Your low EMF Home Articles

Your low EMF Home set of articles is separated into 9 sections, each of which can be individually downloaded. It is a 'work in progress' incorporating new information whenever time permits.

Section 8
Intermediate Frequency Fields (VLFs)
Very low frequency 24 kHz to 100 kHz (VLF)

1. House wiring and EMFs; introduction; what are normal EMFs? Choosing a consumer unit; electric Fields; cables; demand switches; external 'faults' in the supply that can cause high magnetic fields; Wiring in homes - SAGE report July 2007

2. Dirty electricity (DE) – What is dirty electricity? What effect does it have? What sort of levels are you likely to have? What you can do if you have high levels of DE; DE coming into the house; DE generated within the house; dLAN caution

3. Lighting and EMFs; Bulbs, incandescent, energy-saving, fluorescent, halogen, full-spectrum light, daylight, light emitting diode (LED); anglepoise lamps and other metal framed lamps, halogen desk lamps, bedside/bedhead lights, spotlights, standard lamps and table lamps, nightlights; light wiring; light switches, dimmer switches; Physiological effects of blue and red lights; circadian rhythms, melatonin, light and illness, timing of blue lights, timing of red/amber lights

4. Smart meters – What is it all about? Smart Grid; Remote reading meters; Smart meters; Wide Area Network (WAN) technologies; Home Area Network (HAN); RF exposures from Smart Meters; Experiences of smart meters in other countries; Solar storms may affect smart meters

5. WiFi general – cancer; diabetes; DNA; electrical hypersensitivity; eyes; heart; heat shock proteins; immune system defects; neurodegenerative diseases; neurological effects; plant effects; reproductive effects; skin effects and WiFi technical – WiMAX; Wireless Myths 1) We've been exposed to this radiation for years, it must be safe 2) People only got affected when the scare stories started, it must be psychosomatic 3) Being on a phone for 20 minutes is equivalent to 1 year in a WiFi classroom 4) The WHO factsheet says there is no cause for concern, and they should know; Technical Information for Different Protocols

6. Underfloor heating

Intermediate frequency (VLF) sources

VLF radiation is emitted from induction hobs, some CFLs, solar-power invertors and as a result of dirty electricity. A study in 2009, by Sakurai found no detectable cellular genotoxicity as a result of exposure to magnetic fields for 2 hours from an induction heating hob.

VLF exposure may be harmful in young adults by impairing the antioxidant defences directed at preventing iron-induced oxidative stress (Maaroufi 2011). Win-Shwe (2015) found that early exposure to intermediate-frequency MF reversibly affects the NMDA receptor (involved in memory), its related signalling pathways, and inflammatory mediators in the hippocampus of young, but not adult mice.

All 'energy-saving' bulbs are fluorescent, giving off high localised electric and magnetic fields. Most modern "all electronic" ones mostly emit higher frequency fields (usually 30-60 kHz, which is within the range Intermediate Frequency 24-100 kHz (IF), as defined by the World Health Organisation). There is concern about electromagnetic interference associated with IF and studies have shown that IF fields are biologically active and can have adverse health effects (Havas & Stetzer 2004, Milham & Morgan 2008).

Occupational exposure

In a study of cashiers in stores using electronic article surveillance systems at the checkout, the peak magnetic flux density was measured for IF magnetic fields, and was found to vary from 0.2 to 4 μT at the cashier's seat. ELF magnetic fields from 0.03 to 4.5 μT were also found at the cashier's seat. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) occupational reference levels for IF magnetic fields (141 μT for the peak field) were exceeded in some cases (maximum 189 μT) for short periods of time when cashiers walked through the EAS gates (Roivainen 2014).