



Recent scientific publications relevant to mobile telephony

March 2016

Australia: Use of mobile and cordless phones and cognition in Australian primary school children: a prospective cohort study. Redmayne M, Smith CL, Benke G, Croft RJ, Dalecki A, Dimitriadis C, Kaufman J, Macleod S, Sim MR, Wolfe R, Abramson MJ. *Environmental Health*, 15:26 (10 pages), 2016.
<http://dx.doi.org/10.1186/s12940-016-0116-1>

'...Overall, there was little evidence cognitive function was associated with CP and MP use in this age group. Although there was some evidence that effects of MP and CP use on cognition may differ by gender, this needs further exploration. CP results may be more reliable as parents estimated children's phone use and the CPs were at home; results for CP use were broadly consistent with our earlier study of older children.'

China: Dosimetric variation in human exposure to 20 MHz - 3 GHz electromagnetic fields due to changes in dielectric properties. Wang J, Chen, B, QI H, Zhang J, Chen S, and Wang X. *Radiation Protection Dosimetry*, Published online: February 17, 2016.
<http://rpd.oxfordjournals.org/content/early/2016/02/17/rpd.ncw010.abstract>

'...changes in dielectric properties can cause variations in SAR. Moreover, the variation in SAR was influenced by frequency, electric polarisation and incident direction...'

France: Infants and young children modeling method for numerical dosimetry studies: application to plane wave exposure. Dahdouh S, Varsier N, Nunez Ochoa MA, Wiart J, Peyman A, and Bloch I. *Physics in Medicine and Biology*, 61:1500-1514, 2016.
<http://dx.doi.org/10.1088/0031-9155/61/4/1500>

'...The results lean to show the existence of a relationship between age and whole body exposure. The results also highlight the necessity to specifically study and develop measurements of child tissues dielectric properties.'

Germany: Effects of mobile phone exposure (GSM 900 and WCDMA/UMTS) on polysomnography based sleep quality: An intra- and inter-individual perspective. Danker-Hopfe H, Dorn H, Bolz T, Peter A, Hansen ML, Eggert T, and Sauter C. Environmental Research, 145:50-60, 2016.
<http://dx.doi.org/10.1016/j.envres.2015.11.011>

'...results underline that sleep of individuals can be affected differently. The observations found here may indicate an underlying thermal mechanism of RF-EMF on human REM sleep. Nevertheless, the effect of an increase in stage R sleep in one third of the individuals does not necessarily indicate a disturbance of sleep.'

Greece: Immune responses of a wall lizard to whole-body exposure to radiofrequency electromagnetic radiation. Mina D, Sagonas K, Fragopoulou A, Pafilis P, Skouroliakou A, Margaritis L, Tsitsilonis O, and Valakos E. International Journal of Radiation Biology, 1-7, Published online: 06 Feb 2016.
<http://dx.doi.org/10.3109/09553002.2016.1135262>

'...Daily radiofrequency EMR exposure seems to affect, at least partially, the immunocompetence of the Aegean wall lizard.'

Hungary: Dispositional aspects of body focus and idiopathic environmental intolerance attributed to electromagnetic fields (IEI-EMF). Dömötör Z, Doering B, and Köteles F. Scandinavian Journal of Psychology, Published online: 10 February 2016.
<http://dx.doi.org/10.1111/sjop.12271>

'...Our findings show that SSA [somatosensory amplification] is a particularly important contributor to IEI-EMF, probably because it is the most comprehensive factor in its aetiology. IEI-EMF is associated with both a fear-related monitoring of bodily symptoms and a non-evaluative body focus...'

India: Mobile Phone Usage and its Health Effects Among Adults in a Semi-Urban Area of Southern India. Stalin P, Abraham SB, Kanimozhy K, Prasad RV, Singh Z, Purty AJ. J Clin Diagn Res 10:LC14-LC16, 2016.
<http://www.ncbi.nlm.nih.gov/pubmed/26894095?dopt=Abstract>

'Health problems like headache, earache, tinnitus, painful fingers and restlessness etc., were found to be positively associated with mobile phone usage. There was negative association between hypertension and mobile phone usage...In future, higher studies are required to confirm our findings.'

Israel: Habits of cell phone usage and sperm quality - does it warrant attention? Zilberlicht, A, Wiener-Megnazi, Z, Sheinfeld Y, Grach B, Lahav-Baratz S, Dirnfeld M. Reproductive BioMedicine Online, 31:421-426, 2015.
<http://dx.doi.org/10.1016/j.rbmo.2015.06.006>

'...Our findings suggest that certain aspects of cell phone usage may bear adverse effects on sperm concentration. Investigation using large-scale studies is thus needed.'

Israel: Effect of cell phone-like electromagnetic radiation on primary human thyroid cells. Silva V, Hilly O, Strenov Y, Tzabari C, Hauptman Y, Feinmesser R. International Journal of Radiation Biology, 92:107-115, 2016.
<http://dx.doi.org/10.3109/09553002.2016.1117678>

'...Our conditions of RFE exposure seem to have no potential carcinogenic effect on human thyroid cells. Moreover, common biomarkers usually associated to environmental stress also remained unchanged...'

Italy: Parallel β -sheet vibration band increases with proteins dipole moment under exposure to 1765MHz microwaves. Calabrò E, Magazù S. Bioelectromagnetics, Published online: 2 February 2016.
<http://dx.doi.org/10.1002/bem.21956>

'...In addition, a relationship between protein dipole moment and protein unfolding rate was demonstrated with a correlation coefficient $r=0.973$ and 95% confidence interval.'

Italy: Thirty-minutes' exposure to smartphone call triggers neutrophil activation in vitro. Lippi G, Danese E, Brocco G, Benati M, Salvagno GL, Montagnana M, Franchini M. Clin Chem Lab Med. Feb 12, 2016. [Epub ahead of print].
<http://www.ncbi.nlm.nih.gov/pubmed/26872316?dopt=Abstract>

The results of this study using human blood samples '...show that exposure to smartphone RF waves triggers activation of neutrophils in vitro...'

Spain: Does exposure to environmental radiofrequency electromagnetic fields cause cognitive and behavioral effects in 10-year-old boys? Calvente I, Pérez-Lobato R, Núñez MI, Ramos R, Guxens M, Villalba J, Olea N, Fernández M. Bioelectromagnetics, 37:25-36, 2016.

<http://dx.doi.org/10.1002/bem.21951>

'...Although some of our results may suggest that low-level environmental RF-EMF exposure has a negative impact on cognitive and/or behavior development in children; given limitations in the study design and that the majority of neurobehavioral functioning tasks were not affected, definitive conclusions cannot be drawn.'

Spain: Characterisation of exposure to non-ionising electromagnetic fields in the Spanish INMA birth cohort: study protocol. Gallastegi M, Guxens M, Jimenez-Zabala A, Calvente I, Fernandez M, Birks L, Struchen B, Vrijheid M, Estarlich M, Fernandez MF, Torrent M, Ballester F, Aurrekoetxea JJ, Ibarluzea J, Guerra D, Gonzalez J, Roosli M, Santa-Marina L. BMC Public Health 16:167, 2016.

<http://www.ncbi.nlm.nih.gov/pubmed/26892951?dopt=Abstract>

'This study protocol describes the methodologies used for characterising exposure of children to EMF-NIR in the INMA (INfancia y Medio Ambiente - Environment and Childhood) Project, a prospective cohort study.'

The Netherlands: Focal points for improving communications about electromagnetic fields and health: a mental models approach. Claassen L, Bostrom, Timmermans D. Journal of Risk Research, 19:246-269, 2016.

<http://dx.doi.org/10.1080/13669877.2014.961519>

'...Together, the evidence suggests three focal points for improving EMF risk communications: providing more clarity regarding the uncertainty of evidence for health effects, illuminating personal EMF exposures in daily life and providing more accessible and transparent information on governmental policies.'

The Netherlands: Residential exposure to RF-EMF from mobile phone base stations: Model predictions versus personal and home measurements. Martens AL, Slottje P, Meima MY, Beekhuizen J, Timmermans D, Kromhout H, Smid T, Vermeulen RC. Sci Total Environ, 550:987-993, 2016.

<http://www.ncbi.nlm.nih.gov/pubmed/26851884?dopt=Abstract>

The authors reported a moderate *'...correlation between model predictions and personal 48h ..., at home ..., at night ... and spot measurements We found no clear differences between high and low urbanised areas.....We achieved a meaningful ranking of personal downlink exposure irrespective of degree of urbanisation, indicating that these models can provide a good proxy of personal exposure in areas with varying build-up.'*

The Netherlands: Absence of acute ocular damage in humans after prolonged exposure to intense RF EMF. Adibzadeh F, van Rhoon GC, Naus-Postema NC, Paulides MM. *Physics in Medicine and Biology*, 61:488-503, 2016.

<http://dx.doi.org/10.1088/0031-9155/61/2/488>

'...there are large uncertainties regarding the temperature-SAR relationship. Given this large uncertainty (129%) compared with the uncertainty of 3D temperature simulations (61%), we recommend using temperature simulations as a dosimetric measure in electromagnetic exposure risk assessments.'

Turkey: Effects of long-term pre- and post-natal exposure to 2.45 GHz wireless devices on developing male rat kidney. Kuybulu AE, Oktem F, Ciris IM, Sutcu R, Ormeci AR, Comlekci S, Uz E. *Ren Fail*, 1-10, Feb 24, 2016. [Epub ahead of print].

<http://www.ncbi.nlm.nih.gov/pubmed/26905323?dopt=Abstract>

'...chronic pre- and post-natal period exposure to wireless internet frequency of EMF may cause chronic kidney damages; staying away from EMF source in especially pregnancy and early childhood period may reduce negative effects of exposure on kidney.'

Turkey: Effects of electromagnetic field (1.8/0.9GHz) exposure on growth plate in growing rats. Nisbet HO, Akar A, Nisbet C, Gulbahar MY, Ozak A, Yardimci C, Comlekci S. *Res Vet Sci* 104:24-29, 2016.

<http://www.ncbi.nlm.nih.gov/pubmed/26850533?dopt=Abstract>

'Calcium, growth hormone, estradiol and testosterone levels in the EMF groups were higher...In conclusion, 1800 MHz and 900 MHz EMF may cause prolong [sic] the growth phase in growing rats.'

Ukraine: Effects of 36.6 GHz and static magnetic field on degree of endoreduplication in *Drosophila melanogaster* polytene chromosomes. Dyka L, Shakina L, Strashnyuk V, Shckorbatov Y. *International Journal of Radiation Biology*, 1-6, Published online: 16 February 2016.

<http://dx.doi.org/10.3109/09553002.2016.1137105>

*'...Exposure to microwaves on the stage of embryogenesis has a stimulating effect on endoreduplication in *Drosophila* development. The effect of microwaves was not modified by the action of the static magnetic field.'*

United Kingdom: Observations from national Italian fixed radiofrequency monitoring network. Rowley J, Joyner K. Bioelectromagnetics, Published online: 11 February 2016.

<http://dx.doi.org/10.1002/bem.21958>

'...Mean value for mobile communications band was 0.047 μ W/cm² for the period 2005–2006. Findings of this analysis are consistent with similar previous studies and we conclude that mean environmental RF levels from cellular mobile communications systems are typically less than 0.1 μ W/cm².'

USA: Effects of radiation from a radiofrequency identification (RFID) microchip on human cancer cells. Lai H, Chan HW, Singh N. International Journal of Radiation Biology, Published online: 12 Feb 2016.

<http://dx.doi.org/10.3109/09553002.2016.1135264>

'...Data of the present study suggest that radiofrequency field from the microchip affects cancer cells via the Fenton Reaction. Implantation of RFID microchips in tumors may provide a new method for cancer treatment.'

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

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

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