quantities and procedures for description and measurement of environmental sound
23. **ANSI S12.18-1994**: Procedures for outdoor measurement of sound pressure level
24. **SAE J1075**: Sound measurement – Construction sites
25. **IEEE C57.12.90-1993**, Sound level Testing for Establishing Acoustic performance ratings for Transformers
26. **IEC 61400-1**, Sound level measurement and acoustic performance verification of Wind Turbines
27. **CONCAWE Report 4-81** Noise Modeling
28. **ISO 2631-1, 2,3** – Evaluation of Human Exposure to Whole Body Vibration
29. **ISO 8297**, Determination of Sound Power Levels of multisource industrial plants for evaluation of sound pressure levels in the environment.

Many standards addressing methods of measuring source emission levels and measurement equipment standards were also referenced by the subcommittee members, but these are more appropriate to other technical subcommittees of the Z107 Technical Committee.

In addition, the following guidelines are also in common use in the area of environmental noise assessment.

30. Guidelines for the measurement of audible noise emitted by Hydro-Québec plants"
31. Guidelines for the management of noise emitted by Hydro-Québec construction sites
32. Alberta Energy and Utilities Board (EUB) Interim Directive on Noise (ID99-8).
33. Ontario Guideline D1- Land Use Compatibility
34. Ontario Guideline D6 – Compatibility Between Industrial Facilities and Sensitive Land Uses
35. Guidelines for the evaluation of power transformers and shunt reactors sound power levels"
36. Ontario MOE Noise Pollution Control (NPC) Guidelines
37. Ontario MOE Guideline LU-131, Noise Control in Land Use Planning
38. Ontario MOE 4739e, Interpretation for applying MOE technical publications to wind turbine generators

3. DISCUSSION

The large number of standards referenced above illustrates how the field of environmental noise has increased in importance in recent years.

This exercise has revealed that there are a number of standards in common use in Canada which have not yet been officially adopted by the CSA. Future activities of the Environmental Noise Subcommittee would include reviewing those standards and, if appropriate, putting them forward for adoption. The CSA encourages the use of these standards by environmental professionals, industry and regulators across the country to increase and harmonize their application.

These standards and guidelines are routinely applied in obtaining regulatory approvals for industrial, energy production and power generation facilities. They are used in support of license applications for mines, pits, quarries, landfill sites and recycling facilities. In the area of municipal planning and land development they can be applied through the entire planning process from determining initial land use compatibility to site plan approvals.

Regulators and approval authorities are encouraged to use these standards to develop policies and guidelines related to environmental noise in their respective jurisdictions.

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AUTHOR NOTES

To date, the committee has representation and input from members in BC, Alberta, Ontario and Quebec, but none from Manitoba, Saskatchewan, the Maritimes or the north. Noise control equipment and instrumentation suppliers, regulatory agencies, transportation, power generation, gas transmission and consultants are represented.

Please contact the author for a listing of the committee members or if you are interested in participating.