

ELECTROSENSITIVITY: KEY FACTS

CONSCIOUS SPECIFIC SYMPTOMS

- Anxiety
- Asthma
- Cancer
- Confusion
- Cramp
- Depression
- Diarrhoea
- Dizziness
- Fatigue
- Hair loss
- Headache, brain pain
- Heart palpitations
- Indigestion
- Irritability
- Light sensitivity
- Memory loss
- Menstrual changes
- Muscle/nerve pains
- Nausea
- Noise sensitivity
- Nosebleeds
- Restless legs
- Sinusitis
- Skin rashes
- Sleep disturbance
- Smell sensitivity
- Thirst
- Tics, visual effects

SUBCONSCIOUS SYSTEMIC EFFECTS

- Brain wave disturbance, especially Alpha
- Cell cycle disturbance, mitochondrial dysfunction
- Cell membrane depolarisation, ion channel effects
- DNA cancerous double- and single-strand breaks
- Heart: changes to rate, variability, cerebral perfusion
- Immune system changes: chronic inflammation
- Nervous (peripheral and central) system effects:
 - Demyelination, axonal and microglia
 - Hippocampus: enzymes, proteins
 - Hormonal: cortisol, testosterone
- Reproduction: infertility, changes in offspring
- Skin: mast cell degranulation, allergic sensitivity

CAUSES

- Bluetooth, TETRA, Wifi
- CFLs, LEDs, transients
- Cordless DECT phones
- Mobile phones, masts
- Powerlines, transformers
- Smart meters, Fitbits

MECHANISMS

- Cilia. Cryptochromes
- Demyelination. DNA signalling
- Genetic variants. Glial/synapses
- Magnetite. Pineal gland
- Radical pair mechanism, SCN
- Voltage-gated ion channels

PATHWAYS

- Antioxidant glutathione. Metabolism
- Hormones: melatonin, thyroid
- Metal implants, dental amalgam, fluoride
- Oxidative stress (like ionising radiation)
- Protein expression: Hsp70, ERK etc.
- Signalling pathways: calcium flux, ions

ILLNESS AND FUNCTIONAL IMPAIRMENT FROM EHS

- Electrical Hypersensitivity (EHS), established since 1746, is an environmental systemic spectrum syndrome.
- Its cause is the patient's exposure to RFR/EMF.
- It makes people ill with a wide range of symptoms which vary as the condition and its causes change in severity.
- Symptoms are disabling, causing functional impairment under the Health & Safety 1974 and Equality 2010 Acts.
- Clinical history: cause/effect from exposure/symptoms.
- The absence of symptoms when the RFR/EMF source is removed (positive reverse provocation testing).
- Multiple biomarkers, but only a few may be elevated or suppressed, depending on the precise stage of the illness.
- Brain perfusion and fMRI scans, where the potential benefits outweigh the health risk of an MRI scan.

EHS SYNDROME: CLINICAL DIAGNOSIS

PREVALENCE IN UK 67m POPULATION

- 0.65%, 435,500 people: work restricted because of EHS
- 1.2%, 800,000 people: severe electrical hypersensitivity
- 3.6%, 2.4m people: moderate electrical sensitivity
- 100% subconsciously sensitive (80% chronic inflammation).
- Avoid RFR/EMF: e.g. mobiles, smart meters, Wifi
- Keep 10m from people using a mobile phone
- Live: 500m from masts, 600m from powerlines
- Protect sleep: e.g. military nets, shielded rooms

TREATMENT: AVOIDANCE OF RFR/EMF

NON-IONISING (RFR/EMF) and IONISING RADIATION

Both cause oxidative stress and cancer; sensitivity varies. 24 hours of mobile phone harms DNA like 1,600 X-rays. Both: primary non-thermal effects, thermal secondary. Both: hormetic (change low/high dose), no threshold.

RESEARCH INTO ES AND EHS

Started in 1730, Royal Society London. Centres include: ARTAC Paris, Breakspear Herts, EMC Dallas USA, DARPA Caltech USA, HUSM Lleida, CES Moscow, UC San Diego USA, Toronto WCH, JMU Virginia, USA.

ICD-10 CODES

- ICD-10: W90.0 – RFR; W90.8 – ELF, etc for Its cause.
- EHS, known since 1746, still lacks its own ICD-10 code.

W.H.O. STATEMENTS ON EHS AND EPh

Backgrounder 296 (2005) states EHS can be disabling, but is outdated and wrong on aetiology, confusing two different conditions, EPh (IEI-EMF) and EHS.

EPh: DIFFERENT CONDITION FROM EHS

Psychological Electrophobia (EPh, nocebo effect, IEI-EMF), known since 1903, affects 1% of EHS people. EPh's prior conditioning cannot apply to EHS children and unaware adults. 'Front' groups confuse EPh with ES.

NATURAL RFR/EMF EFFECTS

All life in the Earth's biosphere is electrically sensitive to natural geomagnetic and global electrical circuit changes at levels far below most man-made electrosmog.

ELECTROSENSITIVITY: KEY FACTS

MAINSTREAM NON-THERMAL & THERMAL SCIENCE

- scientifically based proof, from evidence
- established long-term and short-term non-thermal and heating adverse effects, known since 1733
- protective: prevents ES symptoms, e.g. cancer, EHS
- protective of all wildlife in earth's biosphere
- mainstream, independent, unbiased scientists.

INTERNATIONAL SCIENTIFIC GUIDELINES

Bioinitiative 2012, Building Biology (sleeping areas) 2015, EUROPAEM 2016, IGNIR 2018, Seletun 2010

IMPARTIAL MAINSTREAM ORGANISATIONS USING ESTABLISHED SCIENTIFIC EVIDENCE

These organisations include experts on real ES.

- Bioinitiative Group <https://bioinitiative.org>
 EHT: Environmental Health Trust, USA <https://ehtrust.org>
 EMF Scientist: International EMF Scientist Appeal [link](#)
 EPA: Environmental Protection Agency, USA
 ES-UK: Electrosensitivity UK <https://www.es-uk.info>
 EUROPAEM: European Academy for Environmental Medicine [link](#)
 IARC: International Agency for Research on Cancer [link](#)
 IEMFA: International EMFs Alliance <https://www.iemfa.org>
 IGNIR: International Guidelines on Non-Ionising Radiation <https://ignir.org>
 NTP: National Toxicology Program, USA [link](#)
 PHIRE: Physicians' Health Initiative for Radiation and Environment <https://phiremedical.org>

ARBITRARY, UNSCIENTIFIC THERMAL-ONLY CLAIM

- arbitrary and unscientific claim: no proof, no evidence
- based on Schwan's invalidated short-term heating-only myth of 1953, confirmed as unscientific in 1957
- unprotective, allowing ES symptoms e.g. cancer, EHS
- unprotective of all wildlife in earth's biosphere
- used as a 'front' for the radiation industry cartel.

ARBITRARY, UNPROTECTIVE THERMAL GUIDELINES

FCC 1998, ICNIRP 2020

'FRONT', 'SHAM' AND SINGLE-VIEWPOINT GROUPS INCLUDING USE OF ARBITRARY EVIDENCE, UNPROVEN DENIALS, 'JUNK' OR FLAWED SCIENCE

No experts on real ES, only on the different condition EPh.

- COMARE: Committee on Medical Aspects of Radiation and the Environment, UK
 FCC: Federal Communications Commission, USA
 GLORE: Global Coordination of Research and Health Policy on RF EMFs
 ICNIRP: International Commission on Non-Ionizing Radiation Protection
 PHE: Public Health England (1990-2017: PHE's AGNIR: Advisory Group on Non-Ionising Radiat.) part of DHSC: Department for Health & Social Care, Ofcom
 WHO: World Health Organisation, EMF Project 1959: WHO legally subject to the IAEA (International Atomic Energy Agency), itself subject to the ICRP (International Commission on Radiological Protection)

Radio Frequency Radiation Guidelines							
	Background level	Non-thermal and Thermal Long- and short-term, 4 - >24 hours. Peak			Thermal only Short- term only, 6 - 30 minutes. Averaged		
	Safe	Scientific, Protective, Humans and Wildlife			Arbitrary, Unscientific, Unprotective, no Wildlife		
	Johansson et al. 1997	USSR 1935	Bioinitiative 2012	EUROPAEM, IGNIR 2016, 2018	USA Schwan 1953	USA, ICNIRP 1982, 1998	ICNIRP 2020
V/m	~ 0.0000002	6	0.03 - 0.05	≤ 0.002 - 0.2	194	61	≤ 123
uW/m ²	~ 0.0000000001	100,000	3 - 6	1 - 100	100,000,000	10,000,000	≤ 40,000,000
dbm	< -90	-1	-46 to -43	≤ -70 to -31	+ 29	+ 19	≤ + 25
W/kg	< 0.00002	Seletun 2010	0.0003	1980, 1984	0.08 whole body, 1.6/2.0 head, 4.0 limbs		

HISTORY: SCIENCE

- 1733: ES: specific adverse symptoms, EMF
 1746: EHS: hypersensitivity specific symptoms, EMF
 1893: ES: specific non-thermal adverse symptoms, RFR
 1930: Non-thermal effects primary, heating secondary
 1932: EHS: hypersensitivity specific symptoms, RFR
 1945: ES symptom of cancer from non-thermal RFR
 1945: Non-thermal RFR used by military in warfare
 1991: ES shown in provocation tests, screened subjects
 2014: Genetic variants associated with EHS
 2015: Cerebral blood hypoperfusion in people with EHS
 2017: 3d fMRI scans show brain damage in EHS people
 2018: NTP study confirms mobile phones cause cancer

HISTORY: REGULATORY

- 1935: First RFR guidelines, non-thermal and thermal
 1974: Health & Safety at Work Act protects ES workers
 1990s: Insurers: RFR high risk only, like cancer asbestos
 2001: IARC classifies ELF EMF as a 2B cancer agent
 2002: WHO/ICNIRP recognise 'sensitive' ES people
 2006: UK employers remove RFR for ES people
 2010: Equality Act protects people disabled by ES
 2011: IARC classifies RFR EMF as a 2B cancer agent
 2012: NHS GPs and consultants diagnose real ES
 2012: Courts accept ES and award compensation/fines
 2013: H&SC Act: local authority duty to improve health
 2021: Court: ES person is interested party in siting mast