The Canadian Acoustical Association
L'Association canadienne d'acoustique

Joint Standards Meeting

CSA Occupational Noise Technical Committee and CAA Acoustical Standards Committee

Laurel Point Inn, Victoria BC
5:00-10:00 pm October 13, 2010

Minutes of Meeting

This was the second joint meeting of the CSA Technical Committee on Occupational Hearing Conservation S304 and the CAA Acoustical Standards Committee. The first was held in the spring at CSA headquarters.

This meeting continues a tradition since the forming of the CAA of having standards meetings as part of Acoustics Week in Canada. The CSA meeting was an informal review, rather than a formal meeting, although it is hoped that at future joint meetings both committees will hold full meetings.

Now that the CAA has a Standards Committee the intent is to publish the minutes in Canadian Acoustics. While the reading may be dry, many members will likely find information on current activities within their specialties around Canada and around the world.

Present:

Tim Kelsall	Hatch	tkelsall@hatch.ca	CSA (vice chair)	CAA (chair)
Tony Brammer	Enviro-Health Solutions	Anthonybrammer@hotmail.com	CSA	CAA
David Quirt	Chair	dave.quirt@nrc.gc.ca	CSA	CAA
Rob Joswlak	Aercoustics	robj@aercoustics.com		CAA
Werner Richarz	Aercoustics	Werner@aercoustics.com		CAA
Christian Giguère	University of Ottawa	cgiguere@uottawa.ca	CSA	CAA
Lixue Wu	National Research Council	Lixue.wu@nrc.ca	CSA	CAA
Brian Howe	HGC Engineering	bhowe@hgcengineering.com	CSA	CAA
Sasha Brown	Worksafe BC	Sasha.Brown@worksafebc.com	CSA	
Stephen Keith (part time by phone)	Health Canada	Stephen_Keith@hc-sc.gc.ca	CSA	CAA
Stephen Bly (part time by phone)	Health Canada	S_Bly@hc-sc.gc.ca	CSA	CAA

Sponsorship: Hatch Associates gratefully contributed toward the cost of holding the joint meeting.

1. CSA Technical Committee On Occupational Hearing Conservation S304 (informal review meeting)

1.1 Update since last meeting

CSA Z107 has been disbanded, with the Occupational Hearing Loss Technical Committee taking over several standards and CAA taking over Z107.10.

1.2 SC 1 (S304.3) – Hearing Protection - Van Volsen

The chair is leaving – need new chair – several names were discussed. Subsequent to the meeting Alberto Behar has proposed that he step down as Committee Chair and take on chairmanship of the Hearing Protection Subcommittee. This proposal is now being taken up by CSA.

EPA 40 CFR Part 211 Product Noise Labelling Hearing Protection Devices; Proposed Rule (attached) was briefly discussed

1.3 SC 2 (S304.4) – Noise Exposure Assessment and Control - Tim Kelsall

New appendix for Z107.56 covers assessment of noise exposure for workers using headsets. Tim Kelsall put forward a draft (attached) which incorporated assessment of drivers in cabs using radios (because the signal to noise estimate used under headsets would also apply in this case). It was agreed that it was better to put the assessment of such workers in the main body of the standard and limit the appendix to headsets only. Tim Kelsall agreed to do this and circulate a final version to the subcommittee.

C/M G. (Joe) Principato, Assistant Project Manager, "K" Division Radio Renewal, RCMP/GRC has subsequently been asking how soon this appendix can be passed and the standard updated because of the need for the standard.

1.4 Z107.58 – Stephen Bly

Health Canada - Consumer and Clinical Radiation Protection Bureau (Acoustics) in August 2010 posted an announcement on the Health Canada website as follows:

Health Canada - Notice to Stakeholders

Subject: Noise from Machinery Intended for the Workplace

The purpose of this Notice is to further strengthen ongoing efforts to help reduce the number of workers per year who suffer hearing impairments, such as permanent hearing loss, resulting from exposure to occupational noise.

Across Canada, approximately 9,000 workers each year suffer from some form of hearing impairment, including tinnitus (ringing in the ears), due to an overexposure to occupational noise. Excessive occupational noise has additionally been shown to increase the risk of accidents within the workplace, when workers fail to hear warning sounds.

Health Canada recommends that machinery, intended for the workplace be sold, leased or imported into Canada, with accompanying standardized noise emission declarations in both the technical sales literature and the instructions for use.

The Canadian Standards Association's (CSA) Standard *Z107.58 Noise Emission Declarations for Machinery* is the National Standard for Canada. It provides manufacturers with a means to determine and to create noise emissions declarations for the machinery they produce. Noise emission declarations for machinery help to support noise reduction guidance provided by provincial authorities. These declarations enable purchasers to select machines that are compliant with their noise-level requirements, and affords them the opportunity to reduce the level of noise within their workplaces by helping them to purchase quieter machinery and plan noise controls.

The information contained in the CSA Standard *Z107.58* is intended to be consistent with: (i) the European Union (EU) Machinery Directive; (ii) the EU Directive 2003/10/EC on workplace noise; and (iii) numerous international standards supporting these EU Directives.

Comments pertaining to this notice should be directed to: ccrpb-pcrpcc@hc-sc.gc.ca

Stephen Bly asked the committee generally how they could publicize this announcement. There was a general discussion and several suggestions were made, including the need to involve the provincial ministries of labour,

workers compensation boards and safety associations, the CCOHS, etc. There was also the suggestion that 1 day course be provided across the country either in person or electronically.

1.5 SC 3 (S304.5) – Hearing Surveillance (Audiometry) - Christian Giguère

Reaffirmation of CSA Standard Z107.6 - Pure Tone Air Conduction Threshold Audiometry For Hearing Conservation was voted before Z107 disbanded.

A list of ANSI/ISO/IEC/OSHA standards overlapping with Z107.4 and Z107.6 was posted on the CSA website with the help of Dave Shanahan.

The relevance of CSA Standard Z107.4 – Pure Tone Air Conduction Audiometers for Hearing Conservation and for Screening is currently being analyzed against ANSI S3.6-2004 and ISO 60645-1, the main US and international standards on the technical specifications of audiometers. The main observations are:

(1) The mandatory paragraphs of Z107.4 seem fully redundant with ANSI S3.6-2004 and ISO 60645-1 or earlier versions of these standards.
(2) Two supplementary appendices within Z107.4 (A.2 on technician training and B on maintenance and calibration) are valuable and not usually found in audiometer standards like ANSI S3.6 or ISO 60645-1. However, the two appendices are mandatory (paragraphs 7.0 and 4.2) in other audiometric standard Z107.6. Therefore, the appendices are redundant.
(3) Updating Z107.4 will at best bring us to the level of specifications already contained in ANSI S3.6 or ISO 60645-1.
(4) It seems preferable to work at the level of ANSI or IEC if we feel a need for a change in the technical characteristics of audiometers. Our market may be too small to justify a Canadian-based standard for audiometer manufacturers to take notice.

Abandoning Z107.4 is therefore an option the subcommittee is currently considering. A recommendation to the Main CSA Committee on Hearing Conservation may follow before the next meeting in May 2011.

1.6 SC 4 (S304.6) – Vibration Exposure Assessment and Control - Tony Brammer

There was a discussion leading to agreement that if possible there be a section in the hearing conservation standard discussing occupational vibration exposure.

The subcommittee considers Whole-Body Vibration Exposure, and operates in parallel with the CAA subcommittee on Human Vibration, which is harmonized with the Canadian Advisory Committee on ISO/TC 108/SC 4 “Human Exposure to Mechanical Vibration and Shock”. The subcommittee continues to direct its efforts in support of the development of international standards. In this role, members of the subcommittee serve as conveners of two of the Working Groups (WG5 - Biodynamic Modeling, and WG8 - Vibrotactile Perception).

ISO/TC 108/SC 4 last met in London in September 2010 (see section 3.7 for the most significant developments at the London meeting).

A list of international standards prepared by ISO/TC 108/SC 4 is appended to the CAA report (see section 3.7).

1.7 SC 5 (S304.7) – HC Management - Jeffrey Goldberg (not attending)

The CAALL-OSH committee - representing OHS regulators from all jurisdictions across Canada - have decided to fund CSA Z1007 – Hearing Conservation Management Standard. They will provide the funds necessary to cover the costs of development, French translation, and publication. This funding demonstrates the support of the regulatory authorities for some of the objectives of the new Technical Committee.

It was agreed that among other things this standard should either amalgamate or at least point to all the standards, Canadian and International, which are encompassed by the Occupational Hearing Conservation Technical Committee.

2. Break to visit reception at Royal BC Museum and return to meal contributed by Hatch.

3. CAA Standards Committee Meeting

3.1 Items from CAA board

Next year's meeting will be in Quebec City in October 2011. The ICA will be held in Montreal, June 3-7, 2013.

The Standards Committee minutes will be published in Canadian Acoustics.

The committee chair will be invited to CAA board meetings (when Tim Kelsall ceases to be a director) to report each year.

Handling of Z107.10 and other potential standards (Cameron did not attend as he was at his son's wedding): It was agreed to re-label the standard as CSA S100. It was also agreed that charging for the standard might prove counter-productive. Instead we will look for sponsors.

3.2 Environmental Noise (B.H. for Bill Gastmeier) and Wind turbines – Brian Howe

The Ontario Ministry of Environment is starting to look at how sound propagation over water should be modelled and sought input in two meetings in Toronto.

3.3 CAC TC43 SC1, 2 – Stephen Keith

SCC Advisory committee for ISO TC43 and TC43/SC1

Current CAC membership

Alberto Behar (vice chair), Stephen Bly, John Bradley, Bill Gastmeier, Christian Giguère, Dalila Giusti, Stephen Keith (chair), Tim Kelsall, Emanuel Mouratidis, Colin Novak, Dave Quirt, Cameron Sherry, Jeremy Voix

New CAC members

Helen Ule: ISO532-x Loudness evaluation, ISO16254 Measurement of minimum noise emitted by road vehicles

ISO active working group memberships

Stephen Keith:
- TC43 Technical Advisory Panel
- ISO374x, ISO1120x Machinery noise emission
- ISO26101 Characterization of anechoic chambers
- ISO1996-x Environmental noise

Alberto Behar, Christian Giguère, Jeremie Voix:
- ISO4869 Hearing Protectors

Colin Novak, Helen Ule:
- ISO532-x Loudness evaluation
- ISO16254 Measurement of minimum noise emitted by road vehicles

2009 ISO Plenary meetings in Seoul, Korea

New working group activity

- New standard on "Measurement of minimum noise emitted by road vehicles"
- New standard on "Compatibility between indoor and outdoor testing of road vehicles"
- To be upgraded to full standard DTS 28961 "Acoustics – Statistical distribution of normal hearing thresholds under free-field listening conditions"
- Planned revision of ISO 226:2003 "Acoustics – Normal equal-loudness-level contours"
- Planned revision of ISO 389-7:2005 "Acoustics – Reference zero for the calibration of audiometric equipment – Part 7: Reference threshold of hearing under free-field and diffuse-field listening conditions"
- Planned revision of ISO 17201-2:2006 "Acoustics – Noise from shooting ranges - Part 2: Estimation of muzzle blast and projectile sound by calculation".

Next ISO Plenary meetings: London, England, April 2011

3.4 IEC – Lixue Wong

This report mainly summarizes the committee work of CSC/IEC/TC 29 since May 2010.

IEC Documents Revision

- IEC 62489-2 Ed.1: Electroacoustics - Audio-frequency induction loop systems for assisted hearing - Part 2: Methods of calculating and measuring the low-frequency magnetic field emissions from the loop for assessing conformity with guidelines on limits for human exposure (Close Date: 2010-12-10)
- IEC 61672-3Ed.2: Electroacoustics - Sound level meters - Part 3: Periodic tests (Close Date: 2011-02-28)
- IEC 61672-2: Electroacoustics - Sound level meters - Part 2: Pattern evaluation tests (Close Date: 2011-02-18)
- IEC 61672-1: Electroacoustics - Sound level meters - Part 1: Specifications (Close Date: 2011-02-18)
- IEC 62585: Electroacoustics - methods to determine corrections to obtain the free-field response of a sound level meter (Close Date: 2011-02-04)
- New Work Item Proposal on Hearing Instruments and Hearing Systems (Close Date: 2010-11-19)

Voting results

- IEC 60118-15 Ed.1: "Electroacoustics - Hearing aids - Part 15: Methods for characterising signal processing in hearing aids with a speech-like signal"
  Final Canadian Position - Support with Comments

Next IEC/TC29 meeting: London, England March 28 – April 1

3.5 Z107.10 / Editorial – Cameron Sherry

Cameron Sherry could not make the meeting as he was at his son's wedding. David Quirt agreed to act as vice chair for the Editorial Subcommittee.

3.6 Building Acoustics – David Quirt

This report presents an overview of immediate suggestions for Z107-10, together with updates on key standardization activity in ISO/TC43/SC2 and ASTM E33, the two standards committees of obvious relevance for Canada.

Building Acoustics in "document formerly known as CSA Z107-10":

Summaries for 13 ASTM standards were in CSA Z107-10, as published in 2006; eight of these have since been revised or reapproved and those entries should be updated in the next revision, at least to the extent of identifying the current version.

At least two other standards should be added to the document CSA Z107-10:

- ANSI S12.60-2002, "Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools". A draft entry for Z107-10 has been prepared.
- ANSI-ASTM E2638-2008, "Standard Test Method for Objective Measurement of the Speech Privacy of Closed Rooms". A draft entry for Z107-10 can easily be prepared, including reference to the related requirements for federal government buildings.

Issues in ISO/TC43/SC2:

Steady advance of the ISO standards beyond their ASTM counterparts invites serious consideration of eventually basing the noise control provisions in the National Building Code on ISO standards, but meanwhile they provide technical content for ASTM to use.

More members joining Canadian Advisory Committee to ISO/TC43/SC2 would be nice, but there has been no systematic recruiting. Voting by current members has been erratic. Those interested in participating in the building acoustics CAC are encouraged to contact Dave Quirt.

The ISO meetings in Seoul Korea in November 2009 brought advances in ISO drafts and added several useful new work items. Next meeting is in London in April, and JDQ will attend.

TC43/SC2/WG18/AHG3 is dealing with restructuring of the ISO 140 series of laboratory standards for airborne and impact sound insulation, to facilitate their use as the basis for product test standards and eliminate current inconsistencies among the parts. The new series (ISO 10140) has 5 parts (test codes for products, airborne transmission, impact transmission, measurement procedures, laboratory & equipment). The FDIS was approved and corresponding parts of ISO 140 have been withdrawn. Acceptance in North America, and/or harmonization with ASTM counterparts, remains contentious. After formal approval, these will become the standards for testing

products for noise control in buildings in Europe. To help Canadian exporters, these should be referenced in Z107.10 as part of the information about corresponding ASTM standards.

Several new work items are underway in TC43/SC2:

- Precision for measurement of airborne and impact noise transmission, under AHG2 of WG18. First draft has been accepted as ISO/CD 12999 and includes new round robin information to deal with precision of airborne and impact noise measurements in lab and field. It seems obvious that error estimates are an important part of specification, compliance, and codes, and ISO leads ASTM E33 in this, with strong support from PTB (Germany). Brad Gover (BNG) is the Canadian participant, with JDQ as alternate.
- Sound transmission through gaps and slits (pertinent for fire stops and for door or window seals): a new ad hoc group has been formed, but probably years away from CD.
- Revision of ISO 717 (ratings for sound transmission) is beginning; BNG has been nominated as a Canadian participant, with JDQ as alternate.
- Revision of field sound transmission standards (remaining parts of ISO 140) is beginning; JDQ is acting as formal Canadian participant (with others from NRC attending meetings so far). If the National Building Code changes from its current simplistic focus on the separating wall or floor assembly, then these standards (and their ASTM counterparts) will become the main focus foor noise control in buildings.

Issues in ASTM E33:

Members of our CAC have leading roles within ASTM Committee E33, which is responsible for standards in "Building and Environmental Acoustics". Most recent meeting was the first week of October 2010. Trevor Nightingale is Chair of Subcommittee E33.03 (responsible for all ASTM standards pertinent to sound transmission in buildings, and hence building codes). BNG is leading several task groups in E33.03 and Chair of Subcommittee E33.05, Research (currently dealing mainly with issues for microphone specification and for statements of precision & bias).

Current activity in ASTM E33 includes work on ASTM E336 (airborne sound transmission in field), ASTM E1007 (field, impact transmission) and others.

Activity to maintain and revise ASTM standards is presented on the ASTM website, and for building acoustics, this is at http://www.astm.org/COMMIT/SUBCOMMIT/E33.htm . For each current standard, there is a brief summary of significance and use, plus the scope, and an outline of the issues for any current revision.

3.7 Human Vibration – Tony Brammer

Members of the Canadian Advisory Committee are: Dr. Alberto Behar (ON), Dr. Paul-Emile Boileau (IRSST, QC), Dr. Anthony Brammer (Chairman), Dr. Tammy Eger (Laurentian University, ON), Dr. Ron House (St. Michael's Hospital, Toronto, ON), Mr. Ed Lehtinen (Impacto Protective Products, ON), Dr. Pierre Marcotte (IRSST, QC), Dr. Jim Morrison (Shearwater Human Engineering, BC), Dr. Subhash Rakheja (Concordia University, QC), Dr. Dan Robinson (Robinson Ergonomics, BC), Mr. Mike Robichaud (Chairman of CAC/ISO/TC 108), and Dr. Vic Schroter (MoE, ON). The subcommittee is looking for more members.

The subcommittee is harmonized with the Canadian Advisory Committee on ISO/TC 108/SC 4 "Human Exposure to Mechanical Vibration and Shock", and operates in parallel with SC4 of CSA Technical Committee on Occupational Hearing Conservation S304. The subcommittee continues to direct its efforts in support of the development of international standards. In this role, members of the subcommittee serve as conveners of two of the Working Groups (WG5 - Biodynamic Modeling, and WG8 - Vibrotactile Perception).

ISO/TC 108/SC 4 last met in London in September 2010. The most significant developments were:

(1) A decision to re-open the possibility of revising the omnibus standard on whole-body vibration (ISO 2631), and re-allocate the subject material so that all applications, e.g., comfort, health, and motion sickness are treated in separate parts of the standard, or Annexes. The "main" standard (Part 1) might therefore contain little more than frequency weightings.

(2) A decision to revise the standard on exposure to repeated shocks (ISO 2631-5) to change the biodynamic model used for estimating the effects of shocks on the spine. Two models are being proposed for the "z-direction" (i.e., along the axis of the spine): the first for shocks of magnitude up to about 20 $m.s^{-2}$, for use in assessing occupational exposures in industry, and a second model for larger shocks such as encountered in military vehicles and fast boats.

(3) A decision to revise the standard on hand-transmitted vibration (ISO 5349-1) to include a frequency weighting specifically to assess the potential of vibration at different frequencies to precipitate vascular and neuro-sensory symptoms in the hands ("vibration-induced white finger" - VWF). In a related development, members of the CAA subcommittee are organizing a workshop on the suitability of the existing ISO frequency weighting for assessing the risk of VWF at the forthcoming International Conference on Hand-Arm Vibration to be held at

Ottawa in June 2011. It is expected that the outcome of the workshop on the need for a second frequency weighting and, if appropriate, a proposed weighting function will have a large influence on the acceptance of such a change being accepted for the international standard.

(4) A decision to revise the standard that describes the biodynamic response of the hand to vibration (ISO 10068). The revision will include estimates of the frequency dependency of vibration that produces equal energy absorption in substructures of the hand (e.g., fingers, palm, wrist), and can be used to predict a frequency weighting for injury in the fingers. This frequency weighting is an important source of information for the revision of ISO 5349 (see 3, above).

List of International Standards prepared by ISO/TC 108/SC 4

- ISO 2631-1:1997 Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements
- ISO 2631-2:2003 Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 2: Vibration in buildings (1 Hz to 80 Hz)
- ISO 2631-4:2001 Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 4: Guidelines for the evaluation of the effects of vibration and rotational motion on passenger and crew comfort in fixed-guideway transport systems
- ISO 2631-5:2004 Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 5: Method for evaluation of vibration containing multiple shocks
- ISO 5805:1997 Mechanical vibration and shock — Human exposure — Vocabulary
- ISO 5982:2001 Mechanical vibration and shock — Range of idealized values to characterize seated-body biodynamic response under vertical vibration
- ISO 6897:1984 Guidelines for the evaluation of the response of occupants of fixed structures, especially buildings and off-shore structures, to low frequency horizontal motion (0,063 to 1 Hz)
- ISO 8727:1997 Mechanical vibration and shock — Human exposure — Biodynamic coordinate systems
- ISO 9996:1996 Mechanical vibration and shock — Disturbance to human activity and performance — Classification
- ISO 10227:1996 Human/human surrogate impact (single shock) testing and evaluation -Guidance on technical aspects
- ISO 10326-1:1992 Mechanical vibration — Laboratory method for evaluating vehicle seat vibration — Part 1: Basic requirements
- ISO 10326-2:2001 Mechanical vibration — Laboratory method for evaluating vehicle seat vibration — Part 2: Application to railway vehicles
- ISO 13090-1:1998 Mechanical vibration and shock — Guidance on safety aspects of tests and experiments with people — Part 1: Exposure to whole-body mechanical vibration and repeated shock

Future event: In June 2011 there will be a Human Vibration meeting in Ottawa.

3.8 Loudness Evaluation – Colin Novak

No report

3.9 CSA Z94.2 – Alberto Behar

See CSA section 1.1 above

3.10 New Business

3.11 Next Meeting and Adjournment

It was suggested that the standards meeting be held just before the CAA board meeting in the spring, preferably sequentially.

The next meeting will be held in the Spring in conjunction with the CSA TC meeting.