

Report from a meeting of the IEC TC61/WG16  
(IEC 335: Safety of household and similar electrical appliances - Part 2-27: Particular requirements for skin exposure to ultraviolet and infrared radiation)  
Paris, France, December 13-14, 1999

The meeting was devoted to the preparation of the 4<sup>th</sup> edition of the IEC 335-2-27.

After detailed discussions, the following decisions have been taken:

1. Set the timer limit at 1000 J/m<sup>2</sup> (effective, i.e., wavelength-weighted according to the CIE Erythema Action Spectrum) or 60 min, whichever provides a lower exposure. Preliminary results from the current FDA study on human UV responses helped substantially in coming to this decision. The proposed limit combines elements of the 3<sup>rd</sup> Edition of 335-2-27 with those of the FDA policies. In particular, it represents the 4 Minimal Erythema Dose (MED) limit (current FDA policy) with a 250 J/m<sup>2</sup> value for a MED as a typical value for skin type 2 persons determined by us. This limit represents an improvement with respect to the current FDA policy because (1) it introduces the internationally recognized Action Spectrum and (2) replaces scientifically unsupportable value of 156 J/m<sup>2</sup> currently used in the FDA policy (based on a compilation of pre-1986 literature data) with a value based on current measurements. Although the FDA study on human UV responses is still in progress, the additional data accumulated after the WG meeting support the proposed limit.
2. Set the specifications for protective goggles to require transmission of 1-5% in the visible region. This transmission range was proposed by us. We also proposed to extend the specified wavelength range from 400-550 to 400-700 nm to cover emissions of some commercially available goggles. The WG proposed to further extend this range to 400-780 nm to comply with other related IEC standards. The WG created an ad hoc group to finalize this element of the standard.
3. The proposal for the "panic button" requirements after detailed discussion has been modified to read:

"Each UV appliance shall include a hand-operated switch to enable the person being exposed to terminate radiation emission from the appliance. This switch shall be located within arms reach of the person being exposed and be readily identifiable by touch and sight."

The original proposal:

"Each sunlamp product shall include a hand-operated switch to enable the person being exposed to terminate radiation emission from the appliance without disconnecting the electrical plug, removing ultraviolet lamp(s) or turning off timer(s). The switch shall be colored red, marked "Emergency switch", and be located so that it is clearly visible and quickly accessible to the person being exposed. If it is of a push-button type, it shall be of the "mushroom-head" type."

The suggestion to mark the button “EMERGENCY SWITCH“ was not included and left for addition in individual linguistic zones. An interesting concept of marking the button with colors that would fluoresce when the UV source is on was proposed and left for consideration by qualified experts on the WG.

4. The warning label proposed by us was discussed. It could not be included in the standard draft because an alternative text has already been approved by TC61 and, at the time of the meeting, was in the stage of final vote by different countries including the U.S. The new IEC text reads:

“WARNING - Ultraviolet radiation may cause injury to the eyes and skin, such as skin aging and eventually skin cancer.  
Read instructions carefully.  
Wear protective goggles provided.  
Certain medicines and cosmetics may increase sensitivity.”

The original proposal:

“DANGER - ULTRAVIOLET RADIATION  
Follow instructions - Use protective eyewear  
Over-exposure causes skin and eye burns  
Long-term use contributes to –  
Skin cancers (sometimes fatal)  
Wrinkling and sagging of the skin  
Drugs and cosmetics may increase above effects”

Many WG members preferred the word WARNING rather than DANGER. Some members of the WG recognized merits of our text and thought that it could be improved by retaining the phrase “As with natural sunlight...” from the current FDA Standard. Unfortunately, for formal reasons, other than the IEC TC61 texts could not be considered at the time of the meeting.

5. It was proposed that the instructions should explicitly state that

“if unexpected side effects occur within 48 hours after the first session, such as itching, further exposure shall not be taken without medical advice.”

6. Germany submitted a proposal to eliminate distinction between radiation below and above 320 nm to simplify classification of the UV-emitting appliances. This proposal was rejected. It was generally recognized that the current system distinguishing between UVA and UVB components of the emission spectrum leaves open the possibilities for improvements of the standards and policies as new data on risk and benefits of UVA and UVB radiation become available in the dynamically developing area of photosciences.

7. Germany submitted a proposal to introduce skin typing to address the differences in MED in different persons and to adjust the recommended annual limits for different phototypes. This proposal was considered desirable but premature. It is expected that current research, including the FDA studies in the area, will make it possible to introduce this element into the standards within several years.
8. A discussion was devoted to lamp classification for establishing replacement equivalency. It was recommended that the lamps be labeled for their (1) erythematous effectiveness (e.g., with UV Index) and (2) basic information about their emission spectrum (e.g., the proportion of the UVB output in the total UV output). An ad hoc committee has been created to continue work on this issue.
9. The next WG meeting has been tentatively scheduled for the first week of December 2000.

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