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# Effectiveness of the Resistance to Irradiance Test on Sunglasses Standards

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**Abstract :** It is still controversial in the literature the ultraviolet (UV) radiation effects on the ocular media, but the World Health Organization has established safe limits on the exposure of eyes to UV radiation based on reports in literature. Sunglasses play an important role in providing safety, and their lenses should provide adequate UV filters. Regarding UV protection for ocular media, the resistance-to-irradiance test for sunglasses under many national standards requires irradiating lenses for 50 uninterrupted hours with a 450 W solar simulator. This artificial aging test may provide a corresponding evaluation of exposure to the sun. Calculating the direct and diffuse solar irradiance at a vertical surface and the corresponding radiant exposure for the entire year, we compare the latter with the 50-hour radiant exposure of a 450 W xenon arc lamp from a solar simulator required by national standards. Our calculations indicate that this stress test is ineffective in its present form. We provide evidence of the need to re-evaluate the parameters of the tests to establish appropriate safe limits against UV radiation. This work is potentially significant for scientists and legislators in the field of sunglasses standards to improve the requirements of sunglasses quality and safety.

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