

Health risks of exposure to non-ionizing radiation – Myths or science-based evidence

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KEY WORDS

Non-ionizing radiation; UV radiation; EM fields

SUMMARY

Introduction: *The non-ionizing radiation (NIR) contains large range of wavelengths and frequencies from vacuum ultraviolet (UV) radiation to static electric and magnetic fields. Biological effects of electromagnetic (EM) radiation depend greatly on wavelength and other physical parameters.* **Optical radiation:** *The Sun is the most significant source of environmental UV exposure, so that outdoor workers are at risk of chronic over-exposure. Also exposure to short-wave visible light is associated with the aging and degeneration of the retina. Especially hazardous are laser beams focused to a small spot at the retina, resulting in permanent visual impairment.* **Electromagnetic fields:** *Exposure to EM fields induces body currents and energy absorption in tissues, depending on frequencies and coupling mechanisms. Thermal effects caused by temperature rise are basically understood, whereas the challenge is to understand the suspected non-thermal effects. Radiofrequency (RF) fields around frequencies of 900 MHz and 1800 MHz are of special interest because of the rapid advances in the telecommunication technology. The field levels of these sources are so low that temperature rise is unlikely to explain possible health effects. Other mechanisms of interaction have been proposed, but biological experiments have failed to confirm their existence.*