



Director General

Datum
2007-02-27

Vår referens
2007/824-51

Ert datum

Er referens

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CENELEC TC61
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Advice of the Nordic radiation protection and health authorities on how to reduce sunbed UV-exposure and annual UV dose in the population

The Nordic health and radiation protection authorities of the five Nordic countries Denmark, Finland, Iceland, Norway and Sweden find it important from a health point of view to reduce UV-doses from artificial tanning in the population.

In order to limit the risk for UV-induced skin cancer as far as possible, the Nordic authorities propose to standardisation bodies and manufacturers

- To strive to reduce exposures and accumulated UV doses from sunbeds below present levels;
- To minimize exposures of persons with skin types III-IV by focusing on how little UV would be needed to achieve a tan in these persons, rather than how much their skin would tolerate before burning; and
- To emphasize that individuals with skin types I or II should not use sunbeds at all and that they would not tan well from these low-dose sessions.

An ad-hoc Working Group of CENELEC TC61 has the task to include in the relevant sunbed product safety standard EN60335-2-27 recommendations of a report from the EU's Scientific Committee on Consumer Products (SCCP) according to the Commission's mandate to CENELEC in the field of the Low Voltage Directive 73/23/EC (M/397 EN). The Nordic authorities agree to these recommendations and believe the following to be especially important:

- SCCP's recommended erythemally effective upper irradiance limit of 0.3 W/m²;
- SCCP's two specific recommendations that young persons (<18y) and sensitive skin phototypes (I-II) should not use sunbeds.

The following items need to be included in the standard, and the ad-hoc Working Group of CENELEC TC61 should also be given the task:

- To outline a general exposure schedule where individuals with skin types I and II should be recommended not to use sunbeds at all, while persons with skin types III and IV to achieve tanning as desired should not exceed an annual dose of $15 \text{ kJ/m}^2(\text{nmsc})$. This is a lowering from $25 \text{ kJ/m}^2(\text{nmsc})$;
- To incorporate this exposure schedule into an example design for a simple pedagogical wall poster with precautions and warnings – which should be in the language of the country where it is to be used, and can be further developed nationally according to local authority requirements.

On behalf of Danish National Board of Health, Finnish Radiation and Nuclear Safety Authority, Icelandic Radiation Protection Institute, Norwegian Radiation Protection Authority, Swedish Radiation Protection Authority

Sincerely,



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CC:

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EUROSKIN

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ICNIRP

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WHO-INTERSUN Programme

Department for the Protection of the Human Environment
World Health Organization, 1211 Geneva 27, Switzerland

Nordic LVD responsible authorities

Nordic IEC & CENELEC NC's
Nordic Consumer Agencies

Encl.: Appendix with more details and rationales for the advice.

Appendix

Details and rationale for the Nordic radiation protection and health authorities advice on how to reduce sunbed UV-exposure and annual dose in the population

The overall conclusion of the report from the EU-Commission's Scientific Committee for Consumer Products (SCCP) is that the use of UVR tanning devices to achieve and maintain cosmetic tanning, whether by UVB and/or UVA, is likely to increase the risk of malignant melanoma of the skin (SCCP 2006).

A basic and internationally accepted principle in the field of radiation protection is that any practice involving radiation must be justified, i.e. do more good than harm (ICRP 1991). The Nordic authorities already generally advise against the use of sunbeds for tanning (Nordic advice 2005).

The SCCP's opinion also is that young persons (below 18 years) and UV-sensitive people (melanocompromised persons, i.e. skin type I-II) should be strongly advised not to use sunbeds. This is in agreement with the Nordic advice.

Consequently, if sunbeds are used, they should be used only by persons who tolerate solar UV-exposures better and tan easily (melanocompetent individuals, i.e. skin types III-IV), but not have freckles, atypical and/or multiple moles or a family history of melanoma.

Concerning total UV dose the SCCP report states: "With a stochastic effect like SCC skin cancer there is no threshold dose below which the effect will not occur" (p. 24). This justifies limiting the risk by reducing the dose if sunbeds are used.

Dose considerations should focus on melanocompetent individuals in terms of how little UV is needed to tan rather than how much the skin tolerates before burning.

In fair-skinned Caucasians who tan poorly (skin types I and II), doses of UVA which result in tanning are similar to those resulting in erythema. Individuals who are more competent tanners (skin types III and IV) develop pigmentation from suberythemogenic doses of UVA. The pigmenting dose of broadband UVA is approximately one quarter of the erythemogenic dose of UVA in such individuals (Parrish 1982, Park et al 1984, Ortel & Gange 1992).

Thus there can be exposure schedules of tanning appliances based on how little UV that is needed to acquire a desired tan for melanocompetent tanners. For persons with more sensitive skin (i.e. phototype II) these exposures will be considerably less than their MED – and not cause burns – provided they follow the exposure schedule if they use a sunbed. Persons with the most sensitive skin (phototype I), which always burn and never tan, should know they must not and cannot use a sunbed - or a stipulated short first test-session (5 min., $<100 \text{ J/m}^2$) will make them realize their extreme susceptibility without burning them.

As an additional limitation of risk, it is wise to minimize annual UV-doses as much as possible - and to eliminate all UV exposure unnecessary for tanning.

Exposed skin area need to be taken into account for any stochastic dose considerations. Although the sun is the dominating source of UV exposure, modern “clam-type” tanning beds and canopies generally expose more of the skin area to UV-radiation than it would be in most outdoor situations, thereby increasing the health risk (WHO 2003). Taking the skin area into account comparatively increases sunbed exposures by a factor of 2-10. One study has schematically estimated that the population’s UV radiation dose due to artificial tanning might be of the same order of magnitude as the potential increase in natural UV radiation dose resulting from a 10 percent ozone depletion (Wester et al 1999).

Proportionality of skin area exposure and total number of DNA-damages has been demonstrated. Exposing the skin in clam-type tanning appliances simultaneously to both the canopy and the bed instead of only to one of these parts, doubles the frequency of skin DNA damages (Kotova et al 2005).

The SCCP notes (p.10) that chronic over-exposure might be a route to malignant melanoma (MM), aside from intermittent exposure for which numerous naevi are a risk factor. Consequently, total accumulated dose need to be kept as low as possible. The SCCP-report further pragmatically defends a limit of 20 sessions per year. Allowing three annual tanning courses (autumn, winter, spring), each consisting of 8-10 sessions would not require more than 15 kJ/m²(nmsc). This is a lowering of the recommended maximum annual dose from 25 kJ/m²(nmsc) in the EN-standard.

The Nordic advice (2005) recommends keeping the annual UV dose as low as possible.

The ad-hoc Working Group should be given the task to outline general advice where young persons (<18y) and individuals with skin types I and II should be recommended not to use a sunbed at all, while melanocompetent persons, to achieve tanning as desired, should not exceed an annual dose of 15 kJ/m²(nmsc). Any session dose must be sub-erythemal (even for skin type II).

This exposure schedule should be incorporated into an example design for a simple pedagogical wall poster with precautions and warnings – which should be in the language of the country where it is to be used, and can be further developed nationally according to authority requirements.



References

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