

Electrical Hypersensitivity

Is your house making you sick?



Gawler Foundation
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Electromagnetic fields

Did you know?

Waiting for high levels of scientific proof before taking action on electromagnetic fields can lead to very high health and economic costs, as was the case with asbestos, leaded petrol and tobacco (Council of Europe, 2011)

Did you know?

Many dispute any harmful effects associated with EMFs and yet we use them to treat depression, heal bone fractures, treat neonatal jaundice and reduce pain and swelling.

Did you know?

On March 19, 2013 the French National Assembly passed an amendment to ban Wi-Fi in their schools. .

Did you know?

In 2007, the German Government recommended that wireless technology be avoided and replaced with wired connections.

Did you know?

World Health Organisation
classified radiofrequencies
used in telecommunications
*as possibly carcinogenic to
humans* (IARC, 2011).

Did you know?

Brain cancer incidence
rose by 35% between 2000
and 2008 in NSW & ACT

(Dobes et al, 2011).

Why the authorities are not acting

1. Exposure is imperceptible, ubiquitous, has multiple sources, varies over distance & time
2. It is not an ionising form of radiation
3. Health effects (brain tumours) have a long latency period
4. Lack of biomarkers – wrong!
5. \$\$\$ to be made - conflict of interest

Did you know?

Harmful effects are observed in 70% studies conducted by non-industry, compared with 32% when funded by the telecommunications industry (Henry Lai, University of Washington)

Our exposure standards are inadequate

Did you know?

Chinese, Swiss and Russian limits for Radiofrequency EMFs used in telecommunications is *100 times lower* that what is permitted in Australia

(Brown, 2000)

Exposure standards for *Radiofrequencies*

Nature: < 0.000001 $\mu\text{W}/\text{m}^2$

Frequency range	ICNIRP / Australia	Building Biology Salzburg, Austria	BioInitiative Report / Vienna Medical Association
2G (GSM) <ul style="list-style-type: none">• 900 MHz• 1800 MHz	4.5 million $\mu\text{W}/\text{m}^2$ 9 million $\mu\text{W}/\text{m}^2$	Outdoor: 10 $\mu\text{W}/\text{m}^2$ Indoor: 1 $\mu\text{W}/\text{m}^2$	Outdoor: 1,000 $\mu\text{W}/\text{m}^2$ Children: 3 to 6 $\mu\text{W}/\text{m}^2$
3G <ul style="list-style-type: none">• 2100 MHz	10 million $\mu\text{W}/\text{m}^2$		

Exposure standards for *AC Magnetic fields*

Nature: < 0.00000002 mG

ICNIRP / Australia	BioInitiative Report	Switzerland	Building Biology Standards
1,000 mG	1 mG	10 mG	Living space: 1 mG Bedroom: 0.2 mG

Exposure Standards – are not adequate

Existing standards are based on acute short term effects of heating of tissue and induced electric currents in the body.

They are NOT based on health effects associated with long term exposure to low levels typically found in the built environment.

Exposure Standards – are not adequate

Standards are based on the average 6ft healthy American soldier – NOT:

- Babies and children
- Pregnant women
- Elderly
- Immunocompromised

Did you know?

Exposure limits for EMFs
need to account for the
total exposure to
thousands of types of
radiation now blanketing
the planet

Evidence of health effects

- **Childhood leukaemia** (WHO, 2002; Wertheimer & Leeper, 1979; BioInitiative Report, 2012; Ahlbom et al, 2000; ICNIRP, 2001)
- **Other childhood cancers cannot be ruled out** (WHO, 2007)
- **Brain tumours** (IARC, 2011 and Hardell et al, 2009)
- **Breast cancer** (Blackman et al, 2001, Girgert et al, 2010)
- **Neurodegenerative diseases: Alzheimers, Parkinsons & ALS** (BioInitiative Report, 2012; Philips et al, 2006)

Health effects in children

- Headaches and dizziness
- Poor concentration and memory
- Tinnitus
- Chest tightness
- Palpitations

Did you know?

Health effects occur at levels thousands of times below the existing standards

(BioInitiative Report, 2012)

How EMFs affect the body

(BioInitiative Report, 2012)

- Reduces melatonin levels
- Increases permeability of blood brain barrier
(Nittby et al, 2008)
- Alters calcium levels in neurons
- Induces oxidative stress
- Stimulates neurons into synchronous firing
- Damages DNA: DNA strand breaks and genotoxic effects in fibroblasts, HL-60 cells and neural progenitor cells
(European REFLEX research program, 2004)
- Produces stress proteins

Electromagnetic hypersensitivity (EHS)

EHS or Idiopathic Environmental Intolerance attributed to electromagnetic fields (IEI-EMF) is a descriptive term for symptoms caused by exposure to electromagnetic fields.

Estimated to affect 10% of the population (Hallberg and Oberfeld, 2006)

Electromagnetic hypersensitivity (EHS)

European Parliament (April 2012) publishes a Written Declaration calling on the World Health Organisation to recognise EHS as a medical condition

Who recognises it as a (functional) disability?

- Sweden
- Spain
- Canadian Human Rights Commission

Did you know?

The most famous person to have electrosensitivity is **Gro Harlem Brundtland** former Prime Minister of Norway and retired Director of the World Health Organisation.

Organisations concerned about EMFs

Many!

- Council of Europe & EU Environmental Agency
- International Commission for Electromagnetic safety
- Russian National Committee on Non-ionising Radiation Protection
- International Commission for Electromagnetic Safety
- German Federal Government
- American Academy of Environmental Medicine

Scientists & Doctors Against Wi-Fi

Vienna Resolution 1998 / Salzburg Resolution 2000
Declaration of Alcalá 2002 / Catania Resolution 2002 /
Freiburger Appeal 2002 / Paris Appeal 2009 / Maintaler
Appeal 2004 / Coburger Appeal 2005 / Venice Resolution
2008 / London Resolution 2009 / Freienbacher Appeal 2005
/ Lichtenfelser Appeal 2005 / Dutch Appeal 2009 / Helsinki
Appeal 2005 / Parish Kirchner Appeal 2005 / Saarlander
Appeal 2005 / Stockacher Appeal 2005 / Benevento
Resolution 2006 / European Parliament EMF Resolution
2009 / Berlin Appeal 2008 / Potenza Picena Resolution
2013 / Seletun Statement 2010...

Electromagnetic hypersensitivity (EHS)

Symptoms (Bevington, 2010)

- **General:** headache, insomnia, fatigue, flu-like symptoms
- **Heart & circulation:** chest pain, shortness of breath, palpitations, arrhythmias, nosebleeds, cold extremities..
- **Brain:** dizziness, confusion, lack of concentration, memory impairment, dyslexia, difficulty learning, mood swings...

Electromagnetic hypersensitivity (EHS)

Symptoms

- **Ears:** earache, tinnitus, imbalance
- **Eyes:** dry and gritty, eyelid tics, irritation, pressure behind eyes
- **Skin:** rash, crawling sensations, dry skin, irritation, lumps, itchy, brown 'sun spots'
- **Muscles:** numbness, weakness, restless legs, spasms/tremors, pain in jaw and teeth
- **Sensitivities:** chemical, light, noise &/or smell

Did you know?

Recognition of EHS would ensure full compliance with the UN Convention on the Rights of Persons with Disabilities of 2007

(Bevington, 2010)

Who is susceptible to EHS? (Bevington, 2010)

1. History of high and/or long term exposure to EMFs
2. Exposure to **chemicals**– pesticides...
3. **Heavy metals** in the body – lead, mercury (amalgam fillings, fish, fungicides, CFL, vaccines...)

Who is susceptible to EHS? (Bevington, 2010)

4. Surgical metal implants
5. Epigenetic factors: atopic individuals may have hayfever & food allergies
6. Children, pregnant women, the elderly, immunocompromised, EHS sufferers...

Sources of *Radiofrequency* EMFs

- External:*
- mobile phone tower
 - radio & TV towers
 - neighbour's smart meter / router / cordless phone / mobile phone...

Sources of *Radiofrequency* EMFs

- Internal:*
- Smart meters
 - Wi-Fi, Wi-MAX...
 - Mobile phone
 - Cordless phones
 - Wireless baby monitor
 - Wireless security system...

Sources of ELF *Electric and Magnetic fields*

External: - HVTL, power lines, substation...

Internal:

- Building wiring
- Electric blankets
- Water beds
- Appliances
- Meter box / Smart meter
- Oven, Fridge, Digital clock..
- Inverter
- Lights - CFLs...

Solutions

- **Distance, distance, distance!!**
- **Avoid Wi-Fi and wireless appliances**
- **Use cables and hard wired connections –** cable/ADSL router, corded phone...
- **Window – metal awnings/venetians, flyscreens..** *(electric and radiofrequencies only)*

Solutions

- **Dense trees** (*electric field only*)
- **Turn off appliances** at the powerpoint
- **Demand switch** (*electric and magnetic fields*)
- **Shielding** (*as a last resort*) – paints, film, bed canopy... (*electric field and radiofrequencies*)

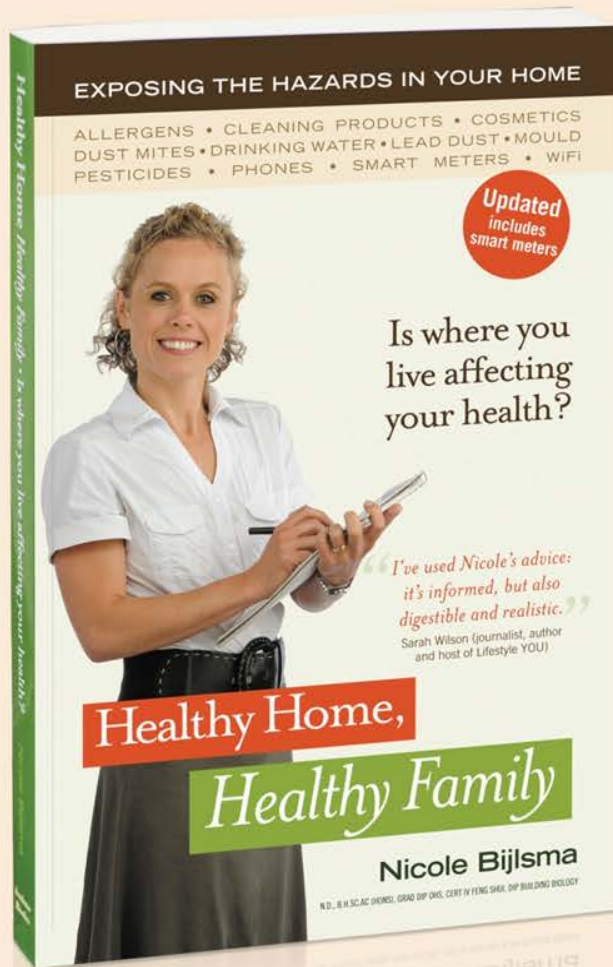
Mobile Phone Tips

- Avoid!
- Distance – air tube ear piece
- Text instead of calling
- Loud speaker
- Only use in good reception area
- Shielding – BlocSocks™



Other Considerations...

- **Wiring a home:** shielded cabling, metal conduit that is earthed, demand switch...
- **Consult a naturopath / GP** (ACNEM member) to: address low melatonin, Ca/Mg, B vitamins, chelation of heavy metals



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Updated
includes
smart meters

- Founder of **Australian College of Environmental Studies** (www.aces.edu.au)
- **Building Biologist**
- Founder of **Abode** range of cleaning products

References

American Academy of Environmental Medicine (AAEM) 2012, *The American Academy of Environmental Medicine calls for immediate caution regarding smart meter installation*. (Online). Available: <http://aaemonline.org/pressadvisoryemf.pdf>

Ahlbom A, Day N, Feychting M, Roman E, Skinner J, Dockerty J, McBride M, Michaelis J, Olsen JH, Tynes T and Verkasalo PK 2000, A pooled analysis of magnetic fields and childhood leukemia. *British Journal of Cancer*, 83(5):692-698

Bevington, M 2010, *Electromagnetic – Sensitivity and Electromagnetic – Hypersensitivity. A Summary*. Capability Books: London, UK.

BioInitiative Report 2007, *A Rationale for a biologically-based public exposure standard for electromagnetic fields (ELF and RF)*. (Online). Available: www.bioinitiative.org/report/index.htm

Blackman CF, Benane SB and House DE 2001, The influence of 1.2uT, 60Hz magnetic fields on melatonin and tamoxifen-induced inhibition of MCF-7 cell growth. *Bioelectromagnetics*, 22(2): 122-128

Brown G 2000, *Wireless Devices, Standards and Microwave Radiation in the Education Environment*. (Online). Available: www.emfacts.com/wifi/wlans_article.html

Carpenter DO 2012, *The state of scientific research as to whether advanced meters transmitting by radiofrequencies, as proposed in the present case, may constitute a risk of serious or irreversible damage to health. Expert Report*. (Online). Available: http://internet.regie-energie.qc.ca/Depot/Projets/111/Documents/R-3770-2011-C-S%C3%89-AQLPA-0075-PREUVE-RAPPEXP-2012_05_15.pdf

Council of Europe Parliamentary Assembly 6 May 2011, *The potential dangers of electromagnetic fields and their effect on the environment report. Doc. 12608* (Online). Available: <http://assembly.coe.int/main.asp?Link=/documents/workingdocs/doc11/edoc12608.htm>

References

Dobes M, Shadbolt B, Khurana, VG, Sanjiv J, Smith SF, Smee R, Dexter M and Cook R 2011, A multicentre study of primary brain tumour incidence in Australia (2000-2008). *Neuro Oncology*. 2011; 13:783-790. (Online). Available: http://www.brain-surgery.us/Australian_Brain_Tumor_Study_Summary.pdf

European Parliament 2012, Written declaration on the recognition of multiple chemical sensitivity and electrohypersensitivity in the International Statistical Classification of Diseases and Related Health Problems (ICD). 0014/2012 (Online). Available: <http://www.europarl.europa.eu/sides/getDoc.do?type=WDECL&reference=P7-DCL-2012-0014&format=PDF&language=EN>

Girgert R *et al*, April 2010, *Signal transduction of the melatonin receptor MT1 is disrupted in breast cancer cells by electromagnetic fields*, *Bioelectromagnetics*. 2010 Apr;31(3):237-45

Hallberg O and Oberfeld G 2006. Letter to the editor: will we all become electrosensitive? *Electromagnetic Biology and Medicine*, 25:189-191

Hardell L, Carlberg M and Hansson MK 2009, Epidemiological evidence for an association between use of wireless phones and tumour diseases. *Pathophysiology*. 16(2-3):113-122. (Online). Available: <http://www.ncbi.nlm.nih.gov/pubmed/19268551>

Hillert L, Berglind N, Arnetz BB, Bellander T. 2002, Prevalence of self reported hypersensitivity to electric or magnetic fields in a population-based questionnaire survey. *Scand J Work Environ Health*. 28(1):33-41. PMID: 11871850

IARC 24-31 May 2011, *IARC Monographs on the evaluation of carcinogenic risks to humans, vol 102. Non-ionising radiation, part 11: radiofrequency electromagnetic fields*. Lyon: International Agency for Research on Cancer (in-press). Available: http://www.iarc.fr/en-/media-centre/pr/2011/pdfs/pr208_E.pdf

References

ICNIRP 2001, Review of the epidemiological literature on EMF and health, *Environmental Health Perspectives*, 109(6):911-933

Nittby H, Grafstrom G, Eberhardt JL, Malmgren L, Brun A, Persson BR and Salford LG. 2008. Radiofrequency and extremely low-frequency electromagnetic field effects on the blood brain barrier. *Electromagn Biol Med.* 27(2):103-26

Philips A and Philips J 2006, *The powerwatch handbook*. Piatkus, Great Britain.

Wertheimer N and Leeper E 1979, Electrical wiring configurations and childhood cancer. *The American Journal of Epidemiology*.