

WHO International EMF Project
19th meeting of the International Advisory Committee
Geneva, May 4– 6, 2015



**Standardization Activities of the
„International Committee on
Electromagnetic Safety“ (ICES)
in the IEEE**

Ralf Bodemann
Chairman IEEE-ICES




International Committee on Electromagnetic Safety (ICES)

Scope

“Development of standards for the **safe use** of electromagnetic energy in the range of 0 Hz to 300 GHz relative to the potential hazards of exposure of humans, volatile materials, and explosive devices to such energy. Such standards will be based on **established effects** and will include safety levels for human exposure to electric, magnetic and electromagnetic fields, including induced currents from such fields, methods for the assessment of human exposure to such fields, standards for products that emit electromagnetic energy by design or as a by-product of their operation, and environmental limits.”

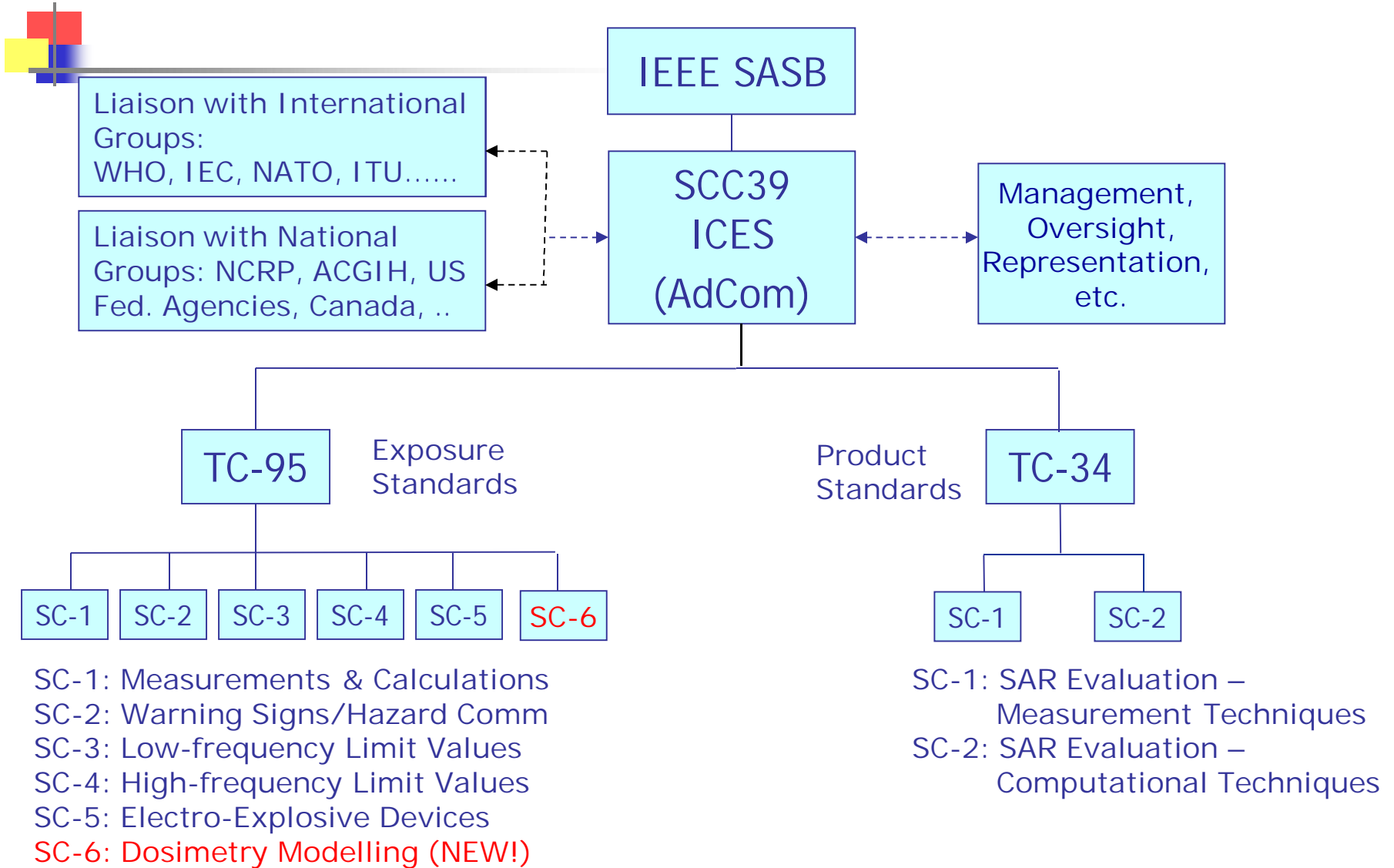
What procedures does ICES follow?

- 
- Stakeholders included
 - WG/SCs Open to everybody
 - 124 members from 25 different countries (TC95)
 - Open and transparent procedures— (P&P's approved by IEEE SA Standards Board)
 - Consensus criteria for ballots:
 - > 75% ballot return
 - > 75% approval rate [=Yes/(Yes+No's)] (after comment resolution)
 - < 30% abstention rate

New Names In The AdCom

- New TC34 Chairman: Jafar Keshvari
- New Membership Chairman: B. Jon Klauenberg
- New SC-6 Chairman: Akimasa Hirata
- New member-at-large: J. Patrick Reilly
- Officers who turned to members-at-large:
 - Wolfgang Kainz
 - Michael Murphy

Organization of ICES





SC-6 (Dosimetry Modeling with Application to Safety Standards for Human Exposure)

- SC Chairman: Prof. Akimasa Hirata, Nagoya Institute (JP)
- Issue: Little to no experimental data exists for nerve activation for external field exposure
- Most difficult and urgent tasks are low-frequency dosimetry (not RF)
- SC-6 Membership: ~25 experts at present, many of whom have not been involved with ICES (or IEEE)
- Workshop “Current status of LF dosimetry modeling” in advance of BioEM2015 (Monterey, CA, 14th June 2015)
- **SC-6 will support standards activities but will not develop standards**

New ICES standards in 2013/2014

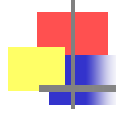
- IEEE C95.1-2345-2014: IEEE Standard for Military Workplaces – Force Health Protection Regarding Personnel Exposure to Electric, Magnetic and Electromagnetic Fields, 0 Hz to 300 GHz. (Approved 16 May, published 30 May, ratified by Estonia, UK, Luxemburg, Latvia, soon by USA, ratification deadline 26 Sep)*
- IEEE C95.7-2014: IEEE Recommended Practice for Radiofrequency Safety Programs, 3 kHz to 300 GHz. (Revision of IEEE C95-7-2005; approved 12 June 2014, published 8 August 2014)
- IEEE 1528-2013: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques. (Revision of IEEE 1528-2003; approved 14 June 2013, published 6 September 2013)

* Under an agreement between IEEE and the NATO Standardization Agency, this standard will replace NATO STANAG 2345 MED (EDITION 3) – “Evaluation and Control Of Personnel Exposure To Radio Frequency Fields – 3 kHz to 300 GHz”



ICES Standards

Still Publicly Available at no Cost!



The following Standards can be downloaded for AT NO COST from the IEEE website: *

- IEEE C95.1TM-2005 (safety levels: 3 kHz – 300 GHz)
- IEEE C95.1aTM-2010 (amendment to C95.1-2005)
- IEEE C95.1TM-2345-2014 (military workplaces)
- IEEE C95.3TM-2002 (measurements: 100 kHz – 300 GHz)
- IEEE C95.3.1TM-2010 (measurements: 0 Hz – 100 kHz)
- IEEE C95.6TM-2002 (safety levels: 0 Hz – 3 kHz)
- IEEE C95.7TM-2014 (RF safety programs)

***<http://standards.ieee.org/about/get/index.html#getC95>**

(funded by the US Air Force, US Navy, and US Army)



ICES TC95: Ongoing Activities

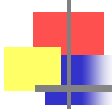
PC95.3-200X: Draft Recommended Practice for Measurements and Computations of Electric, Magnetic and Electro-magnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz. (Revision of C95.3-2002—will incorporate C95.3.1-2010)

PC95.1-200X: Draft Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic and Electromagnetic Fields, 0 Hz to 300 GHz. (Revision and merging of C95.1-2005 and C95.6-2002)

C95.4-2002: IEEE Recommended Practice for Determining Safe Distances from Radio Frequency Transmitting Antennas When Using Electric Blasting Caps During Explosive Operations. (Reaffirmed 2008. Expiration date – 12/31/18. Subcommittee 5 now being reorganized – expansion of scope under consideration.)



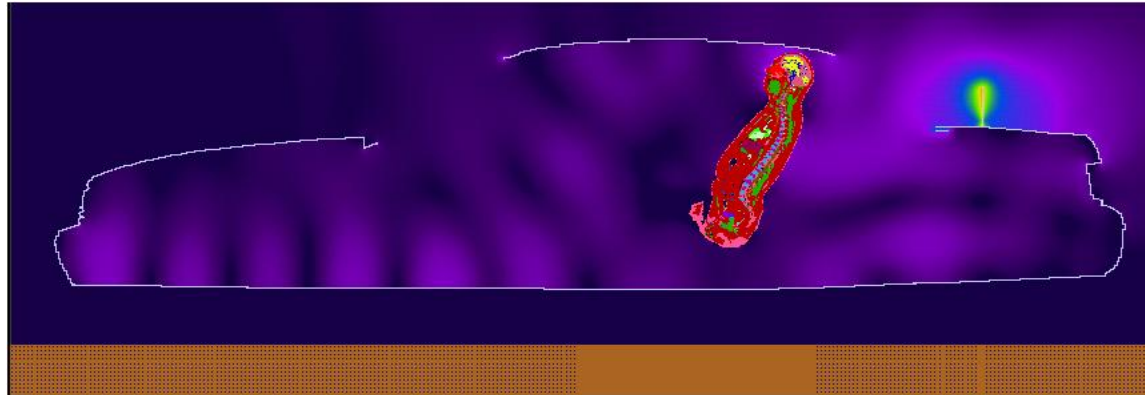
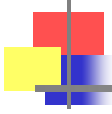
ICES TC34/IEC TC106 Jointly Developed Standards Projects



- P62704-1 "Peak-SAR: General Requirements for using the Finite Difference Time Domain (FDTD) Method for SAR Calculations "
(CDV will be sent out for voting by June 2015)
- P62704-2 "Peak-SAR: Specific Requirements for Finite Difference Time Domain (FDTD) Modeling of Vehicle Mounted Antenna Configurations "
(CDV will be sent out for voting by June 2015)
- P62704-3 "Peak-SAR: Specific Requirements for Finite Difference Time Domain (FDTD) Modeling of Mobile Phones/Personal Wireless Devices "
(Estimated date for CDV is autumn 2016)
- P62704-4: "Peak Spatial Average Specific Absorption Rate (SAR) in the Human Body from Wireless Communications Devices, 30 MHz - 6 GHz: Requirements for Using the Finite-Element Method for SAR Calculations, specifically involving Vehicle Mounted Antennas and Personal Wireless Devices (Estimated date for CDV is autumn 2016)



Exposure Scenarios for Vehicle Mounted Antennas



New IEEE-IEC Liaison on Guide Document

**IEEE-ICES supports new team established in IEC to work on:
” Guide for scientific framework and requirements in
developing EMF compliance assessment standards”**

**Harmonization of EMF compliance assessment standards by
having a common understanding and agreement of the
scientific principals in which the foundation of an EMF
assessment standard is built on.**

Liaison collaboration with ITU is sought.



Next ICES Meeting

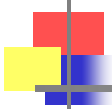
June 11 - 13, 2015
Pacific Grove, California

in conjunction with the
BioEM 2015 Conference



Check Out Our Relaunch Website:

www.ices-emfsafety.org

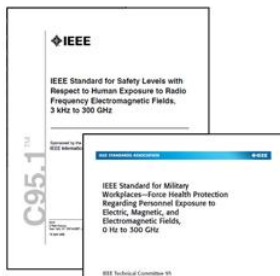


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Understanding Electromagnetic Safety



News



Next Meeting





Thank You!

