



Recent scientific publications relevant to mobile telephony

## November 2007

### Details

**Australia:** Occupational exposure to ionizing and non-ionizing radiation and risk of glioma, [Karipidis et al., Occupational Medicine](#), 57(7):518-524, 1 October 2007.

*'...We did not find evidence of an association between glioma and occupational exposure to ELF, RF and ionizing radiation. UV radiation was associated with increased glioma risk for men but this result could have been confounded by other predominantly male occupational and lifestyle exposures associated with high UV. Further investigation of UV radiation and glioma risk is suggested.'*

**Austria:** No effect of an UMTS mobile phone-like electromagnetic field of 1.97 GHz on human attention and reaction time, [Unterlechner et al, Bioelectromagnetics](#), Published Online: 23 October 2007.

*'...Statistical analysis of the obtained test parameters showed that exposure to the generic UMTS signal had no statistically significant immediate effect on attention or reaction. Therefore, this study does not provide any evidence that exposure of UMTS mobiles interferes with attention under short-term exposure conditions.'*

**Finland:** Electromagnetic Interference from GSM and Tetra Phones with Life-Support Medical Devices, [Hietanen et al., Annali dell'Istituto Superiore di Sanità](#), 43(3):204-2007, 2007.

*'...No interference was observed if the distance from GSM1800 phone was over 5 cm. Corresponding safety distance for GSM900 phone was 70 cm, and for TETRA phones over 3 m. Hence, the use of GSM1800 type mobile phones can be considered safe, whereas GSM 900 and TETRA phones may cause considerable interference in hospital devices, which can result in life-endangering situations.'*

**Germany:** Effects of mobile phone electromagnetic fields at nonthermal SAR values on melatonin and body weight of Djungarian hamsters (*Phodopus sungorus*), [Lerchl et al, Journal of Pineal Research](#), Published Online: 25 October 2007.

*'...The results corroborate earlier findings which have shown no effects of RF-EMF on melatonin levels in vivo and in vitro. The data are in accordance with the hypothesis that absorbed RF energy may result in metabolic changes which eventually cause body weight increases in exposed animals. The data support the notion that metabolic effects of RF-EMFs need to be investigated in more detail in future studies.'*

**Israel:** The Development of a Cellular Phone Antenna with Small Irradiation of Human-Organism Tissues, [Bank et al., Antennas and Propagation Magazine](#), IEEE, 49(4):65-73, August 2007.

*'...Calculations show that an arrangement with an additional radiator reduces radiation by a factor of three to four. The structure and magnitude of the field in the far zone preserve their quality of communication with correspondents (base stations) in all directions.'*

**Italy:** Electromagnetic Immunity of Infusion Pumps to GSM Mobile Phones: A Systematic Review, [Calcagnini et al., Annali dell'Istituto Superiore di Sanità](#), 43(3):225-228, 2007.

*'...for distances lower than 1 m there is a non negligible risk of electromagnetic interferences, although significant differences exists in the reported minimum distances. Interference effects clinically relevant for the patients are rare. No permanent damage to the pumps has been ever reported, although in several cases intervention of personnel is required to resume normal operation.'*

**Italy:** Electromagnetic Immunity of Medical Devices: The European Regulatory Framework, [Calcagnini et al., Annali dell'Istituto Superiore di Sanità](#), 43(3):268-276, 2007.

*'...As far as electromagnetic immunity of active implantable devices are concerned, the difference between United States and European Union (EU) regulatory frameworks is presented (standard ANSI/AAMI PC69:2000 for US and EN45502-1 framework in EU). Finally, some considerations on how to address the risk assessment of workers with implanted devices are discussed.'*

**Italy:** Electromagnetic Interference and Cochlear Implants, [Tognoli et al., Annali dell'Istituto Superiore di Sanità](#), 43(3):241-247, 2007.

*'..Particular attention will be given to the description of the mechanisms of electromagnetic interaction with CI [cochlear implants]; main disturbances caused to CI; relevant scientific investigations; and existing requirements and tests for electromagnetic compatibility (EMC) immunity applicable to CI.'*

**Italy:** Exposure of humans to electromagnetic fields. Standards and regulations, [Vecchia, Annali dell'Istituto Superiore di Sanità](#), 43(3):260-267, 2007.

*'...concerns for hypothesized, but unproven, long-term effects of chronic exposure to low-level EMF have created a demand for precautionary measures beyond the standards for recognized, acute effects. Such measures, if deemed justified by social considerations, including public anxiety, should be separate from exposure standards, and adopted with special care to avoid undermining the credibility of science-based guidelines, and of health authorities.'*

**Italy:** Interference between Mobile Phones and Pacemakers: A Look Inside, [Censi et al., Annali dell'Istituto Superiore di Sanità](#), 43(3):254-259, 2007.

*'...we found that modulated RF signals are somehow demodulated by the PM [pacemaker] internal non-linear circuit elements, if no feedthrough assembly is incorporated inside the PM. Such demodulation phenomenon poses a critical problem because digital cellular phones use extremely low-frequency modulation (as low as 2 Hz), that can be mistaken for normal heartbeat...'*

**Italy:** Effects of Exposure of Newborn Patched1 Heterozygous Mice to GSM, 900 MHz, [Saran et al., Radiation Research](#), 168(6):733-740, 1 December 2007.

*'..Thus, under the experimental conditions tested, there was no evidence of life shortening or tumorigenic effects of neonatal exposure to GSM RF radiation in a highly tumor-susceptible mouse model.'*

**Italy:** Effects of GSM Cellular Phones on Human Hearing: The European Project "GUARD", [Parazzini, et al, Radiation Research](#), 168(5):608–613, November 2007.

*'...Analysis of the data showed there were no effects of exposure to GSM mobile phone signals on the main measures of the status of the auditory system.'*

**Italy:** Prediction of Temperature Increase in Human Eyes Due to RF Sources, [Buccella et al., IEEE Transactions on Electromagnetic Compatibility](#), 49(4):825-833, November 2007.

*'...Finally, attention is paid to the maximum temperature increase in the lens for the SAR values prescribed by the Commission on Non-Ionizing Radiation Protection...significant values of temperature increase are found (about 0.3 °C for general public exposure and about 1.5 °C for occupational exposure) for the most critical cases of near-field exposures...'*

**Japan:** The Electromagnetic Environment of Hospitals: How It Is Affected by the Strength of Electromagnetic Fields Generated Both inside and Outside the Hospital, [Hanada, Annali dell'Istituto Superiore di Sanità](#), 43(3):208-217, 2007.

*'...Herein, I will show examples of measurements and measuring methods for radiated electromagnetic fields, static magnetic fields, and power-source noise, common components of the medical electromagnetic environment.'*

**Japan:** An anatomically realistic whole-body pregnant-woman model and specific absorption rates for pregnant-woman exposure to electromagnetic plane waves from 10 MHz to 2 GHz, [Nagaoka et al, Physics in Medicine and Biology](#), 52(22):6731-6745, 21 November 2007.

*'...This pregnant-woman model is the first completely anatomically realistic voxel model that includes a realistic fetus model and enables a numerical simulation of electromagnetic dosimetry up to the gigahertz band. In this paper, we also present the basic specific absorption rate characteristics of the pregnant-woman model exposed to vertically and horizontally polarized electromagnetic waves from 10 MHz to 2 GHz.'*

**Spain:** Electric field distribution and energy absorption in anisotropic and dispersive red blood cells, [Sebastián et al., Physics in Medicine and Biology](#), 52(23):6831-6847, 7 December 2007.

*'...The normal and tangential conductivities and permittivities of the membrane are shown to be responsible for the different peak amplitudes and frequency shifts of the maxima. A previously unnoticed effect is that the cell shape combined with the dispersion of the membrane permittivity and the influence of bound water layers leads to a very high amplification factor (greater than 300) of the electric field in the membrane at frequencies in the megahertz range.'*

**Sweden:** The Effects of 884 MHz GSM Wireless Communication Signals on Self-reported Symptom and Sleep (EEG)- An Experimental Provocation Study, [Arnetz et al, PIER Online](#), 3(7):1148-1150, 2007.

*'...The study indicates that during laboratory exposure to 884 MHz wireless signals, components of sleep, believed to be important for recovery from daily wear and tear, are adversely affected. Moreover, participants that otherwise have no self-reported symptoms related to mobile phone use, appear to have more headaches during actual radiofrequency exposure as compared to sham exposure. However, subjects were not able to detect the true exposure status more often than would have been expected by statistical chance alone...'*

**UK:** Mobile telephone use effects on peripheral audiovestibular function: A case-control study, [Bamiou et al, Bioelectromagnetics](#), Published Online: 10 October 2007.

*'...In conclusion, 30 min exposure to mobile phone RF did not show any immediate effects on vestibulocochlear function as measured by TEOAE [transient evoked otoacoustic emissions] and the VOR [sic. video-oculography].'*

**UK:** Whole-body-averaged SAR from 50 MHz to 4 GHz in the University of Florida child voxel phantoms, [Dimbylow and Bolch, Physics in Medicine and Biology](#), 52(22):6639-6649, 21 November 2007.

*'...A comparison is made between the calculated external electric fields required to produce the basic restriction on the whole-body-averaged SAR and the ICNIRP reference levels for public exposure.'*

**USA:** A mechanism for stimulation of biosynthesis by electromagnetic fields: Charge transfer in DNA and base pair separation, [Blank and Goodman, Journal of Cellular Physiology](#), 214(1):20-26, January 2008.

*'...Electrons in the H-bonds of both DNA and the surrounding water molecules fluctuate at frequencies that are much higher than the frequencies of the EM fields studied. The characteristics of the fluctuations suggest that the applied EM fields are effectively DC pulses and that interactions extend to microwave frequencies.'*

**USA:** Electromagnetic Compatibility Management of Wireless Transceivers in Electromagnetic Interference Sensitive Medical Environments, [Bit-Babik et al., Annali dell'Istituto Superiore di Sanità](#), 43(3):218-224, 2007.

*'...It is possible to avert medical equipment interference by performing ad hoc tests. The method requires measurements of electromagnetic fields and the observation of interference events with increasing distance between equipment and RF transmitters. The results are applicable only to the specific testing environment...'*

**USA:** Wireless Radiation in the Etiology and Treatment of Autism: Clinical Observations and Mechanisms, [Mariea et al., Journal of the Australasian College of Nutritional & Environmental Medicine](#), 26(2):3-7, August 2007.

*'...These data also suggest that wireless device EMR is a synergen in the etiology of Autism, acting in conjunction with environmental and genetic factors, and offer a mechanistic explanation for the correlation between concurrent increases in the incidence of Autism and the use of wireless technology.'*

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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.gsmworld.com](http://www.gsmworld.com)

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