

STANDARDIZATION ACTIVITIES AND CANADIAN PARTICIPATION IN ISO TC43 'ACOUSTICS' AND ISO TC43/SC1 'NOISE'

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1. INTRODUCTION

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade. The scope of Technical Committee (TC) 43 of the International Organization for Standardization (ISO) includes methods of measuring acoustical phenomena, and all aspects of their effects on humans and the environment. Specification of acoustic measuring instruments and their calibration procedures are the responsibilities of the International Electrotechnical Commission (IEC) TC 29. ISO TC 43 maintains a close liaison with IEC TC 29.

European Union (EU) directives concerning the safety of machinery, workers and the environment are establishing the priorities of ISO TC 43 and its two subcommittees (SC) for the preparation of joint ISO and European (CEN) standards. ISO TC 43/SC 1 'Noise' has been developing standards for measuring noise produced by diverse sources in diverse acoustical environments. Standards are also being developed for the assessment of effects of sound on humans. ISO TC 43/SC 2 'Building Acoustics' is engaged in standardization activities relating to architectural acoustics, building construction and sound propagation in buildings. The standardization activities relating to human hearing are carried out under the main committee TC 43. The major objective of ISO TC 43 and its subcommittees is international harmonization of methods for measuring noise and human hearing assessment. This provides a strong basis for noise reduction measures in products, buildings and the environment as well as for hearing conservation.

2. ACTIVITIES OF WORKING GROUPS

The priorities of ISO TC 43/SC 1 currently include the development of new or revised standards for machinery noise, transportation noise, environmental noise and hearing protectors. EU Directives require noise emission declarations by machinery manufacturers as well as sound power level limits for some outdoor equipment. Standards for the measurement of sound power level and emission sound pressure levels at workstations are being revised to better meet these regulatory requirements. Working Group 28 (WG 28) is currently involved in the revision of ISO 3740-3747, a series of standards on determination of sound power levels of noise sources using sound pressure

measurements. A new work item has been proposed by the working group to revise the ISO 11200 to ISO 11205 series of standards on noise emitted by machinery and equipment for the determination of emission sound pressure levels at work stations of industrial machinery. Revisions to the standards within this series are intended to make them consistent with each other and make them user friendly by incorporating the recent developments in measurement methods and instrumentation technology. Measurement uncertainties of the ISO 11200 series standards on emission sound pressure level measurements meet engineering and survey grades of accuracy. Measurement methods described in the 3740 series of standards also include precision grade accuracy. WG 25 has recently completed the development of a three-part series on determination of sound power levels of noise sources using sound intensity measurements. Using this technique, sound power can be determined in any acoustic environment without the requirement of costly special facilities. Three experts from Canada are participating in WG 28 and WG 25.

WG 45 is concerned with the revision of a two part series of standards ISO 1996-1 and ISO 1996-2. Their common title is 'Description, measurement and assessment of environmental noise.' Part 1 is called 'Basic quantities and assessment procedures' and Part 2 is called 'Determination of environmental noise levels.' These standards provide guidance on standardized measurement and calculation procedures and rating methods for environmental noise. This provides a basis for legislative bodies to set limits on allowable noise levels, develop criteria for land use planning and set specifications for mitigation. Canada has one member in the working group.

Working groups 33, 38, 39, and 42 are involved in developing standards on road traffic noise, mostly related to automobiles. The activities of the first three working groups include measurement methods for comparing traffic noise on different road surfaces, sound absorption properties of road surfaces and pavement surface profiling. WG 42 is concerned with the characterization of exterior vehicle noise under realistic driving conditions. Another activity of this working group is the development of methods for testing muffler performance on the roadside. Although these standards are of sufficient importance to

Canada, it has been challenging to find Canadian experts willing to participate in the working group.

WG 17 is developing standards on hearing protectors. The characterization of hearing protectors in a way that reflects their performance during actual use is crucial to hearing conservation for workers in a noisy environment. The activities of this working group include the development of measurement methods for insertion loss, sound attenuation characteristics, and active noise reduction. There is one Canadian expert serving on the working group.

SC1 is also involved in the development of standards relating to the spatial distribution of sound in workrooms, noise control in offices, silencers and noise in enclosures and cabins.

There are currently three active working groups on 'hearing' under the main committee TC 43. The activities of these working groups relate to definition of normal hearing, measurement of main hearing functions, calibration and proper use of audiometers and acoustical characteristics of hearing aids. WG 1 is concerned with the threshold of hearing, WG 6 is developing a standard on noise emissions from sound sources placed at the ears, and WG 7 is defining loudness scaling by means of categories. Canadian participation is provided through the recent appointment of two new members to the three working groups.

3. OPERATIONAL PROCEDURES

Development of a new standard by ISO TC 43 and its subcommittees is considered after a new work item proposal by a member body at the plenary meeting. For a new work item to be registered, it should have the support of at least five other member bodies that are willing to nominate experts to the working group. At this point a convener is nominated and he/she is required to come up with a working draft within 6 months of the formal registration of the work item. Normally working group meetings are held once or twice a year and, in the interim, most of the drafting is conducted through correspondence by e-mails. Within 18 months of registration, the convener is responsible for coming up with the first committee draft (CD) for comments by the subcommittee's member bodies. The working group normally prepares two or three committee drafts before bringing it to the stage of the draft international standard (DIS). The DIS is to be submitted by the working group for comments and voting by the member bodies within 24 months of registration. The document should receive at least 75% approval from the member bodies to proceed to the next stage. If the DIS is approved, a final draft international standard, (FDIS), is prepared, incorporating the comments and suggestions from the member bodies. The FDIS should be voted on to become an ISO standard within 36 months of registration. Again, this document is required to receive approval by 75% of the

votes cast by member bodies to become an ISO standard. The work item will be cancelled if, at any stage, the document is unable to proceed to the next stage. If the target dates are not met, cancellation will occur if the document is not finalized within 7 years.

4. CANADIAN PARTICIPATION

Canada is actively participating in several of the ISO TC 43 and TC 43/SC1 working groups. Health Canada's research programs on the measurement of emission sound pressure level and sound power level are providing input to the development of basic machinery noise emission standards. The National Research Council of Canada through its active research programs in several areas of acoustics has provided substantial input to the development of ISO standards. CSA is adopting and endorsing many ISO standards. A proposed CSA standard 'Noise emission declarations for machinery' is based on several ISO documents on noise emission and sound power standards. The CSA standard provides information to manufacturers, purchasers and importers/exporters on noise data that should be supplied with new machinery.

For several working groups, it has been difficult to find suitable experts who are willing to participate and have access to travel funds. Experts are needed in many areas that include transportation noise, environmental noise and hearing.