

# Radiofrequency Protection for You and Your Family

This article is separated into 6 sections, each of which can be individually downloaded. It is a 'work in progress' incorporating new information whenever time permits.

## Section 6 References

1. Introduction; health effects associated with RF radiation; TV and radio; mobile phone masts or base stations; graphs showing change of symptoms experienced according to RF exposure levels; other sources of RF radiation
2. Sources outside the home; mobile phone masts (base stations); Televisions and TV transmitters; WiFi; interactive whiteboards in classrooms; kindergartens; hospitals; wLANs in offices; railway stations; rubbish tagging; transport; internet cafés; WiMAX; street lighting; bus stops; radar; amateur radio enthusiasts; local radio communication services; local broadband services; military equipment; police surveillance
3. Sources inside the home; mobile phones; digital cordless (DECT) phones; wired telephones; television; lighting; computer monitors; wireless mice; computer broadband connections; laptop computers; computer wireless LAN (local area network) broadband connections; dLANs/Homeplug devices; microwave ovens; baby monitors; alarm buttons; children's games; burglar alarms; 'smart' utility meters; hearing aids; dental work; de-humidifiers
4. Measuring exposure, screening and protection; How does microwave radiation get in from outside? Windows; the glass; windowfilm; curtains; bed canopies; shielding sleeping bag; earthed grounding sheets; walls; paint; skirting boards and curtain battens; ceilings; doors; Why, when I screen out the fields, does my phone still work? insulation; phones; mains filters; dirty electricity; lighting; Litovitz equipment; (electromagnetic noise)
5. Personal Screening; shielding clothing; phone pouches and headsets
6. 56 references

## References

- Abdel-Rassoul G et al 2007** – *Neurobehavioural effects found among inhabitants around mobile phone base stations* Neurotoxicology 28(2):434-40 PMID: 16962663
- Balmori A 2005** - *Possible Effects of Electromagnetic Fields from Phone Masts on a Population of White Stork (Ciconia ciconia)* Electromagnetic Biology and Medicine 24: 109-119
- Barnett J et al 2007** – *Public responses to precautionary information from the Department of Health (UK) about possible health risks from mobile phones* available online at [www.sciencedirect.com](http://www.sciencedirect.com) Health Policy 82(2):240-50 PMID: 17113180
- Bhatt CR et al 2017** – *Radiofrequency-electromagnetic field exposures in kindergarten children* J Expo Sci Environ Epidemiol 27(5):497-504 PMID: 27759027
- Bhatt CR et al 2016** – *Assessment of personal exposure from radiofrequency-electromagnetic fields in Australia and Belgium using on-body calibrated exposimeters* Environ Res 151:547-563 PMID: 27588949
- Bolte JF & T Eikelboom 2012** – *Personal radiofrequency electromagnetic field measurements in The Netherlands: exposure level and variability for everyday activities, times of day and types of area* Environ Int 48:133-42 PMID: 22906414
- Burch JB et al 2006** – *Radio frequency nonionising radiation in a community exposed to radio and television broadcasting* Environ Health Perspect 114(2):248-53 PMID: 16451862
- Chia SE et al 2000** - *Prevalence of headache among handheld cellular telephone users in Singapore: a community study* Environ Health Perspect 108(11):1059-1062 PMID: 11102297
- De Pomerai D et al 2000** - *Non-thermal heat-shock response to microwaves* Nature 405(6785): 417-8 PMID: 10839528
- Dolk H et al 1997** - *Cancer incidence near radio and television transmitters in Great Britain. I. Sutton Coldfield transmitter* Am J Epidemiol 145(1): 1-9 PMID: 8982016
- Eger H et al 2004** – *The influence of being physically near to a cell phone transmission mast on the incidence of Cancer* Umwelt Medizin Gesellschaft 17.4.2004
- Estenberg J & T Augustsson 2014** - *Extensive frequency selective measurements of radiofrequency fields in outdoor environments performed with a novel mobile monitoring system* Bioelectromagnetics 35(3):227-30 PMID: 24375568
- Frei P et al 2010** - *Classification of personal exposure to radio frequency electromagnetic fields (RF-EMF) for epidemiological research: Evaluation of different exposure assessment methods* Environ Int 36(7):714-20 PMID: 20538340
- Frei P et al 2009** – *Temporal and spatial variability of personal exposure to radiofrequency electromagnetic fields* Environ Res 109(6):779-85 PMID: 19476932
- Freiburger Appeal 2002** – [www.igumed.de](http://www.igumed.de)
- Gryz K et al 2014** – *Evaluation of exposure to electromagnetic radiofrequency radiation in the indoor workplace accessible to the public by the use of frequency-selective exposimeters* Int J Occup Med Environ Health 27(6):1043-54 PMID: 25519944
- Gryz K & J Karpowicz 2014** – *Environmental impact of the use of radiofrequency electromagnetic fields in physiotherapeutic treatment* Rocznik Hig 65(1):55-61 PMID: 24964580

**Hardell L** et al 2016 – *Radiofrequency radiation at Stockholm Central Railway Station in Sweden and some medical aspects on public exposure to RF fields* Int J Oncol 49(4):1315-1324

**Hocking B & I Gordon** 2003 - *Decreased survival for childhood leukemia in proximity to television towers* Arch Environ Health 58(9) 560-64 PMID: 15369273

**Hutter H P** et al 2006 – *Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations* Occup Environ Med 63: 307-313 PMID: 16621850

**Joseph W** et al 2012 – *In situ exposure to non-directional beacons for air traffic control* Bioelectromagnetics 33(3):274-7 PMID: 22252685

**Joseph W** et al 2012 - *Assessment of RF exposures from emerging wireless communication technologies in different environments* Health Phys 102(2):161-72 PMID: 22217589

**Joseph W** et al 2010 - *Comparison of personal radio frequency electromagnetic field exposure in different urban areas across Europe* Environ Res 110(7):658-63 PMID: 20638656

**Joseph W** et al 2010 - *Assessment of general public exposure to LTE and RF sources present in an urban environment* Bioelectromagnetics 31(7):576-9 PMID: 20607741

**Joseph W** et al 2010 – *Comparison of personal radio frequency electromagnetic field exposure in different urban areas across Europe* Environ Res 110(7):658-63 PMID: 20638656

**Kim BC & SO Park** 2010 – *Evaluation of RF electromagnetic field exposure levels from cellular base stations in Korea* Bioelectromagnetics 31(6):495-8 PMID: 20564176

**Koprivica M** et al 2016 – *Statistical analysis of electromagnetic radiation measurements in the vicinity of indoor microcell GSM/UMTS base stations in Serbia* Bioelectromagnetics 37(1):69-76 PMID: 26661841

**Koprivica M** et al 2014 – *Statistical analysis of electromagnetic radiation measurements in the vicinity of GSM/UMTS base station antenna masts* Radiat Prot Dosimetry 158(3):263-75 PMID: 24056584

**Kottou S** et al 2015 – *Preliminary background indoor EMF measurements in Greece* Phys Med 31(7):808-16 PMID: 26004352

**Lai H** 2004 - *Interaction of microwaves and a temporally incoherent magnetic field on spatial learning in the rat* Physiol Behav 82(5):785-9 PMID: 15451642

**Litovitz TA et al** 1997 - *Bioeffects induced by exposure to microwaves are mitigated by superposition of ELF noise* Bioelectromagnetics 18(6):422-30 PMID: 9261539

**Liu CF** et al 2011 - *A call for safer utilization of radio frequency identification in the e-health era* Telemed J E Health 17(8):615-9 PMID: 21780943

**Mahfouz Z** et al 2013 – *Comparison of temporal realistic telecommunication base station exposure with worst-case estimation in two countries* Radiat Prot Dosimetry 157(3):331-8 PMID: 23771956

**Markakis I & T Samaras** 2013 – *Radiofrequency exposure in Greek indoor environments* Health Phys 104(3):293-301 PMID: 23361425

**Mild KH & MO Mattson** 2010 – *ELF noise fields: a review* Electromagn Biol Med 29(3):72-97 PMID: 20707642

**Mortazavi SM** et al 2016 – *ELISA reader does not interfere by mobile phone radiofrequency radiation* Adv Biomed Res Jun 8;5:101 PMID: 27376040

**Navarro E A** et al 2003 – *The microwave syndrome: a preliminary study in Spain* Electromagnetic Biology and Medicine 22 (2 & 3): 161-69

- Oberfeld G** et al 2004 – *Further Aspects of a Spanish Study* International Conference Proceedings, Kos, Greece
- Preece AW** et al 2005 – *The Akrotiri Military Antennae Survey Report* (submitted for publication)
- Santini R** et al 2002 - *Investigation on the health of people living near mobile telephone relay stations: I/Incidence according to distance and sex* Pathol Biol (Paris) 50(6): 369-73 PMID: 12168254
- Santini R** et al 2003 - *Symptoms experienced by people in vicinity of base stations: II/ Incidences of age, duration of exposure, location of subjects in relation to the antennas and other electromagnetic factors* Pathol Biol (Paris) 51(7): 412-5 PMID: 12948762
- Schilling C J** 1997 – *Effects of acute exposure to ultrahigh radiofrequency radiation on three antenna engineers* Occupational and Environmental Medicine 54(4): 281-4 PMID: 9166136
- Tomitsch J & E Dechant** 2012 – *Trends in residential exposure to electromagnetic fields from 2006 to 2009* Radiat Prot Dosimetry 149(4):384-91 PMID: 21828064
- Tri JL** et al 2001 – *cellular phone interference with external cardiopulmonary monitoring devices* Mayo Clin Proc 76(1):11-5 PMID: 11155403
- Tuysuz B & Y Mahmutoglu** 2017 – *Measurement and mapping of the GSM-based electromagnetic pollution in the Black Sea region of Turkey* Electromagn Biol Med 36(2):132-140 PMID: 27463094
- Vagdatli E** et al 2014 – *Effects of electromagnetic fields on automated blood cell measurements* J Lab Autom 19(4):362-5 PMID: 24464815
- Van der Togt R** et al 2008 - *Electromagnetic interference from radio frequency identification inducing potentially hazardous incidents in critical care medical equipment* JAMA 299(24):2884-90 PMID: 18577733
- Verloock L** et al 2014 – *Assessment of radio frequency exposures in schools, homes, and public places in Belgium* Health Phys 107(6):503-13 PMID 25353235
- Vermeeren G** et al 2010 – *The influence of the reflective environment on the absorption of a human male exposed to representative base station antennas from 300 MHz to 5GHz* Physics in Medicine and Biology 55(18):5541-55
- Viel JF** et al 2011 – *Variability of radiofrequency exposure across days of the week: a population-based study* Environ Res 111(4):510-3 PMID: 21411077
- Viel JF** et al 2009 - *Radiofrequency exposure in the French general population: band, time, location and activity variability* Environ Int 35(8):1150-4 PMID: 19656570
- Watanabe F** et al 1998 - *Effects of Microwave Heating on the Loss of Vitamin B(12) in Foods* J Agric Food Chem 46(1): 206-210
- Wolf R & Wolf D** 2004 – *Increased incidence of cancer near a cell-phone transmitter station* Int J of Cancer Prevention 1(2)
- Wu W** et al 2008 – *[Blocking 1800 MHz mobile phone radiation-induced reactive oxygen species production and DNA damage in lens epithelial cells by noise magnetic fields]* Zhejiang Da Xue Xue Bao Yi Xue Ban 37(1):34-38 PMID: 18275117
- Yao K** et al 2008 - *Effect of superposed electromagnetic noise on DNA damage of lens epithelial cells induced by microwave radiation* Invest Ophthalmol Vis Sci 49(5):2009-15 PMID: 18436834
- Yao K** et al 2008 - *Electromagnetic noise inhibits radiofrequency radiation-induced DNA damage and reactive oxygen species increase in human lens epithelial cells* Mol Vis 14:964-9 PMID: 18509546