ELECTROSENSITIVITY

AND

ELECTROMAGNETIC-HYPERSENSITIVITY

(ES/EHS)

KEY FACTS:

NON-THERMAL SCIENCE AND FUNCTIONAL DISABILITY

OVERVIEW

- *Electrosensitivity (ES) and Electromagnetic hypersensitivity (EHS) have been known since 1746 and proved frequently since then in numerous scientific studies.*
- *An estimated 800,000 people in the UK (1.2%) are particularly electrosensitive and severely disabled by the UK's very high levels of Radio Frequency Radiation (RFR).*
- *In addition, 100% of the population is adversely affected at a subconscious level.*
- *Treatment is avoidance of RFR and Electromagnetic Fields (EMFs).*
- *It has been known since 1930 that the long-term non-thermal effects are primary and that these, not heating, cause ES/EHS and other symptoms like some cancers.*
- *However, the UK's DHSC and Ofcom still follow Schwan's mistake of 1953, protecting against only the secondary short-term heating effects. As a result, people with ES/EHS are not protected, and the whole population is not protected from other symptoms like cancers, infertility and neurological and cardiovascular harm.*

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ELF = Extremely Low Frequency
EMF = Electromagnetic Field
EHS = Electromagnetic Hypersensitivity
EPh = Electrophobia
ES = Electrosensitivity
RFR = Radio Frequency Radiation

0 Hz – 300 GHz = EMF (Field)

~3 kHz - 10^26 Hz (RF to Gamma rays) = EMR (Radiation)

A. Description, symptoms and diagnosis

1. **Electrosensitivity (ES) and Electromagnetic-Hypersensitivity (EHS)** are **physical intolerances**.
2. **ES/EHS** leads to environmental **functional disability** caused by:
   - Radio Frequency Radiation **(RFR)** - *e.g. mobile phones, cordless phones, masts, WiFi, Bluetooth, smart meters, Wifi baby alarms, Bluetooth hearing aids, fitbits, CFLs, LEDs, TETRA, satellites.*
   - Electromagnetic Fields **(EMFs)** - *e.g. dirty electricity, electric cars, house wiring, powerlines.*
3. **Common symptoms of electrosensitivity** *(it is multi-systemic and can affect all neural pathways)*: headaches, skin/eye problems, insomnia, fatigue, anxiety, memory loss, confusion, sharp or burning pains especially in the head, muscles and peripheral nerves, heart palpitations, irritability, cancers, nausea, nosebleeds, chemical/light sensitivity, imbalance, vertigo, tinnitus.
4. **Other names** for ES/EHS:
   Radio Wave Sickness (1932), **Microwave Sickness** (1964), **El-Allergy** (2000), **Ideopathic Environmental Intolerance - EMF** (2005), **EMF Intolerance Syndrome** (2009).
5. **International Classification of Disease Codes** for ES/EHS: **ICD-10-CM W90.0** (RFR), **W90.8** (ELF).
6. **Mechanisms:** e.g. blood-brain-barrier permeability, cryptochromes, demyelination, Hsp70, mast cells, retrovirus, oxidative stress, ROS, trigeminal & vagal nerves, voltage-gated calcium channels (VGCC).
7. **Diagnosis of ES/EHS** has been made by some UK **NHS hospitals, consultants and GPs** since 2013. Diagnosis involves a **clinical history of RFR/EMF sensitivity and exposure**. 20-60% of cases can also be shown in positive results from other tests e.g. 3d fMRI, cerebral blood perfusion scans (UCTS), DNA, H, HRV, Hsp, MT, sAA, TSH, but this can vary according to individual genetic haplotypes.
   The Nordic Council of Ministers' **diagnostic test** (2000): **eliminating** RFR/EMF **eliminates** ES symptoms**.**
8. **Conditions related** to ES include: Amyotrophic lateral sclerosis (ALS), Autism, Brain tumours, some Cancers, Chemical/Light Sensitivity, Chronic Fatigue Syndrome/ME, Demyelinating conditions, Type 2 Diabetes, Leukaemia, Mitochondrial diseases, Multiple Sclerosis, Obesity, Post Viral Syndromes, etc.
9. **Viruses:** studies since 1960 show that EMFs/RFR can reduce immunity and thus increase susceptibility to viral infections, while it has long been known that viruses can react to geomagnetic perturbations.

B. Prevalence and awareness

10. **Electrosensitivity** was first shown **in electrical researchers: ES** in **1733** (du Fay), **EHS** in **1746** (Trembley FRS, after the Leiden jar was invented); from **1932 in electrical, radio and radar workers**.
11. Since the 1980s, **mobiles, computers and Wifi** caused ES/EHS to spread into the **whole population**.
12. Current **prevalence:** an estimated 1.2% (804,000 in UK) of the population has **severe sensitivity** and is **severely disabled**, 4% (2.7m) has **moderate sensitivity** (UK government-sponsored surveys), 80% has **conscious sensitivity** (e.g. chronic inflammation), and all humans - 100% - have **subconscious sensitivity**.
13. Thus the estimated percentage of people in the UK severely disabled by RFR/EMFs (1.2%) is over twice the number of Registered Blind & Partially Sighted (0.5%) and closer to those with Autism

(1.04%), Dementia (1.3%) and Wheelchair users (1.87%).

However, as a **Hidden Disability**, ES/EHS is **less well known** than many other disabilities.

14. **RFR/EMFs affect all health,** but I**ndividual sensitivity** depends on age, genetics, inflammation, etc.
15. **Humans are sensitive to geomagnetic disturbances**, eg sferics, solar/lunar effects, thunderstorms.
16. **Wildlife sensitivity**: all animals, plants, birds and insects, like humans, are sensitive to RFR/EMFs.
17. Up to **some 90% of people and their doctors may be unaware of their ES/EHS** because

    (a) it is difficult to imagine that a common substance such as RFR/EMFs would be **allowed** in society when it has been known since 1932 to cause symptoms of ES/EHS and, from 1953, cancers;

    (b) it is **unseen** and most people do not feel it;

    (c) many doctors **lack sufficient training in environmental medicine**;

    (d) it is **hard to notice the link** between RFR and ill health, except for a very small number who, e.g.:

    - develop tinnitus or a brain tumour in or near the ear where they always hold their mobile phone,
    - often feel ill with symptoms they later discover are ES/EHS in a particular room or place when the Wifi is switched on,
    - feel stabs of pian from a neighbour's smart meter when it transmits to a mast when there is nothing in their own property likely to cause such ill health,
    - develop what they later discover are ES/EHS symptoms when a mast is switched on nearby,
    - develop what they later discover are ES/EHS symptoms when they move into a flat with a mast on the roof above or a substation in the basement below.

    (e) It took researchers with detection meters to find out why children in just two classrooms in a primary school were consistently ill with headaches, nosebleeds, earaches etc.. They discovered a narrow beam of radiation from a nearby phone mast, which was otherwise blocked by adjacent buildings, passing through just these two classrooms. The children were healthy in the other classrooms.

C. Typical functional disabilities from ES/EHS and lack of recognition

18. **People with ES/EHS** can find the following **everyday tasks difficult or impossible**:

    (a) Accessing log-ins, e.g. bank accounts, university portals or other Apps, where two-factor authentication requires a number or message to be sent to a mobile phone, but not to a wired landline telephone.

    (b) Accessing organisations which rely on communication and messages which is only by mobile phone or uses Apps available only on mobile phones and not on computers with cabled internet.

    (c) Downloading information where Wifi is required, e.g. Kindle books, log-ins, WhatsApp etc.

    (d) Some severe cases of ES/EHS can also prevent the use of computers and laptops even with wired internet connection rather than Wifi, making emails, online bank accounts, online reporting to utility companies, online booking events, and online accessing information etc impossible.

    (e) Some severe cases of ES/EHS prevent even the use of landline telephones.

    (f) Accessing places where Wifi is provided eg libraries, schools, shopping centres.

    (g) Accessing places where mobile phones are allowed e.g. shops, transport, stations, airports.

(h) Accessing places where wireless smart meters have been installed.

(i) The use of Wifi, mobile phones and wireless smart meters applies to both an individual's property if shared with other people, and to the radiation from a neighbouring house invading the person's house, flat or garden, or public roads where they expect to be able to walk without being harmed.

(j) ES/EHS can make it impossible for a person with this condition to stay in most hotels, visit many theatres or public places like shopping centres, travel on buses or trains with Wifi and other people using mobile phones, visit or stay in a relative's or friend's house, sit next to a person with a mobile phone switched on, communicate with others where all old telephone public call boxes have been removed, find out information only available via downloading or scanning a QR code on a mobile.

(k) Accessing areas without adaptive power control for Wifi, smart meters, satellites and some masts, where the antenna emit radiation at full power at all times even when not used for communication.

(l) Accessing homes and offices using radiation for the Internet of Things (IoT) where 'white' kitchen appliances, boilers, doorbells and security devices often lack switches to turn off the radiation.

(m) Accessing cars and other vehicles where Bluetooth or Wifi cannot be turned off easily.

(n) Accessing cars or taxis using mobile phones as live Satnavs, or being in the car behind or in front.

(o) Purchasing hearing aids, baby monitors and computer printers which do not use Bluetooth or Wifi.

(p) Accessing studios, stages, churches, schools, university lecture theatres, museums, National Trust houses and gardens, and performance venues using radio mikes, Wifi and radio communications.

(q) Accessing workplaces, schools, streets, homes etc near to mobile phone masts.

(r) Some people in the UK are forced by RFR/EMFs to live in only part of their home and garden.

(s) Some people are forced to flee from their homes and families to live in cars or tents in wilderness areas with no man-made mobile phone radiation, if they can and if such places still remain.

(t) A few have committed suicide from total social rejection, DHSC(/Ofcom) denial and severe ill health.

(u) From 2020, the UK has allowed satellites to deploy harmful 5G radiation from space. People with ES/EHS and others reported new and sometimes continuing ill health after this radiation began, even when the individuals concerned did not know of its activation beforehand.

19. Although **the Council of Europe Parliamentary Assembly** voted in 2011 that **member states should provide zones free of radiation** for their citizens disabled by ES/EHS, the UK has not yet done so.

20. Following **Sweden in 2000,** and **Canada and the USA subsequently,** some countries have **specifically recognised people with functional disabilities caused by ES/EHS**. Some countries have, e.g., provided train carriages without Wifi and without mobile phones, or paid for people with ES/EHS to shield their homes, or provided specific advice to employers on making workplaces healthy and safe for people with ES/EHS. The UK has not yet done so and the DHSC/UKHSA/PHE followed by Ofcom still denies that real ES/EHS exists.

21. Over 80 people, each with their MPs' support, **complained to the PHSO** in 2014 about PHE's failure to accept the science on ill health from RFR/EMFs. In 2020 the PHSO finally announced that PHE (now UKHSA) was not required to follow the majority or mainstream science, or even mention it, since they

could make any claim they wished. Therefore the PHSO prevented the representatives of the estimated 800,000 people severely disabled with ES/EHS from achieving recognition, justice or help.

22. DHSC/Ofcom's choice of **heating** guidelines in 2020 means people severely disabled with ES/EHS are unable to live a life with social, educational and health opportunities **equal to those of other people**.

D. Research into electrosensitivity and EHS

23. **ES research began in 1730** at the Royal Society London (Stephen Gray FRS, the 'father of electricity').
24. Adverse health or **Electrosensitivity symptoms** were reported in 1733 and **EHS effects** in 1746.
25. **Russia and Poland researched most effects by 1970**. In the US, Glaser listed 2,300 studies in 1972.
26. The discovery of myelin's saltatory conduction (1939), led to understanding **demyelinating** conditions.
27. **Calcium voltage-gated channels** were discovered to be an ES pathway in 1974 by DARPA scientists.
28. **Cryptochromes**, proteins sensitive to EMFs and RFR, were discovered in 1980.
29. The USA's **DARPA Project Iceman** (2020) is to prevent **harmful ES/EHS symptoms** in aircraft crew.
30. **Centres include:** ARTAC Paris, Breakspear Herts UK, CES Moscow, DARPA Caltech California, EMC Dallas Texas, HUSM Lleida Spain, JMU Virginia USA, Toronto WCH Canada, UC San Diego California.

E. Provocation tests prove that electrosensitivity and EHS exist

31. **Conscious provocation tests** since 1991, where each individual is tested for the specific frequencies to which they are sensitive under appropriate conditions, show **100% accurate and correct responses**, providing proof of ES/EHS at a **conscious as well as a subconscious level**.
32. **Conscious** psychological tests **sponsored by the UK government and the mobile phone industry under MTHR** predictably failed to provide proof, as did almost all other MTHR studies, partly because results were averaged and not **individual**, because the subjects were **unscreened** for whether they had ES/EHS, and because of **inappropriate conditions**, excluding severe cases of ES/EHS. In fact some individuals were proven as responding consistently and accurately to RFR/EMF provocation but individual results were not published or the studies assumed failure if they did not find 80% in total.
33. Some research fails to allow for conscious symptoms caused by **entrainment** of pain pathways.
34. Evidence from **personal dosimeters** attached to the subject's body shows a **consistent correlation** between **symptoms** and **high exposures**.
35. Dosimetry data reflect **individual experiential evidence,** as from 1733 when ES was first recorded.
36. The **mast studies** (see below) prove beyond all reasonable doubt that in blinded situations people are **sensitive to RFR** with the **specific symptoms** identified since 1733 as related to ES/EHS.

F. Treatment and prevention in the home, school and workplace

37. **The key treatment is avoiding RFR** (e.g. WiFi, smart meters, mobiles, masts) especially in bedrooms.
38. Some ES/EHS people use military-style **shielding** with silver netting or protective clothing, or **live far from man-made radiation** if they can find anywhere without man-made RFR environmental pollution.

39. Since 2006, **UK employers** have **removed and banned Wifi, mobile phones, etc.,** for ill health and functional disability in people with ES/EHS (Health & Safety At Work Act 1974, Equality Act 2010).
40. **UK tribunals/courts have recognised EHS as a disability** and awarded compensation (2012 on). They have also **fined employers** making accommodations for people with EHS **too slowly**.
41. In 2013 an Australian court compensated a person with EHS for **aggravation of his ES symptoms** caused by the employers' Wifi and computers and the employer's **failure to protect** its employee.
42. In 2021 Russia **banned educational use of mobile phones and Wiif in schools, at home and elsewhere, and masts near schools.** There are bans in China, Cyprus, France, Israel, Spain etc.
43. **Trade Unions** in the UK state that **carcinogens**, like RFR/EMFs, should be **avoided** in the workplace.

G. Phone and radio masts: ES/EHS symptoms and cancers at non-thermal levels

44. **Increased cancers** were first found within 2 miles of a **radio mast** at **non-thermal levels** in 1994.
45. In 2001 a court in Geneva ordered a phone mast to be **dismantled** and financial compensation given to nearby residents.
46. **ES/EHS symptoms** near **mobile phone masts** at **non-thermal levels** were first published in 2002.
47. **Increased cancers**, at **over ten times** for women, were found close to **mobile phone masts** (2004).
48. The Italian Supreme Court ordered Vatican Radio to **compensate** the town of Cesano for leukaemia cases caused by its masts (2011).
49. In 2019 a mast near a US school was **removed** after 4 pupils and 3 teachers had cancer within 3 years.
50. A Dutch appeal court in 2020 recognised a person with EHS living 350 metres away and out of sight a planned mast as an **interested party** who should be involved in decisions on planning for masts.
51. **Local Councils** must **'improve public health'** (NHS Act 2006; NPPF 2019: 8b, 91, 92, cf.116).

H. Cancer from non-thermal RFR and EMFs

52. It has been known, since 1953, that **RFR causes cancer** and, since 1979, that **EMFs cause cancer** at **non-thermal levels.**
53. **The International Agency for Research on Cancer** (**IARC,** part of the WHO) classified EMFs, ELF and RFR, as **class 2B possible human carcinogens** (2001 and 2011) at **non-thermal levels**.
54. Experts say (since 2013) RFR should be **reclassified as a class 1 certain human carcinogen**.
55. The $30 million US NTP study (2018), requested by the FDA to see if mobile phones cause cancer, found 'clear evidence', their highest category, **confirming non-thermal mobile phones cause cancer**.
56. The Ramazzini study (2018) confirmed that **non-thermal mobile phone masts cause cancer**.

I. Mechanisms for non-ionising radiation, like ionising, causing cancer etc.

57. RFR has biological **non-thermal effects** (shown in 1930).
58. **Non-thermal effects of RFR are primary** and **cumulative**, with heating secondary (established 1936).
59. **RFR/EMFs can cause cancer** without heating, but ≥ 0.1^{o} heat increase does not always cause cancer.
60. **Non-ionising RFR and EMFs** can cause **oxidative stress, DNA damage, cancer** and **ES/ EHS**.

RFR/EMFs, like other **non-ionising carcinogens**, e.g. dioxins, smoking and viruses, do not break chemical bonds but can still cause cancer **directly**, or **indirectly** by restricting repair DNA mechanisms. Only about **1%** of cancer deaths are caused by **ionising** radiation, and **99% by non-ionising causes**.

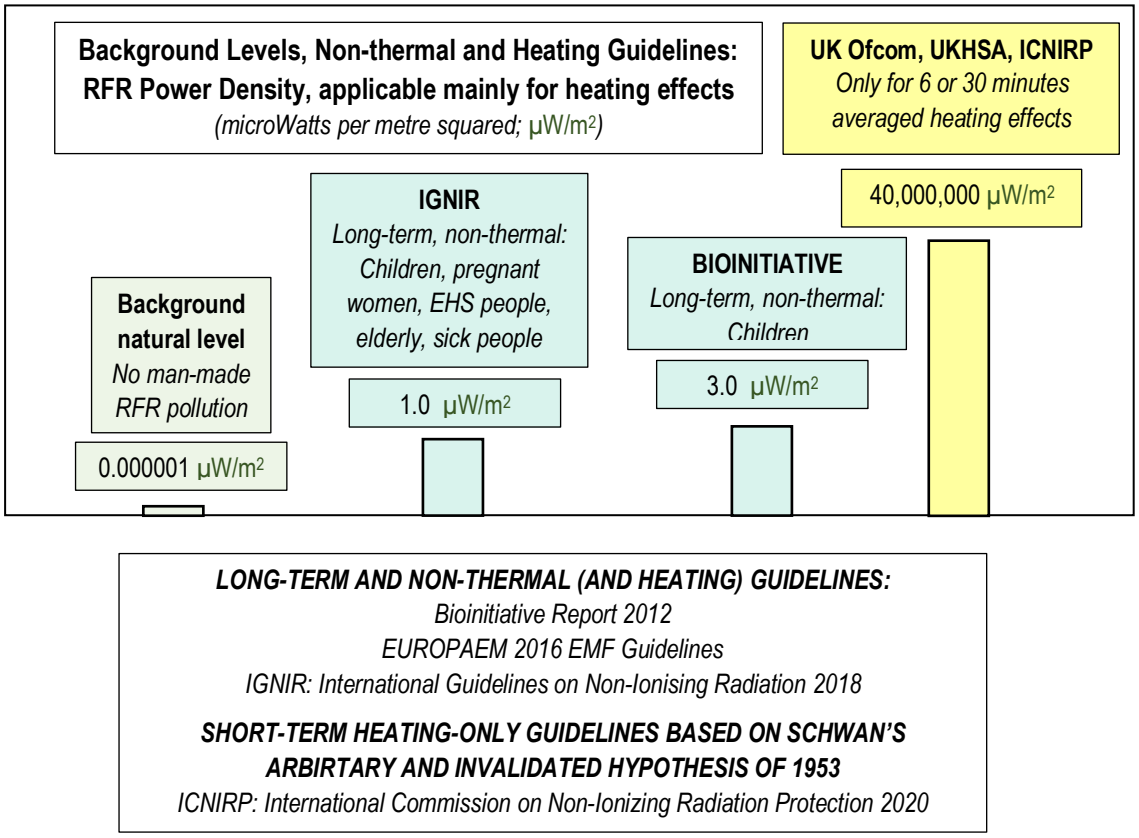
61. Ionising (1992) and **non-ionising** radiation (2019) damage nearby cells through the **Bystander Effect**.
62. Ionising (1992) and **non-ionising** radiation (2014) damage cell division through **Genomic Instability**.
63. **Photon effects** differ between **non-ionising** and ionising radiation. For RFR, **photon density** and **coherence, not energy levels,** cause **biological effects**, as with **pulsed microwaves** inducing electric currents leading to **membrane depolarisation** below ionising photon energy levels (1966).
64. **Eyes are sensitive to EMFs**. Human retinas perceive a **single photon of non-ionising non-thermal visible light**. 1 Watt of RFR produces 500,000 times more **non-ionising photons** than 1 Watt of visible light. They have **similar non-thermal energy levels** and cause non-thermal **biological effects**.
65. Non-ionising radiation causes biological effects through **coherence, resonance** and the **Radical Pair Mechanism** (RPM) as in spin chemistry (discovered 1960s). It is based on the **Zeeman Effect** (1896), where magnetic fields alter pairs of free radicals, similar to the Stark Effect (1913) with electric fields.
66. The RPM explains magnetic navigation in animals, e.g. through **cryptochrome proteins** in the eye.
67. **Pulsed** microwaves, as used by mobile phones, Bluetooth, Wifi and smart meters, cause greater and more widespread adverse health effects than **continuous** microwaves (discovered 1959, for cataracts). **Pulsed RFR** causes t**innitus** or **microwave hearing** (observed before 1945 and proved 1961).
68. RFR has **cumulative** and therefore **long-term non-thermal adverse health effects** (proved experimentally in 1959), as well as acute short-term effects and **delayed** effects (shown in 1932). Therefore the only scientific and protective guidelines are **long-term** and **non-thermal**.

J. Guidelines: long-term non-thermal (1935) and short-term heating (1953)

69. **Non-thermal non-ionising RFR limits** were the first non-ionising/ionising guidelines (1935, USSR).
70. **IGNIR** (International Guidelines on Non-Ionising Radiation), Bioinitiative, EUROPAEM and Seletun, are **long-term** and **non-thermal** to prevent **all** ill health, not just ICNIRP's short-term heating effects.
71. The **vast majority of involved scientists** have asked the WHO/ICNIRP to accept non-thermal effects.
72. **Appeal Court judges in the USA** in 2021 'hammered' the Federal Communications Commission (FCC) for **still denying non-thermal effects.**
73. **Ofcom,** similar to the USA's FCC as a telecommunications regulator and responsible for applying health and safety standards, follows ICNIRP based on unscientific and misleading advice from the DHSC and its agencies UKHSA/PHE, whose employees are members of the industry 'front' ICNIRP.
74. **The ICNIRP** is a **private** single-minority-viewpoint **cartel**, still based on Schwan's 1953 invalid heating limit regarded by the US coordinator as **arbitrary** in 1957, especially for omitting chronic effects.
75. ICNIRP's averaged short-term heating limits **support the RFR industry** but **explicitly exclude long-term and non-thermal effects** like cancers and ES/EHS.
76. DHSC/UKHSA/PHE uses COMARE, like AGNIR, as a '**front'** committee to protect high radiation levels.
77. The **European Union Parliament** in 2008 voted ICNIRP's short-term heating guidelines as **obsolete**.

78. **The Council of Europe Parliamentary Assembly** voted for a **0.2 V/m limit** in 2011 (ICNIRP 134 V/m)**.**
79. Although **ICNIRP** (2002) and **ANSI** (1966) accept that **people are harmed by RFR below their heating limits,** ICNIRP expected **individual states** to adopt the appropriate **non-thermal guidelines** for such people instead of its own heating guidelines. ICNIRP admitted that, given the numbers of people with ES/EHS, it may be easier for the state to adopt long-term non-thermal guidelines for the whole population. **The UK has not yet carried out** this ICNIRP recommendation.
80. ICNIRP was adopted in 1992 as an agency of the World Health Organization (WHO) and the WHO delegates setting its RFR and EMF guidelines to ICNRIP. However, the WHO has been in **legal subservience** to the IAEA **radiation industry** since 1959. Therefore ICNIRP operates in effect as single and minority viewpoint cartel like a 'front' for the radiation industry and lacks independence.
81. This lack of independence by ICNIRP was recognised by the Court of Appeal of Turin in 2020 when upholding a case which found that a mobile phone caused a brain tumour. The Court stated that **studies by members of ICNIRP** should be given **less weight** than **independent** studies showing non-thermal effects because of ICNIRP's conflict of interests.
82. Although non-thermal effects were proved primary in 1930, where non-thermal RFR caused adverse health effects but heat without RFR did not, ICNIRP still stated in 2021 that its guidelines are based on only 'the thermal effects'. It wrongly claimed that 'The lowest exposure levels that can cause adverse health effects are due to thermal mechanisms', a **hypothesis long disproved in numerous studies** since 1930 and by the established majority-viewpoint science which accepts non-thermal effects, as shown by the WHO/IARC's classification of EMFs and RFR as 2B carcinogens based on non-thermal evidence. In 1957 US regulators called Schwan's 1953 heating limit 'arbitrary' and unscientific, but this is still used by ICNIRP.
83. **RNCNIRP** (Russia National Committee, established 1997) has highlighted the unscientific and unprotective nature of ICNIRP's guidelines. RNCNIRP, unlike ICNIRP, accepts the **established long-term and cumulative non-thermal effects, including modulation.** Its aim is to prevent cancer and ES/EHS and to protect children. Russia **bans** educational use of mobiles and Wifi at school, home, etc.
84. ICNIRP has **not yet** proposed the **long-term non-thermal guidelines** which would protect all people from **established non-thermal effects**, such as ES/EHS, cancers and infertility.

Background Level, Non-thermal and Heating Guidelines: Electric Fields, applicable to all health effects *(Volts per metre; V/m)*						
Back-ground (safe) levels	**Majority mainstream guidelines**			**Minority unscientific guidelines**		
	Long-term (and short-term)			*Short-term only*		
	Non-thermal (and heating)			*Heating only*		
	Peak (and averaged)			*Averaged over 6 or 30 minutes*		
	Origin: majority scientific evidence			*Origin: Schwan's arbitrary claim of 1953*		
	Protection against EHS and Cancers			*No protection against EHS and Cancers*		
V/m	*Date*		*V/m*	*Date*		*V/m*
0.000001	2018	IGNIR	*0.02 - <0.002	2020	ICNIRP	134
**Children, pregnant women, people with electromagnetic hypersensitivity, the elderly, the sick*						



85. RFR/EMF **meters** are essential for everyone to **check levels** to ensure their health and safety. Many simple battery-operated pocket-sized detection meters are available, typically costing £100 to £200.
86. **SAR** (Specific Absorption Rate), a **heating metric** still used by the RFR industry for e.g. mobile phones, is irrelevant to long-term non-thermal and cumulative effects, such as cancers and other symptoms like ES/EHS. It has been established by US DARPA scientists since 1974 that, via one of many pathways, RFR/EMFs act directly on voltage-gated channels in cell membranes. Current knowledge suggests that this rapid effect depends more on ionic depolarisation through, for instance, magnetic fields and resonance than a sudden increase of 1° or more of heat.
87. SAR as a **heating metric is irrelevant to the non-thermal effects** like cancers and ES/EHS since it:
    (a) measures only **short-term (6 or 30 min.) heating**, not established long-term non-thermal effects;
    (b) uses **plastic dummies** filled with a homogenous liquid to represent a **healthy young adult male** from among US army recruits; even for short-term heating it omits children, pregnant women, the elderly, the sick and those with long-term immune and inflammatory conditions and ES/EHS.
    (c) uses only a **single source**, not a synergy with other RFR/EMF and chemical pollution.

K. Therapeutic and beneficial effects of non-thermal RFR/EMFs

88. It is wrong to claim, like ICNIRP, that only heating from RFR/EMFs causes health and biological effects, not non-thermal RFR/EMFs. Numerous **therapeutic procedures** now in common use in hospitals across the world depend on **non-thermal health and biological effects.**
89. Many hospitals are well aware of the **risks of ES symptoms** for **people sensitive to RFR/EFMs** from **therapeutic and beneficial investigative devices**. These include the powerful magnets of MRI

scanners for staff moving rapidly through the magnetic field and thus generating endogenous electric fields. These in turn can cause electrosensitivity symptoms in any staff who are especially sensitive.

90. Some hospitals, outside the UK, have **specially shielded rooms** for people sensitive to EMF devices.
91. Most RFR/EMFs seem to be **biphasic** and can cause both **biological benefit and harm**.
92. It is well established that many RFR/EMF effects are **non-linear**, acting in '**windows**', or **cumulative**, and depend on the particular frequency and strength to produce their beneficial or harmful effect.
93. **Natural RFR/EMFs**, like man-made non-ionising radiation, can also be both **beneficial** and **harmful**. For instance, sunlight, another form of non-ionising radiation, can produce beneficial Vitamin D, but it can also cause harmful skin cancer in people with sensitive skin.

L. Warfare - hostile use of non-thermal microwave weapons; secrecy and denial

94. **Non-thermal RFR as weapons** causes ES symptoms (1953 on), e.g. against the women at Greenham Common in the 1980s, during the Northern Ireland troubles in the 1990s, and in the Middle East wars.
95. There were **microwave attacks** on US and Canadian diplomats in Moscow (1953, 1996), Cuba (2016) and China (2018). in 1996 the US government knew of microwave attacks against CIA staff but kept them **secret**. With others they **denied** that the attacks from 2016 were by microwaves, until 2020 when a secret scientific report was leaked to the media.

M. Lack of insurance, or only high risk like asbestos

96. **Underwriters refuse to insure RFR/EMF risks** (1999 on), or classify them as **high risk,** like asbestos. Employers, including local authorities where appropriate, are required to have **liability insurance** to cover all injuries (Employer's Liability (Compulsory Insurance) Act 1969).

N. ICNIRP/WHO, DHSC and Ofcom invalidly conflate real ES/EHS with EPh

97. **The World Health Organization** classifies **ES/EHS** as a disabling **Environmental Intolerance** (EI).
98. The **industry 'front' ICNIRP/WHO EMF Project invalidly conflated ES/EHS with EPh** in 2005. The WHO Backgrounder 296 unscientifically gave causes and treatment for **Electrophobia (EPh)**, not for real ES/EHS. Since 1959, the WHO has been **legally subservient** to the IAEA **radiation industry**.
99. **The different condition of psychological Electrophobia** (EPh) or Nocebo Effect, known since 1903, affects 1% of ES people. EPh's prior conditioning cannot apply to ES children or unaware adults.
100. The UK's **DHSC/UKHSA/PHE** still provides **conflicted and unscientific advice** that real ES/EHS does not exist, because it **still denies** the non-thermal health effects first recorded in 1733. Its employees are and have been **members and advisers of ICNIRP**, which **still follows** Schwan's 1953 invalidated claim of only short-term heating health effects. They advise Ofcom to adopt the short-term heating-only guidelines they themselves set through ICNIRP. Thus Ofcom denies established long-term and non-thermal effects like ES/EHS and cancers, and **fails to protect ES/EHS people and all others**.

For further information, see www.es-uk.info/. The charity Electrosensitivity UK (ES-UK) was founded in 2003 to support people in the UK with ES/EHS and to inform others of health effects caused by RFR and EMFs.

M Bevington, May 12 2021