



**COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION**

<http://www.cie.co.at>

Central Bureau: Kegelgasse 27 - A-1030 Wien – Austria

E-mail: ciecb@ping.at

Tel: (43) 1 714 3187 0

Fax: (43) 1 713 0838 18

DIVISION 6

PHOTOBIOLOGY AND PHOTOCHEMISTRY

<http://physics.nist.gov/cie6>

DIVISION DIRECTOR:

Ann Webb, Ph.D.

School of Earth Atmospheric and Environmental
Sciences

University of Manchester

P.O. Box 88/Sackville Street

Manchester, M60 1QD

United Kingdom

E-mail: ann.webb@manchester.ac.uk

Tel: +44 (161) 306 3917

FAX: +44 (161) 306 3941

**Minutes of the Division 6 Meeting
September 9, 2006
Ottawa, Canada**

In Attendance:

Joerg Angerstein

George Brainard

Howard Cooper

Gilberto da Costa

Yvon Deslauriers

Bernd Herzog

Kohtaro Kohmoto (ADD)

Robert Levin

Mojtaba Navvab

John O'Hagan

Helmut Piazena

Harald Siekmann

David Sliney

Shu Takeshita

Irina Terenetskaya

Richard Vincent

Ann Webb (DD6)

Stephen Wengraitis (DS)

1. Welcome. Attendees were welcomed to the meeting by DD6 Ann Webb. She noted that CIE Division 3 was also meeting that day, should any of the attendees wish to visit that meeting afterward, and that D6 technical committees were meeting in the afternoon.

2. Approval of Agenda. The agenda proposed in recent correspondence from the DS was accepted.

3. Approval of Minutes of the Previous Division 6 Meeting. Minutes of the meeting in Aix les Bains, September 2005, were approved.

4. Division Director's (DD's) Report. Webb stated the importance of helping to move the development of the CIE International Lighting Vocabulary (ILV) forward. It was suggested by Sliney that, if progress appeared to be moving too slowly, perhaps the Division 6 section of the ILV could be published as a Division vocabulary, perhaps in CD format, and that it may be prudent to send a query to the CIE CB regarding this. It was suggested that the document could also be made available even sooner as an internet download, albeit for a smaller fee. Some discussion followed regarding terms and reviews that already have been done in this area, and Webb noted that CIE would not wish to publish an "incomplete" document with some items remaining controversial, and that if agreement could not be reached, those items would be left out or retain their existing definition. It was noted that the price of perfection in any document was that it would take a prohibitively long time to develop it. Some concepts in the ILV (e.g. action spectra, dosimetry, and reciprocity failure) were discussed as important photobiological concepts that need to be clearly understood within the photobiology community. Webb stated that a push would be made to at least move the Division 6 section of the ILV forward, in some form.

Discussion followed regarding publications. Webb noted the need to ensure that users of CIE's online webshop be made aware of older publications that are due to be superseded by more-recent publications. In a similar sense, older technical reports that are in need of update should be identified and considered for rewrite by the Division, and 6-01 Actinic Effects on Man was identified as a possible example. Recently published technical committee reports were announced, including:

- 6-29 UV Protection and Clothing
- 6-54 Action Spectrum for Previtamin D3 Synthesis in Human Skin
- CIE Standard S019/E:2006 Action Spectrum for Photocarcinogenesis (Non-melanoma Skin Cancers)

Webb reminded the group of the coming CIE quadrennium meeting in Beijing on 4-11 July 2007, with the deadline for abstracts being September 15. Wengraitis was tasked with sending an announcement to the Division 6 correspondence list, to encourage the recipients to send abstracts as soon as possible. It was noted that scientists may not be aware if they could attend this meeting, but there would be no penalty for submitting abstracts early, even if it meant withdrawing the abstract later (as long as this was done in a timely fashion). Often, many papers would be submitted and accepted, with papers being presented as posters if they were not chosen to be presented as talks.

Discussion then followed on possible themes and workshops for the meeting, with emphasis on timely, controversial subjects that would stimulate participation and discussions among the attendees. Recent events on the SARS epidemic in China, avian flu, etc. have raised the visibility of UV-C germicidal irradiation as a public health protective measure. Another well-received theme idea placed emphasis on Division 3, to discuss strategies for lighting, and to begin to apply the most current, well-established research on light and health. Kohmoto pointed out that the industrial applications of UV-C germicidal irradiation could also be discussed (e.g. water

purification), and that he could recommend lecturers from Japan who could speak on recent developments. It was agreed that two main themes would be pursued:

- Risks and Benefits of UV Radiation and Blue Light
- Ultraviolet Radiation and Disease Control

Other professional societies and meetings that discuss similar photobiology topics were then discussed as being valuable sources of information and productive for research (e.g. the International Congress on Photobiology, the Association of Vision and Research in Ophthalmology, the American and European Societies of Photobiology, the International Ultraviolet Association, etc.).

5. Secretary's Report. Wengraitis noted the importance of keeping Division 6 visible in order to stimulate activity among its members and TC chairs, and equally important, to ensure the members of the Division 6 mailing list are kept informed with the most up-to-date information. He stated that he would send smaller activity updates on a monthly basis, rather than compiling information for longer periods and sending one or two newsletters in a year, as has been done before.

6. Editor's Report. It was discussed that it would be appropriate for Division 6 Editor Myron Wolbarsht to step down, as he had recently retired and had experienced some health problems. O'Hagan was suggested as the new Division 6 Editor, and he was receptive to this idea. This was followed by an enthusiastic round of applause from the group.

7. Progress Reports from TCC's, and, in their absence, updates from the Secretary.

Completed and Closed TC's:

6-01 Actinic Effects of Optical Radiation on Man a completed TC, should be reviewed as much of it has been replaced, or overtaken by more recent advances.

6-03 Photo-kerato-conjunctivitis It was also noted in Aix les Bains that this TC is now outdated. Cullen has performed the work that contradicts this report. He was asked if would consider a Reportership to update this TC report; however, he stated that his professional commitments would not allow this. Other alternative reporters will be sought.

6-08 Guidelines for Obtaining Action Spectra. TCC is David Sliney. This TC met in Ottawa. Discussion during the TC meeting suggested that the current draft be revised so that the more-theoretical aspects be moved to an appendix, and that the main body of the document be designed as a practical guide. Discussion on measurement techniques included the use of light emitting diodes (LED's) or broad-band monochromators to determine where the action spectrum peaks, and then use narrower bands to determine the fine structure.

6-15 A Computerized Approach to Reflection, Transmission and Absorption Characteristics of the Human Eye TCC is Jack Lund. A spreadsheet was recently reviewed, with data to be used as a basis for the report. A first draft was recently created.

6-21 Cataractogenesis by Low-Level Exposure to Ambient Ultraviolet Radiation TCC Sliney reported that this TC met in Fort Lauderdale, FL. He stated that efforts continue, although there is still controversy on the various types and causes of cataract.

6-23 Develop Generalized Action Spectra for Plant Responses to Wavebands from 280 to 1100 nm TCC Stephan Flint has stated that he cannot continue as chair. However, he suggested a replacement (Patrick Neale) who is receptive to taking on this effort.

6-24 Sunscreen and UVA See Section 9, below.

6-28 Standardization of Sunscreen Testing: Method of UV-A Sunscreen Testing Activity

on this TC is awaiting the conclusion of 6-24, Sunscreen and UVA.

6-29 UV Protection and Clothing Completed, published as CIE Document 172:2006.

6-31 Immediate Pigment Darkening Activity on this TC is awaiting the conclusion of 6-24, Sunscreen and UVA.

6-32 Action Spectrum for Photocarcinogenesis (Non-melanoma Skin Cancers) CIE Standard S019/E:2006, "Photocarcinogenesis Action Spectrum (Non-melanoma Skin Cancers)" was published this year.

6-37 Light and Retinal Disease TCC Sliney stated that this TC met in Fort Lauderdale, with some controversy remaining on this TC. He also stated that Maria Ines de Wilde recently reviewed the document and provided comments on the draft.

6-39 UV Radiation in Lighted Environments TCC Kohmoto held a TC meeting in Ottawa. Kohmoto showed the results of his research on a wide variety of lamps, with illustrative charts displaying the effectiveness of the lamps for hazard and material degradation. This effort continues to move forward.

6-42 Lighting Aspects for Plant Growth in Controlled Environments It was suggested in Aix les Bains that this TC would be a candidate to be closed for inactivity. After some discussion, Navvab volunteered that he may be able to move this effort forward.

6-43 UV Water Disinfection ADD Schulmeister was tasked to follow this up in Aix les Bains. By e-mail correspondence, Schulmeister reported that TCC Cabaj is still active in this TC.

6-44 Illuminators for Treatment of Infant Hyperbilirubinemia. Riccardo Pratesi is currently being investigated as the possible new TCC for this effort.

6-45 Optical Radiation Hazard Measurements in the Work Space Sliney and Wengraitis met with TCC Angelo in August. A draft document is in development.

6-46 Standard Action Spectrum for UV Disinfection After this TC was identified as a candidate for closure, Sliney suggested that providing a TC document template to the chair with some basic information would stimulate action in the TC. Vincent suggested two action spectra that may be used for this TC, used in documents by the IES and the DIN.

6-47 Photobiological Safety of Lamps and Lamp Systems TCC Bergman reported that the current standard is under review, and this TC met recently in Cleveland and in Ottawa. This effort continues to move forward.

6-49 Infrared Cataract Tsutomu Okuno was recently identified as a possible new chair for this TC. He stated in correspondence that this may be possible, and potential new members have been investigated.

6-50 Photodegradation of Pharmaceuticals TCC Steven Baertschi has recently provided a rough draft for this TC.

6-52 Proper Measurement of Passive UV Air Disinfection Sources TCC Vincent reported that a draft is available on this subject, and he thanked to Levin and Sliney for their help. It was stated that there was a need to expand the TC members to other countries.

6-53 Personal Dosimetry for UV Radiation It was suggested that a CIE TC document template be sent to stimulate activity in this TC. Other potential TC chairs were discussed, although some of these experts are approaching retirement.

6-54 Action Spectrum for Previtamin D3 Synthesis in Human Skin. Completed, published as CIE Document 174:2006. Efforts will likely continue to standardize this spectrum

6-55 Photobiological Safety of Light Emitting Diodes This TC met in Ottawa, with TCC Werner Horak holding a combined meeting with TC 2-45 chair Kohmoto. The most current draft has been circulated, with discussion including a need for additional measurements to be performed, to confirm some of the theoretical aspects of this TC.

6-56 Infrared Warming Cabins TCC Jan Stolwijk is concerned that there is little interest in this TC from the Health Authorities, and Industry-only interests would bias the TC. Piazena was identified as a possible TC chair, if Stolwijk cannot continue.

6-58 A Recommendation on Lower Limits for UV Exposure TCC Wim Passchier held a meeting of this TC in the Netherlands recently, and is currently synthesizing information from various sources into a draft.

6-59 UVC Photocarcinogenesis Risks from Germicidal Lamps TCC Vincent held a meeting of this TC in Ottawa. Although some documents have identified UV-C radiation as a “probable” carcinogen, these documents do not consider that the likelihood of someone receiving high-level chronic UV-C exposures, enough to significantly increase cancer risk, is exceedingly low.

Asked for change of TC Title to the Carcinogenic Risk Arising from Human Exposure to UV-C Energy Emitted from Germicidal lamp Systems

6-60 Spectral Weighting of UVR from Solar Surrogate Sources TCC P. Donald Forbes held a meeting of this TC in Ottawa. This TC will use the 6-25 effort on the Spectral Weighting of Solar Ultraviolet Radiation as a template, and weight the spectra from several “benchmark” light sources for biological effects.

No updates were received on the following TC's, and these will be investigated by the DS:

6-20 Phototoxicity in Domestic and Industrial Environments
6-33 Photoimmunological Effects Mediated Through the Skin
6-36 UV Protective Materials Used in Shading
6-48 Typical Minimal Erythema Doses
6-51 Standardized Solar Simulator Spectral Irradiance Distribution for Sunscreen Testing

8. Progress Reports from Reporters. No reporters were present to provide updates.

9. Presentation of the Final Draft of TC 6-24, UVA Protection and Sunscreens It was announced that a final draft is available, and Herzog gave a detailed PowerPoint presentation on this subject. The TC performed a thorough investigation and intercomparison of testing techniques, and discussed advantages and shortcomings of the test methods. It was hoped that this important effort would soon be concluded with the publication of the TC document, which is a precursor to the 6-28 and 6-31 TC's.

10. Presentation on CEN/TC169/WG8 Standards for Measurement and Assessment of Optical Radiation Exposures Siekmann's presentation provided a background on these standards, and stated the need for safety standards to give detailed specifications on measurement and assessment procedures. The EN 14 255 standard series discusses measurement and assessment of artificial UVR, visible and infrared sources, as well as solar UVR, as well as relevant terminology and quantities. It was discussed that it may be useful to publish EN standards as an International Standard through CIE and the International Standards Organization (ISO), and the EN documents already support the recommendations of ICNIRP and WHO. Several attendees suggested that it would be logical to consolidate the EN documents with similar documents from other national agencies.

Since this topic is close to that of TC6-45 it was decided to ask TC6-45 to consider the CEN report for adoption (or otherwise) by CIE.

11. Progress Reports of Liaisons. No liaison officers were present.

12. Proposals for Dissolution of TC's and Reporterships. No proposals were made to dissolve TC's or reporterships.

13. Proposals for New TCs and Reporterships.
da Costa proposed a TC on "Measurement of Radiation Using the Phytometric System for Plant Application."

Terms of reference: To prepare a document intended to provide growers, lamp manufacturers, greenhouse and growth-chamber designers, lighting engineers, architects, and plant scientists and engineers with a concise reference for the use of the phytometric system for measuring radiation for plant photosynthesis and related processes.

TCC: Gilberto da Costa

The meeting approved this TC proposal.

O'Hagan proposed a reportership on "Occupational UV Protection by Disposable Gloves." This will describe a Glove Ultraviolet Protection Factor assessment methodology, which includes consideration of the impact of stretching and moisture. He stated that his colleague Marina Khazova would be happy to produce the report, as she has done most of the work, and a paper is due to be published in Radiation Protection Dosimetry. The meeting approved this reportership proposal.

14. Future Meetings. As discussed earlier, the next Division 6 meeting will be held in conjunction with the CIE quadrennium meeting in Beijing in 2007.

15. General, and Adjournment. The meeting was adjourned at 1330.