



**INTERNATIONAL
COMMITTEE *on*
ELECTROMAGNETIC
SAFETY**

**SUBCOMMITTEE 3
SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE, 0 to 3 kHz**

**22nd Meeting – Jean-Paul Lemieux Room
Loews le Concorde Hotel
1225 Cours du General-De Montcalm
Quebec City, PQ G1R 4W6
Friday, June 28, 2002**

MEETING MINUTES

Members Present

Kent Jaffa, (Chair)
Eleanor Adair
Dr. Franz Adlkofer
David Baron
David Black
Ralf Bodemann
John D'Andrea
John DeFrank
Om Gandhi
Ken Gettman
Kelly Gibney
Donald Haes, Jr.
Wayne Hammer

Michael Herz
Roy Hubbard
Veronica Ivans
Linda de Jager
James King
Niels Kuster
Patrick Mason
Robert McCourt
Tom McManus
James McNamee
Robert Needy
John Osephchuk

Ronald Peterson
J. Patrick Reilly
Ervin Root
Asher Sheppard
Carl Sutton
Mays Swicord
Richard Tell
Art Thansandote
Eric van Rongen
Arthur Varanelli
Femme-Michelle Wagenaar
Marvin Ziskin

Members – Excused Absences

J. Robert Ashley
William H. Bailey
John Bergeron
Charles Boeggeman
Aviva Brecher
Jim Daly

Thanh Dovan
Georges Goldberg
Martin Hernandez
Louis Heynick
Daniel Hicks
Joe Koepfinger

John Leonwich
Steve Pittman
Lee Rosen
Dave Sawdon
Louis Williams, Jr.
Don Zipse

Members Absent (consecutive unexcused absences)

Robert Carberry (2)
Roger Coghill (1)
Robert Curtis (2)
Steinar Dale (1)
Dr. Gregor Dürrenberger (2)
David Fichtenberg (1)
Peter Gajšek (2)

Greg Gorsuch (2)
W. Gregory Lotz (1)
Michael Murphy (1)
William Paul (1)
Robert Podhrasky (1)
Brad Roberts (1)

Theodoros Samaras (1)
Jon Sirugo (1)
Vijayalaxmi (2)
Cleveland Watkins (1)
Richard Woods (1)
John Ziriak (2)

Guests Present

Edward Aslan	NARDA, USA
Pascale Belier *	Canadian Radiation Protection Bureau
Philip Chadwick *	MCL, UK
Kazuhiko Chikamoto	Japan NUS Con Ltd.
Jules Cohen	Consultant, USA
Abiy Desta	US FDA
Greg Gajda	Health Canada
Daniel Goulet *	TransEnergie, Canada
Sheila Johnston *	Neuroscience Consultant, UK
Janet Lathrop	Resource Strategies, Inc.
James Merritt *	Air Force Research laboratory, USA
Gregory Quan	BC Hydro, Canada
Walter Rogers	Veridian, USA
Santi Tefani	Ivzea Hospital, Italy
Kanako Wake	Communications Research Labs, Japan

* Requested membership on SC 3

1. CALL TO ORDER

The meeting was called to order by the Chair, Kent Jaffa, at 8:02 AM.

2. SELF INTRODUCTIONS & ATTENDANCE ROSTER

The Chair requested that all attendees introduce themselves and state their affiliation.

The SC 3 Membership Roster was circulated for members present to initial to indicate attendance at the meeting and to update their listing on the roster, particularly to make sure that their e-mail address was included and correct and to add their IEEE membership number and grade. Guests were requested to either provide a business card in the attached envelope or to provide mailing information on an attendance sheet that was circulated with the roster. Guests were also requested to indicate if they wished to become members of SC 3.

3. OPENING REMARKS

The Chair mentioned that Bob McCourt is filling in as secretary for Jim Daly at this meeting and assisting with the minutes, as Jim is unable to attend.

4. APPROVAL OF AGENDA

The Agenda was approved, see Attachment #1.

5. APPROVAL OF 1/18/02 MINUTES

The Minutes were approved as published.

6. CHAIRMAN'S REPORT

The Chair reported that IEEE had sent out the recirculation ballot last Monday to the parent committee's balloting group, but we requested that it be canceled until we could fix a typo in Figure 1. The figure has been corrected and the recirculation ballot will probably begin next week.

7. SECRETARY'S REPORT

7.1 MEMBERSHIP MATTERS

The attendance policy for continued membership in SC 3 was restated. Members will be removed from the roster after missing two (2) consecutive meetings unless an excused absence is requested. The reason(s) for absences from SC 3 meetings will be accepted by e-mail, phone, or in writing to the Secretary or the Chair. Before removing members, the Secretary will contact the individual and request, either by e-mail or in writing, their intentions for continued membership. If no response is received, the individual will be removed from the membership roster.

Seven members were removed from the membership roster since the last meeting for failure to comply with the attendance policy and not responding to the Secretary's e-mails.

Philip Chadwick
Linda Erdreich
Philip Hopkinson
Michel Israel

Dr. Sheila Johnston
Martin Meltz
Amitabha Mukhopadhyay

Ruth Douglas-Miller resigned from the Subcommittee and three members requested correspondence only status – John Bavin, William Feero, and Edward Yandek.

5 new members have been added since the last meeting:

Linda de Jager
Niels Kuster
Steve Pittman

Theodoros Samaras
Femme-Michelle Wagenaar

Philip Chadwick and Shiela Johnston requested re-instatement as members.

18 members requested an excused absence from the June 28th meeting as indicated above under Members Absent.

See Attachment #22 for the current SC 3 roster. Prior to this meeting there were 74 members of SC 3 plus 6 corresponding members.

8. ICES SCC-28 EXCOM REPORT

The Chair of ICES SCC 28 reported on the activities of the parent committee. They have been holding discussions with IEEE regarding fund raising. They have also been working to increase the visibility of ICES, including increasing the non-US membership. ICES participated in a WHO sponsored meeting on thermal effects and is planning a joint workshop with ICNIRP next spring on thermal physiology in Dublin, Ireland, in conjunction with COST281 meetings.

9. STATUS of C95.6 BALLOT

The Chair reported on the successful ballot of the proposed C95.6 standard. 92% of the ballots were returned with a 90% approval. The chair expressed appreciation to committee members for their help in developing a proposed standard that was well received by the balloting group. A special acknowledgement of Pat Reilly's major contributions was made.

This standard advances the scientific basis of standards by relying on the *in situ* electric field instead of internal current density, utilizes tissue/mechanism-specific basic restrictions, and relies on median adverse effect levels and probability factors to determine the 1% level. It utilizes an ellipsoid model that is superior to ICNIRP's loop model. The rationale of the standard is very explicit. We also believe that our 20 Hz transition frequency for synaptic activity is superior to ICNIRP's transition frequency of 1000 Hz. Thus, it is expected that this standard will provide a model for other standard bodies by introducing these scientific advancements.

The Chair reported that a report will be included with the recirculation ballot containing all of the ballot comments and the response to each comment. Each member of the balloting group will be given an opportunity to see all of the comments, the revised C95.6, and an opportunity to change their ballot if they so desire. The goal is to get the recirculation ballot done as soon as possible so that the standard can be submitted in time for the Standards Board to approve at their September meeting.

The Chair then gave an overview of the negative ballots and the affirmative comments that were received and the responses to each. The overheads are contained in Attachment #3. The actual report contains the specific details on the negative ballots and the affirmative comments, which was recently sent to members. Members were in general agreement with the responses.

As part of the discussion, Dr. Adlkofer reported the findings of a REFLEX project that found DNA strand breaks in fibroblast cells at exposures as low as 70 μ T. A brief discussion followed on these

results pertaining to the meaning of the on/off exposures for which these effects were reported and the use of the Comet assay. Dr. Adlkofer provided a copy of the paper that will be published soon in *Mutation Research*. Members were asked to review the paper in the context of standards setting. See Attachment #4 (This paper is copyrighted and should only be used for Subcommittee review).

10. TOPICS TO BE INCLUDED IN THE APPLICATION GUIDE

A task force will be formed to begin work on an application guide. Members suggested that the guide include discussions on unique exposure situations where there are complex exposures of multiple frequencies or non-uniform exposures. Members suggested exposure situations that might provide examples for the application guide (military shaking tables, AC/DC rectifiers, electric railroads, etc.) The application guide will discuss contact currents as well as electric and magnetic field exposures. Members felt that some guidance should be included on measurement techniques. Howard Basen mentioned that we should rely on the SC1 1460 standard on quasi-static fields. The guide should also provide some guidance on the size of the measurement probe and where measurements should be taken. The guide will discuss exposures to humans and will not include any product guidelines as this is SCC-34's responsibility. Howard Basen mentioned that ICNIRP is developing an application guide for their guidelines and we should harmonize with it as much as possible. Howard will check with ICNIRP and see if he can provide us with a copy of the ICNIRP draft application guide for our consideration.

The following people expressed interest in being members of the task force for the application guide: Dave Baron, Ralf Bodemann, Howard Basen, Ken Gettman, Ric Tell, Roy Hubbard, Art Varanelli, Om Gandhi, Pat Reilly and Kent Jaffa.

11. TASK GROUP REPORT ON LONG TERM EFFECTS STATEMENT

Ralf Bodemann reported on the progress that has been made on this activity and that some members of the task group are no longer members of SC3. Ralf also stated that a new chair of this task group should be appointed as his work situation has changed. Nevertheless, the committee would like this activity to continue. Eric van Rogen, Ralf Bodemann and Tom McManus will meet and make a recommendation to the chair on how to proceed.

12. UPDATE ON INTERNATIONAL STANDARDS ACTIVITY

Dr. McManus provided a brief review of various international developments since the San Antonio meeting in January 2002. The documents and initiatives referred to are listed in the tables in Attachment #56. Dr. McManus advised that he would help locate or provide further information on the items referenced in his overheads to ICES members and meeting attendees.

13. OTHER OLD BUSINESS

None

14. NEW BUSINESS

A discussion was held on whether or not SC3 should create a task force to extend C95.6 from 3 kHz to 100 kHz. Dr. Adair stated that the proper subcommittee for this work is SC4. Consequently, no task group was formed.

15. NEXT MEETING

The next meeting of SC3 and SCC-28 will most likely be held in Houston following the IEEE EBMS meeting. The date will probably be between 10/25 and 10/28. Dr. Adair also polled members to see what meeting location they could attend for the May/June meeting. The choices included meeting in conjunction with 1) COST281 and the joint ICES/INCIRP Thermal Workshop in Dublin, Ireland about May 17, 2) with BEMS in Maui, Hawaii, or 3) with BEMS in Maui including a one day symposium in Dublin on ICES. Members indicated a similar preference for each option and the EXCOM will consider this in their decision. (Note: At the parent committee meeting, they decided that the main ICES meeting would be held in conjunction with BEMS in Maui, Hawaii. ICES meetings will most likely precede the BEMS meeting that will be held on June 22-26, 2003. ICES will consider holding a one-day symposium on IEEE in Dublin similar to what was done last fall in Europe.)

16. ADJOURNMENT – The Chair adjourned the meeting at 11:35 AM.

Respectfully submitted,

Jim Daly

Jim Daly, Secretary
Subcommittee 3 of IEEE/ICES SCC 28

Attachments No. 1 through 5