Frequently Asked Questions

Health Issues

Does the ultraviolet output from fluorescent lighting present health risks?

Questions are asked about the small amount of ultraviolet (UV) power emitted by fluorescent lamps. This interest has been stimulated by the well-publicized health issues of suntanning by extended exposure to high levels of UV in sunlight.

The incidence of malignant melanoma, the least common but most serious type of skin cancer, has been increasing over the past half century. Considerable research on causes of melanoma has looked at possible links with factors of modern life-style that have changed over the same period of time. In the early 1980's a suggestion was made that fluorescent lighting might be a cause of melanoma, but this suggestion could not be substantiated. In 1988, an international scientific review[1] concluded that "the available evidence does not support the existence of any substantial association between melanoma risk and exposure to fluorescent lighting."

The two more common types of skin cancer are the non-melanoma skin cancers[2]: basal cell carcinoma and squamous cell carcinoma. These are slow growing cancers that seldom spread to other parts of the body. Nevertheless, treatment is essential because, as reference (2) points out, "it is encouraging to know that skin cancer is now almost 100 percent curable if found early and treated promptly." Basal cell carcinoma accounts for more than 90 percent of all skin cancers in the Untied States. In a recent study, Lytle, *et al*.[3], of the Center for Devices and Radiological Health (FDA) report that studies "indicate the squamous cell carcinoma results from long term chronic solar UV exposure, whereas solar UV exposure after age 10 may not contribute to basal cell carcinoma."

On this basis, one could expect that the small contribution of UV due to indoor lighting would not be a major health concern. Lytle, *et al*., directly addressed the issue by surveying 58 fluorescent lamp types for UV emission. From these data, the UV exposure at typical office light levels was calculated for luminaires using louvers that did not block UV. The resultant UV exposure was put in perspective by noting that this indoor exposure during one eight hour workday is equivalent to just over a minute of midday solar exposure on a clear July day in Washington, D.C. This comparison clearly conveys the relative insignificance of the UV from fluorescent lamps. In addition, many luminaire types and lighting techniques (enclosed luminaires, indirect lighting, etc.) will further reduce or eliminate the small amount of UV emitted from the fluorescent lamps.

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[1] "Malignant Melanoma and Fluorescent Lighting," CIE-Journal, 7:29 (1988).

[2] "What You Need To Know About Skin Cancer," National cancer Institute, NIH Publication No. 90-1564 (1989).

[3] C. Lytle, W. Cyr, J. Beer, S. Miller, R. James, R. Landry, M. Jacobs, R. Kaczmarek, C. Sharkness, D. Gaylor, F. Gruijl, and J. Van Der Leun, "An Estimation of Squamous Cell Carcinoma Risk from Ultraviolet Radiation Emitted by Fluorescent Lamps," Photodermatol Photoimmunol Photomed 1992/1993, 9:268 (1993).

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