



Recent scientific publications relevant to mobile telephony

## December 2014

### Details

**Austria:** Exposure to electromagnetic fields in households—Trends from 2006 to 2012, [Tomitsch et al., \*Bioelectromagnetics\*](#), Published online: 24 November 2014.

*'...The median of total RF-EMFs increased from 28.13 to 52.16  $\mu\text{W}/\text{m}^2$ . Highest increases were found for universal mobile telecommunication system (UMTS) and wireless local area networks (WLAN)...Indoor RF-EMF sources resulted in decreased exposure in the frequency range of digital enhanced cordless telecommunications telephones (DECT) and increased exposure in the frequency range of WLAN...'*

**Belgium:** A formula for human average whole-body SAR<sub>wb</sub> under diffuse fields exposure in the GHz region. [Bamba, A. et al. \*Physic in Medicine and Biology\*](#). 2014 Nov 13;59(23):7435-56.

*"...(fast) Estimation of the average whole body SAR<sub>wb</sub> due to diffuse fields is also important for the dosimetry community as it could help for the revision of the current basic restrictions (ICNIRP 1998), which were derived from plane wave analysis (deterministic discrete plane wave exposure) neglecting the DMC..."*

**Belgium:** Joint Minimization of Uplink and Downlink Whole-Body Exposure Dose in Indoor Wireless Networks, [Plets et al., \*Biomed Research International\*](#), Accepted 12 November 2014.

*'...Total dose reductions decrease with increasing uplink usage for WiFi due to the lack of uplink power control but are maintained for LTE and UMTS. Uplink doses become dominant over downlink doses for usages of only a few seconds for WiFi. For UMTS and LTE, an almost continuous uplink usage is required to have a significant effect on the total dose, thanks to the power control mechanism...'*

**Canada:** A comparison of two methods to assess the usage of mobile hand-held communication devices. [Berolo S, Steenstra I, Amick BC 3rd, Wells RP. \*Journal of Occupational and Environmental Hygiene\*](#). 2014 Dec 1; [Epub ahead of print]

*"...Subjects' self-reports overestimated their logged use. The overestimation by category tended to be low for low average usage and more variable with higher usage categories..."*

**China:** Adaptive Response in Mice Exposed to 900 MHz Radiofrequency Fields: Bleomycin-induced DNA and Oxidative Damage/Repair, [Zong et al., \*International Journal of Radiation Biology\*](#), Posted online on October 27, 2014.

*'...The overall data suggested that RF exposure was capable of inducing adaptive response and mitigated BLM-induced DNA and oxidative damages by activating certain cellular processes...'*

**China:** Differential Pro-Inflammatory Responses of Astrocytes and Microglia Involve STAT3 Activation in Response to 1800 MHz Radiofrequency Fields, [Lu et al., \*PLoS ONE\*](#), 9(10):e108318, Published: October 02, 2014.

*'...Novel insights into the potential mechanisms of the reported CNS impacts associated with mobile phone use and present STAT3 as a promising target to protect humans against increasing RF exposure...'*

**China:** The relationship between NMDA receptors and microwave induced learning and memory impairment: a long term observation on Wistar rats, [Wang et al., International Journal of Radiation Biology](#), 1-25, Posted online on November 26, 2014.

*'...The content of amino acids neurotransmitters, the expression of NMDAR subunits and the variation of hippocampal structure might contribute to the long term cognitive impairment after microwave exposure...'*

**USA:** Are Children More Exposed to Radiofrequency Energy from Mobile Phones than Adults?, [Foster et al., IEEE Access](#), PP(99):1-1, Online: 11 December 2014.

*'...Differences involve SAR levels that are below the 1-g or 10-g psSAR (peak spatial SAR averaged over 1 or 10 grams of tissue) and have no significance for compliance assessment. Age-related differences observed in worst-case simulations such as presently considered are difficult to generalize to human populations under real-world exposure conditions due to many variables that determine SAR during realistic usages...'*

**USA:** Broadband Rydberg Atom-Based Electric-Field Probe for SI-Traceable, Self-Calibrated Measurements, [Holloway et al., IEEE Transactions on Antennas and Propagation](#), 62(12):6169-6182, December 2014.

*'...One small vapor cell can be used to measure E-field strengths over a wide range of frequencies: 1 GHz to 500 GHz...'*

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The MMF is an international association of wireless communications manufacturers established to support scientific research in relation to mobile telephony and health [www.mmfai.info](http://www.mmfai.info)

The GSM Association (GSMA) is the global trade association that exists to promote, protect and enhance the interests of GSM mobile operators throughout the world. [www.gsma.com/mobile-and-health](http://www.gsma.com/mobile-and-health)

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