ATTACHMENT 19

IEEE / ICES

Report on TC95 / SC3&4 Combined Meeting

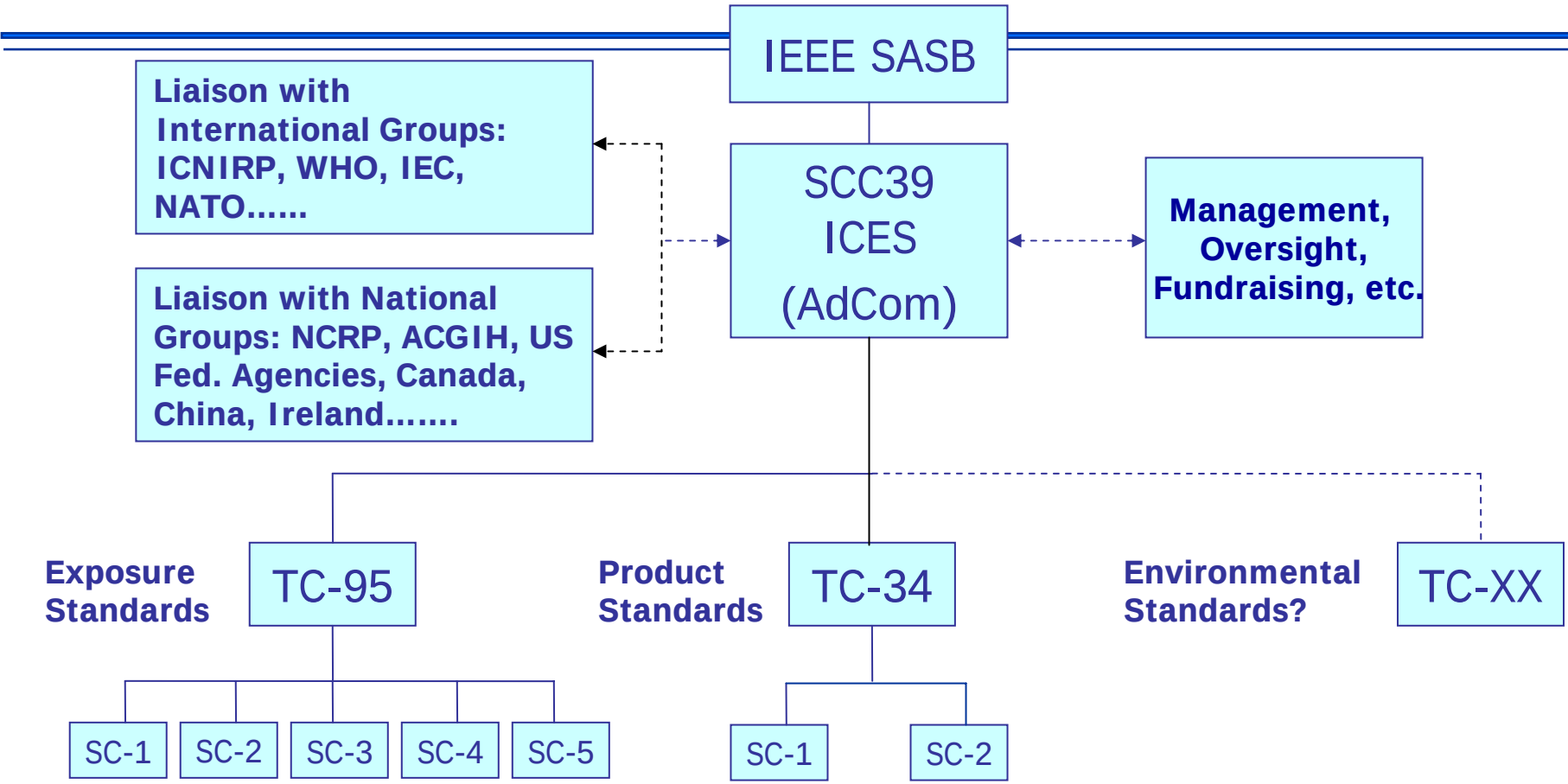
A. Thansandote

Sunstar Parkhotel, Davos, Switzerland, June 21, 2008

ICES/TC95/SC3&4 Meeting, June 20, 2009

- Meeting chaired by Marv Ziskin
- About 25 members and guests attended
- David Black kindly accepted the chair‘s request to take meeting minutes

ICES as the Focal Point in the Global Program for EME Safety Standards



SC-1: Measurements & Calculations
SC-2: Warning Signs/Hazard Comm
SC-3: 0-3 kHz
SC-4: 3 kHz - 300 GHz
SC-5: EEDs

SC-1: SAR Evaluation – Measurement Techniques
SC-2: SAR Evaluation – Computational Techniques

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TC95 / SC3&4

Subcomittee 3

- Co-chairs: Phil Chadwick and Thanh Dovan
- Task: Develop an exposure standard C95.6 - Safety Levels w.r.t. Human Exposure to EMFs, 0 to 3 kHz.

Subcomittee 4

- Co-chairs: Marv Ziskin and Art Thansandote
- Task: Development of Standard C95.1 - Safety Levels w.r.t. Human Exposure to RF EMFs, 3 kHz to 300 GHz.

IEEE Human Safety Standards History

1960: USASI C95 Radiation Hazards Project and Committee chartered

1966: USAS C95.1-1966

- 10 mW/cm^2 (10 MHz to 100 GHz)
- based on simple thermal model

1974: ANSI C95.1-1974 (limits for E^2 and H^2)

1982: ANSI C95.1-1982 (incorporates dosimetry)

1991: IEEE C95.1-1991 (two tiers – reaffirmed 1997)

2002: IEEE C95.6-2002 (0-3 kHz)

2006: IEEE C95.1-2005 published on April 19, 2006 (comprehensive revision, 250 pages, 1143 ref.)

ICES TC95/SC3&4 Standards: Status

- **C95.1-2005: (Safety levels, 3 kHz – 300 GHz)**
  - **Approved 2005; published 2006**
  - **Will be combined with C95.6 to cover 0 Hz to 300 GHz**
- **C95.6-2002: (Safety levels, 0 - 3 kHz)**
  - **Reaffirmed 2007**
- **PC95.1a: (Safety levels, 3 kHz – 300 GHz)**
  - **Amendment 1 (sets ceiling values for induced & contact current)**
  - **Now in ballot**

TC95/SC3&4 Meeting Report

- Legislation Situation in Malaysia by Vany Muthuvelu
  - Draft exposure standards: part 1 (up to 3 kHz) and part 2 (3 kHz – 300 GHz), based on ICNIRP guidelines, completed.
  - Precautionary measures adopted to manage any perceived health risks.
- Draft Australian ELF exposure standard by Vitas Anderson
  - Basic restrictions are based on internal E fields, similar to C95.6; field strength limits are somewhat more stringent.
  - Status: under approval process.
- Update on ICNIRP standards by A Thansandote
  - Guidelines on static fields published in April 2009
  - Guidelines on low frequency fields (1Hz – 100 kHz) will soon be posted at www.icnirp.org for general consultation
  - ICES will form a taskforce to review and comment.

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Status of NATO/IEEE STANAG

- **An agreement between IEEE Standards Association and NATO Standardization Agency was signed in Brussels on May 14, 2009**
  - **Assign responsibility for transfer, conversion and maintenance of NATO EMF exposure standard STANAG 2345 to IEEE-ICES.**
  - **ICES was chosen because of its open consensus process and ability to set limit values in their standards.**

1. **Ron Petersen, ICES secretary**
2. **Ralf Bodemann, ICES chairman**
3. **Susan Tatiner, IEEE SA Director**

B Jon Klauenberg, ICES member, led the effort.

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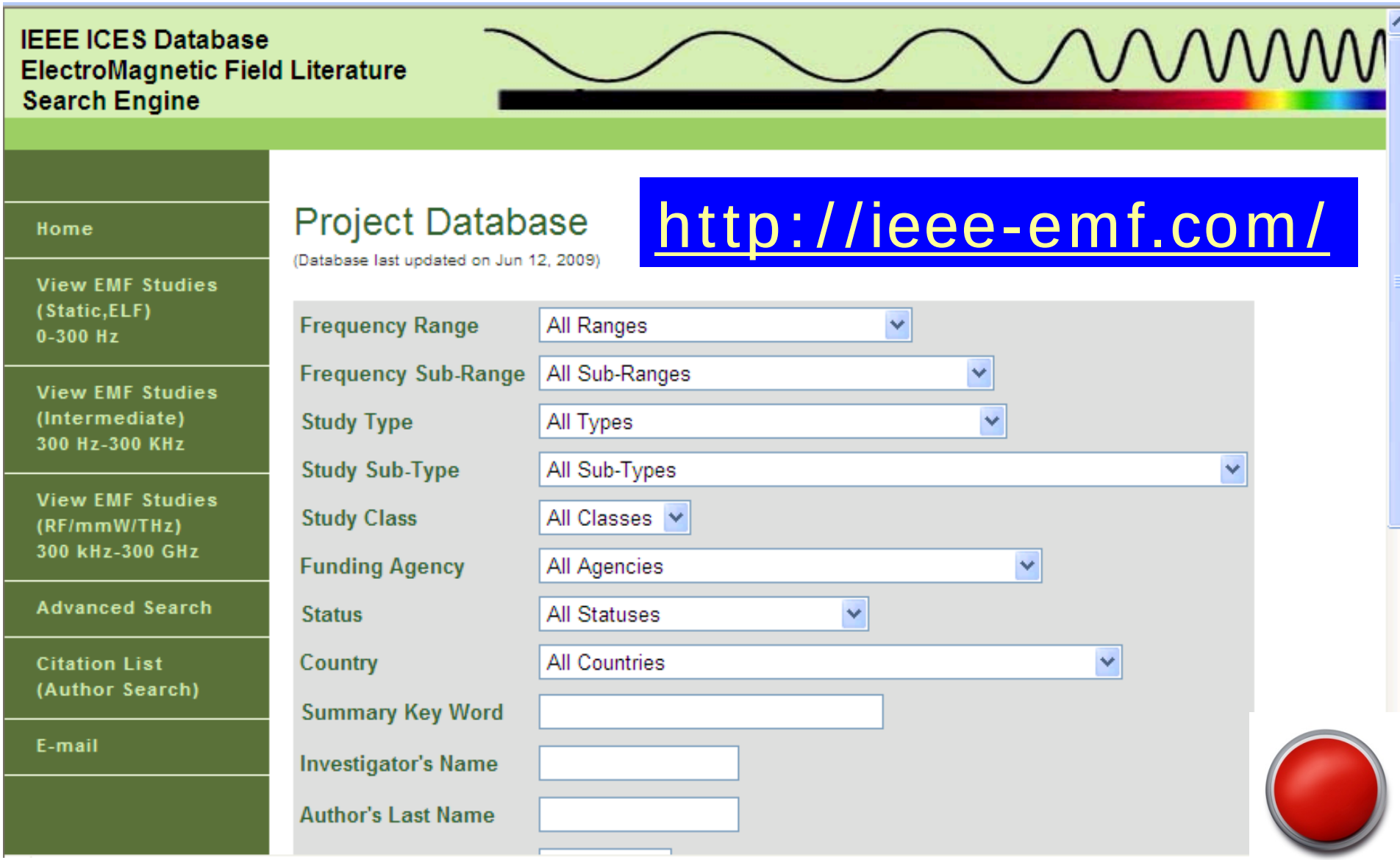
Issues on Merging of C95.1 and C95.6

- **C-K Chou appointed as Chairman of Editorial Committee.**

- **C95.1 and C95.6 text comparison was discussed. Differences in the descriptions and terminologies were tabulated and should be addressed. For example,**
  - **C95.6 basic restriction lower tier – general public.**
  - **C95.1 basic restriction lower tier – action level.**

- **Editorial Committee will soon meet to discuss the process and begin to work on the merging.**

Literature Surveillance (J. Morrisey)



Literature Surveillance (J. Morrisey)

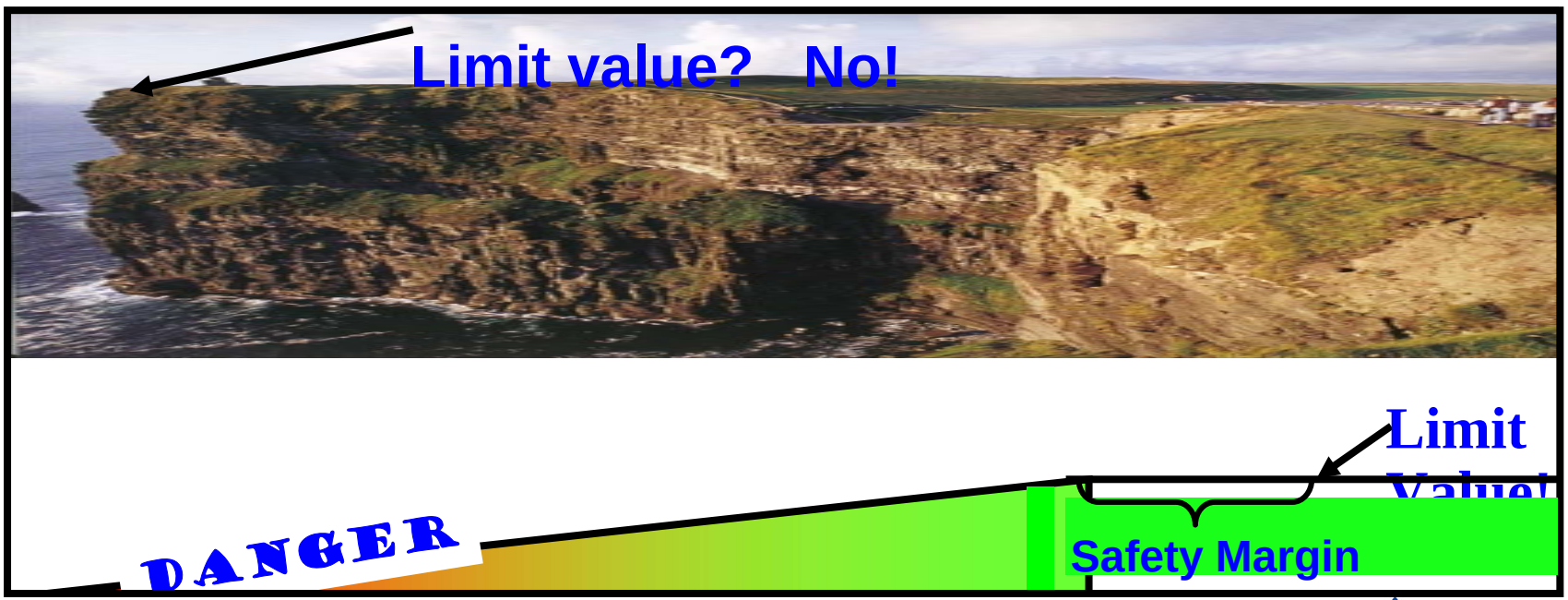
Study Type	RF ALL	RF 2003+
Epidemiology	332	149
Human	270	166
Animal	913	202
In Vitro	517	169
Total	2032	686

Next Step: Detailed Task Force Review

- epidemiology **Erdreich, Krewski, Elwood**
- **epi exposure assess Malanjyc**
- human studies **van Rongren, Croft, Black**
  in vivo studies
- **animal cancer bioassays Elder , Bushberg, McCormick**
- **animal behav brain bchm D'Andrea**
- **aud path / MW hearing Chou**
- **teratogenicity / reprod Ziskin, Elder, McCormick**
- **time-temp thresholds Dewhirst**
- **BBB Elder**
- **Immune function ????**
- **Hormone changes ????**
- *in vitro* studies **Morrissey, McNamee, *Leszczynski***
- **membrane, Ca++ signaling Haberland**
- **mechanisms Haberland**

General Discussion

- Standards shall be science-based and should be realistic.
- Standards should be conservative.
- Add a section to the rationale that there is no cliff; however, if exposure limits are exceeded, health risks will be increasing.



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Next Meeting

TC95/SC3&4 Summer Meeting 2010

- Parcipants voted to recommend AdCom to consider holding the next summer meeting in Seoul, Korea, before or after the BEMS Annual Meeting, June 2010.