

SERIOUS FLAWS IN THE WHO'S AND ICNIRP'S CLAIMS ON 5G AND RF WIRELESS RADIATION

The claims by the WHO and ICNIRP that 5G and RF wireless radiation are safe are seriously flawed and represent a minority viewpoint.

Instead, politicians, regulators and medical doctors should follow the majority viewpoint scientists.

1. The WHO and ICNIRP: minority and outdated thermal viewpoint

The self-appointed groups of the World Health Organization (WHO) and International Commission on Non-Ionizing Radiation Protection (ICNIRP) support an erroneous, invalidated and outdated heating hypothesis. They form a small cartel of people holding a minority scientific viewpoint which favours the wireless industry. Their rejection of the majority-scientific viewpoint has been described by the experts in this field as 'unscientific' and 'corruption'.

2. Majority viewpoint accepts non-thermal effects

In contrast, the vast majority of the relevant expert scientists in eastern countries since the 1950s have accepted that the scientific evidence has long shown adverse effects from RF wireless radiation at non-thermal levels. This has also been the case for the vast majority of scientists in western countries since 2008. Thus the consensus among the majority of scientists is that RF wireless radiation at non-thermal levels has adverse effects which are not protected by WHO or ICNIRP's minority rejection of the scientific consensus.

The vast majority of scientists also accept, in addition to the proven adverse effects, the therapeutic uses of non-thermal wireless radiation now commonly applied in numerous hospital procedures, none of which can occur according to the WHO and ICNIRP minority who still reject non-thermal effects.

3. 2G, 3G and 4G already proved harmful

To suggest that 5G has been proved safe would be clearly against the vast majority of the scientific evidence on 2G, 3G and 4G radiation, which is the same as used for the current initial rollout of 5G.

4. No tests on 5G so far, so impossible to claim as safe

It is wrong to state that 5G is safe. There have been no tests on 5G's safety so far, although existing evidence already proves that its type of radiation is unsafe.

5. Millimetre waves known to be dangerous and used as weapons

Future 5G systems will use millimetre waves. Millimetre waves have been proved to be unsafe in many ways. They are also used as offensive weapons in electronic warfare and even in crowd control where they have not been banned on safety grounds.

6. The dangers of RF wireless radiation were described in 1932 with cancer shown in 1953

It has long been known that radio frequency (RF) wireless radiation is dangerous. The symptoms of low-level RF exposure, often described as specific symptoms of electrosensitivity, were first recorded in 1932, the year that such RF harm was also confirmed as non-thermal. In 1935 the USSR adopted prototype safety guidelines based on non-thermal effects. Cancer was discovered as caused by RF wireless radiation in 1953, but the USA adopted guidelines in 1953 based on Schwan's mistaken heating hypothesis. Now up to about half the world follows Russia with non-thermal guidelines, while the USA and the UK still follow Schwan's mistaken heating claim from 1953.

7. Cancer and genotoxic DNA damage confirmed in 2004 by EU study

In 1994 DNA damage from microwaves was shown within the current ICNIRP heating guidelines of $10,000,000 \mu\text{W}/\text{m}^2$, leading to a call for their replacement. In contrast current international non-thermal guidelines typically range from 0.1 to $100 \mu\text{W}/\text{m}^2$. This DNA damage was confirmed by the seven-nation REFLEX research study funded by the European Union in 2004. It showed that the health effects in the form of genotoxic DNA damage (micronuclei DNA strand breaks) are similar or greater for 24-hour exposure to an ordinary GSM 1800 MHz mobile phone at SAR 1.3 W/kg (i.e. within the UK safety limit of 2.0 W/kg and the FCC's of 1.6 W/kg), compared with 0.5 Gy gamma-rays or exposure to 60 CT scans. The findings of this government-backed study well illustrate that wireless radiation of the type already used and planned for 5G is unsafe.

8. International long-term non-thermal safety guidelines should be used, not ICNIRP's short-term (6 or 30 minutes average) obsolete guidelines

All forms of electromagnetic (EM) radiation can be unsafe. This is the reason why international safety groups and safety guidelines exist.

(a) **Long-term biological guidelines** include:

Bioinitiative 2012, EUROPAEM EMF Guidelines 2016, IGNIR 2018, and Seletun 2010. These international guidelines typically adopt values for public safety levels ranging from 0.1 to $100 \mu\text{W}/\text{m}^2$. These are up to 100 million times lower than ICNIRP's obsolete short-term heating guidelines.

(b) **Short-term heating guidelines** include ICNIRP's of 2020. These raised their heating limits which were already obsolete in 1998:

(i) They have been raised **by a factor of 4** since 1998 to allow for 5G's greater intensity. They now permit $40,000,000 \mu\text{W}/\text{m}^2$ (power density). This is based on the Specific Absorption Rate (SAR) - the heat absorbed by the body in W/kg to prevent only a rise of originally one degree in body temperature averaged over 6 or 30 minutes. They do not cover long-term effects like electrosensitivity or cancers.

(ii) Tissue has been classified into two types, both allowing local temperature rises:

Type 1 (the upper arm, forearm, hand, thigh, leg, foot, pinna and the cornea, anterior chamber and iris of the eye, epidermal, dermal, fat, muscle, and bone tissue) temperature rise of **5°C allowed**, no time limit;

Type 2 (the head, eye, abdomen, back, thorax, and pelvis, excluding Type 1) temperature rise of **2°C allowed**, no time limit (p. 489).

These limits are designed to prevent heating causing pain and thermal tissue damage above **41°C** (p.501). The process of heating is the same as cooking in a microwave oven.

However, spermatogenesis and fetal teratogenic effects can occur with a rise of $\leq 2^\circ\text{C}$, which would appear to carry a risk that these temperature rises could 'impact health'.

In addition, little or no allowance is made for the skin of children and the elderly being significantly thinner than that of others, or the risk of looking into focused beams.

(iii) **Cell membrane permeability** is recognised as a biological effect (p.487), although [Fragopoulou AF et al.](#) (Brain Behav. 2018) found that mobile phone radiation increased cell membrane permeability by changing its phospholipid composition, with the expression of 178 genes changed in mice after 2hr of 1800 MHz at 3 cm, at a head SAR of 0.02-0.366 W/kg, well under heating exposure limits.

(iv) ICNIRP guidelines still use **averaging** for duration, area, and supposed absorbed rather than incident heating effects. See: [ICNIRP Guidelines: Unscientific and Not Protective](#) (2020) pp.4-5.

9. The World Health Organization's (WHO) online factsheet entitled "Electromagnetic fields and public health: mobile phones" is outdated, inaccurate and does not protect human health or wildlife.

(a) It is out of date, since it was published in 2014 and states that it will be replaced by 2016 by the WHO's risk assessment, although this has not yet (July 2020) been published.

(b) It is factually incorrect in numerous aspects.

(c) It omits established confirmation of RF as a cause of electrosensitivity (ES) and cancer among many other proven adverse outcomes.

(d) It confirms the published views by leading world experts in this field that the WHO is 'unscientific', that it does not protect health from the established harm of RF wireless radiation and 5G, and that its major conflicts of interest in its support for the wireless industry 'seriously undermine' its credibility (*see references at end*).

(e) It was not peer-reviewed.

(f) It was anonymous.

(g) It makes no reference to 5G.

10. The WHO lacks medical physicians experienced in diagnosing and treating real electrosensitivity

This WHO factsheet on mobile phones is a non-peer-reviewed opinion piece which does not give its author. It was probably approved by the leader of the WHO EMF Project who is a trained electrical engineer, not a medical physician with experience in diagnosing real electrical sensitivity (ES) as expected for assessing the established health risks from EM radiation.

The WHO has shown itself unable to deal scientifically with these issues because

(a) it is dependent on its parent body, the United Nations, with its predominant interests in trade and commercial development rather than health,

(b) it has been legally subservient in matters of radiation since 1959 to the IAEA (International Atomic Energy Authority) whose role is to exploit radiation as much as possible,

(c) it still adheres to Schwan's 1953 mistaken heating hypothesis against the majority-viewpoint scientists,

(d) and it lacks any of the majority-viewpoint scientific experts,

(e) as explicitly addressed by [The EMF Call](#) of 2018, initiated by leading scientists in this area specifically to tackle this recognised problem, that the WHO is now regarded as 'unscientific' in its approach to the established dangers of RF wireless radiation including 5G, and that the WHO is now regarded as failing to provide guidelines which are protective of human health.

11. The UK government also lacks advice from majority-viewpoint scientists

The [UK] government claims ('Mobile phone base stations: radio waves and health', update May 16 2019) that it depends on its 'independent expert groups'. This online document is also not peer-reviewed. It relies significantly on the invalidated AGNIR 2012 Report, which leading scientists have asserted should have been retracted long ago.

- (a) The invalidated AGNIR 2012 Report, like the WHO's opinions, was also not peer-reviewed.
- (b) It has been shown to be 'unsafe' in that it ignored up to 80% of studies showing adverse health effects and cherry-picked the few which failed to find an effect.
- (c) It was a blatant example of conflict of interests, since it depended on contributions and views of the government's own employees and thus was not an independent review.
- (d) Its committee was composed of people holding a single and invalidated viewpoint based on Schwan's heating mistake of 1953, all part of the minority-viewpoint cartel controlling PHE, AGNIR, SCENIHR, ICNIRP and the WHO EMF Project, all of which support the wireless radiation industry.

12. UK government's very poor record on the proven harm from RF wireless radiation, and failing under the Health & Social Care Act 2012

The UK government has a very poor record on this issue of the established and proven harm from RF wireless radiation.

- (a) In the 2019 Westminster Hall debate MPs stated that they sought to help their constituents who were injured by the current high levels of EM exposure in the UK. They complained that the UK government refused to acknowledge this issue and instead acted like a 'brick wall' when it came to accepting the science and mitigating RF harm.
- (b) The complaints to the PHSO by over 80 UK citizens seriously harmed by the failure of the government's Public Health England (PHE) to acknowledge the established science on the dangers of RF wireless radiation began in 2013 but they have still to be resolved. The government wrongly believes it has the right to deny or ignore the majority-viewpoint scientific evidence and therefore PHE does not have to admit or even state, for instance, that EM exposure, including RF wireless radiation, 5G and light at night, is a 2B or 2A human carcinogen according to the WHO's IARC.
- (c) Denials of harm from the Department of Health and Social Care (DHSC) still refer to the notorious AGNIR 2012 report, even though this has been shown to be unscientific, unsafe, and the product of conflicts of interest, as explained above.
- (d) The DHSC claims to review studies on health damage from EM exposures, but the DHSC's COMARE also admits that it has its delegated responsibility for this to the unelected private minority-viewpoint group ICNIRP, part of the cartel supporting the wireless industry.
- (e) The DHSC has no means of engaging with the majority-viewpoint scientists in this area. In 2017 it abandoned its AGNIR committee, set up as a front in 1990 to reduce criticism of its unscientific approach. Its COMARE committee, a similar front to cover up the evidence of cancer clusters near reactors, decided in 2019 to abandon its plan to form a subcommittee on non-ionising radiation.
- (f) The DHSC and PHE believe that they can control RF wireless radiation through Health & Safety legislation under HSE and planning controls under NPPF, but neither is based on the proven non-thermal harm for RF radiation and thus they can never be protective of health.
- (g) Therefore the Secretary of State through the DHSC and PHE appears to be failing in his legal responsibility under the Health and Social Care Act 2012 ([11.2A.3.a,b](#)) for 'the protection of the public from ionising and non-ionising radiation, a matter in which the

HSE has a function', since the cases of harm from 5G trials already being seen in the UK could not occur if this responsibility were being properly fulfilled.

13. The EU has a poor record on acting on the proven harm from RF wireless radiation

Nicole Scholz's European Parliament Briefing "Mobile phones and health: Where do we stand?" of March 2019 was not peer-reviewed and should be rejected as scientific evidence. It is unscientific in several key ways.

(a) It upholds SCENIHR 2015, despite this being part of the discredited minority-viewpoint cartel, as explained above.

(b) It still holds to the long-invalidated heating hypothesis based on Schwan's 1953 mistake, and thus rejects the European Environment Agency's Recommendation to adopt a Precautionary Approach. This Precautionary Approach would require a moratorium on 5G and more stringent safety guidelines for the general public, including pregnant women, children, the elderly, the sick, people sensitive to EM radiation and people with chronic immune conditions. A Precautionary Approach has legal status in the EU, but this Briefing adopts a contrary and thus apparently illegal approach.

(c) It fails to recognise the European Parliament's vote of 2009 by 522 to 16 that governments should reject the WHO ICNIRP's short-term heating guidelines as 'obsolete' and replace them with biological long-term guidelines.

(d) It fails to recognise the Council of Europe's Parliamentary Assembly vote of 2011 calling on member states to recognise the urgent needs of people sensitised to EM exposures and create 'white zones' appropriate for them (see IGNIR's [EQZ](#)).

(e) The latest [review](#) of surveys estimates that 3.6% of the population (27 million people in Europe) are sensitised to EMFs and RF wireless radiation like 5G, and 1.2% (9 million) are severely affected. The scientifically proven and well established condition of all such people relates to the implementation of the Health & Safety at Work Act 1974 and the Equality Act 2010 as regards 5G and other wireless radiation.

(f) The EU Briefing's concern for the safety of wireless radiation is valid given that the correct level of protection from man-made wireless radiation is essential to the future existence of human beings and wild-life in Europe, since 5G like other RF radiation has established teratogenic, toxigenic and fertility effects impacting the future of all life in Europe. Some leading experts predict a rise in autism to 50% of boys within decades if RF continues to grow exponentially, along with continued plummeting fertility and further wildlife loss.

14. The need to adopt the majority-viewpoint scientific position, not the minority one

(a) The WHO, AGNIR and EU documents refer only to non-peer-reviewed invalidated claims by the minority-viewpoint cartel supporting the wireless industry. These comprise some 20-30 individuals, none of whom is a medical physician with experience in diagnosing and treating real sensitivity to RF radiation.

(b) In contrast, the majority viewpoint, accepting the established proof of ES and cancer as caused by RF wireless radiation and EM fields or their role as a co-carcinogen, is represented by some 250 involved scientists who have signed the [International EMF Scientist Appeal](#). These are thus a majority over the industry cartel of some 250 to 30.

(c) Over 390 scientists and doctors have signed the EU [5G Appeal](#) to halt 5G, and the [Stop 5G on Earth and in Space: International Appeal](#) has over 282,000 signatures.

15. Proof exists of 5G harm but not proof of its supposed safety

(a) There is not a single peer-reviewed study proving that RF wireless radiation like 5G is safe. Nor can there be, since RF wireless radiation and thus 5G has long been established as harmful.

(b) In contrast, the majority-viewpoint scientists, accepting non-thermal adverse effects, can refer to thousands of peer-reviewed studies establishing their concerns (see, for instance, [Selected Studies on ES and EHS](#)).

(c) The WHO's IARC classified EM x-ray and gamma rays as a class 1 human carcinogen (1999), EM ELF as a class 2B human carcinogen (2001), EM visible blue light at night as a class 2A human carcinogen (2007), and EM RF wireless radiation as a class 2B human carcinogen (2011).

(d) The IARC's 2B human carcinogen classification was for non-thermal effects, since the increased brain tumours on which this was based were all from mobile phones which are designed so as not to heat the human body.

(e) The US \$30 million National Toxicology Program study, requested by the FDA to see if cellphones cause cancer, found 'clear evidence' (its top rating) that they do cause cancer. This study, together with the Ramazzani study confirming its findings and showing clear evidence of cancer from exposures similar to mobile phone masts, provides 'sufficient animal evidence', together with known mechanisms like VGCCs, oxidative stress, gene expression, DNA damage perhaps through repair restriction, free radicals etc, to already meet the requirements of IARC's class 1 certain human carcinogen for RF and 5G wireless radiation exposures, according to the majority of scientists. Thus these studies require that RF should be reclassified as a class 1.

(f) This would mean that the issue of RF wireless radiation and 5G safety has already been answered in such a way that governments urgently have to reduce RF exposure to safe levels.

(g) In the light of the NTP and Ramazzini studies finding 'clear evidence' of cancer, the IARC now regards the reassessment of RF wireless radiation as a high priority.

(h) As noted above, the WHO and UK government are far behind in advising citizens of the established science on the dangers of 5G and similar RF wireless radiation. In the UK more authoritative and up-to-date sources of relevant, reliable, majority-viewpoint evidence include: [ES-UK](#), [IGNIR](#), [PHIRE](#), [Powerwatch](#), [SSITA](#), [Radiation Research Trust](#), [Wifiinschools](#) etc.

(i) There are hundreds of internet sites, most giving much more accurate and up-to-date scientific information than is available from the WHO's outdated, inaccurate and misleading opinions, dated 2014 on mobile phones and 2005 on EHS.

See e.g. [Electrosensitivity.co: Links](#).

16. 5G, military warfare and military protection for civilians who can afford it

(a) Millimetre waves, planned for 5G, are already in widespread use for military warfare and in some civilian crowd control. This confirms that this type of 5G radiation can cause adverse reactions in the ordinary population and especially those sensitive to it, something which even the wireless industry cannot deny.

(b) The beam-forming properties of 5G are an especial concern when these combine or are reflected in intersecting beams or are directed into super-sensitive biological organs such as the eyes.

(c) The location of 5G transmitters on lamp-posts outside bedroom windows where people sleep is also a major concern, both for down- and up-streaming.

(d) Many people who have been sensitised to RF wireless radiation have to use the same protective netting and materials developed by the military for protecting their own troops from electromagnetic assault. People in the UK today are living in tents or cars in remote

areas to escape the harm caused by EMFs and RF wireless radiation like 5G because they cannot afford this costly protective shielding or the relocation of their homes to areas less intensely irradiated.

(e) The number of people harmed by EMFs and RF wireless radiation appears to be constantly growing, with contacts to the charity Electrosensitivity UK increasing by 10% per year for over a decade. Some reports of bioeffects to both humans and wildlife during initial 5G trials including within the UK suggest that 5G has the capacity to be significantly more damaging to life than even 3G and 4G.

17. Illegality of 5G and similar RF wireless radiation when deployed against people without safety testing and without their informed consent

The legality of 5G and similar RF wireless radiation is under growing scrutiny now that effects such as sensitivity to EM exposure and cancer have been proven in numerous scientific studies and are accepted by the majority-viewpoint scientists.

(a) The unsafe nature of RF wireless radiation for 3G and 4G and such as used in the initial 5G roll-out has been recognised in UK courts since 2012 and sensitivity to it has been diagnosed by some NHS GPs and hospital consultants since 2013.

(b) The first legal cases against 5G deployment have succeeded in countries like Australia in 2018-19. There are currently two legal actions for judicial review in the UK.

(c) There is concern that the lack of prior safety testing and the lack of informed consent for the in situ health testing of the novel phased-array and beam-forming features of 5G mean that its deployment contravenes the Nuremberg Code.

(d) Some countries have banned 5G because of its lack of proven safety, as have some towns in the UK.

(e) The UK government admits that environmental radiation levels are likely to increase with the introduction of 5G.

(f) Although members of the minority-viewpoint cartel supporting the wireless industry, as explained above, prefer to make generalised assumptions implying the safety of 5G and similar RF wireless radiation, while also calling for more research, most refuse to state that it is safe.

Thus the UK government has been very careful to admit uncertainty by stating that there is no proof that 5G or similar RF wireless radiation is safe, only that they have failed to find 'consistent' or 'convincing' evidence of harm. These latter two terms are unsatisfactory both as not being scientifically explicit, and in contradicting the established science which has proved that effects of RF wireless radiation include sensitivity symptoms and cancers.

18. Latest scientific evidence on human beings and wildlife: moratorium on 5G required

The growing interest in the safety of 5G and similar RF wireless radiation led to two major scientific international conferences in London in September 2019, where experts from America and Europe explained the latest science and research.

(a) This showed convincingly and consistently, based on established and proven scientific evidence, that RF wireless radiation is a serious threat to all human beings and also the natural living world.

(b) In contrast, it appears that the WHO, ICNIRP and most governments have not yet conducted effective Environmental Risk Assessments before infrastructure projects like 3G, 4G or 5G, since there are now hundreds of studies showing harm to wildlife from RF wireless radiation. The exception is the EU Environmental Protection Agency which has

called for the Precautionary Principle (PP) to be applied, meaning a moratorium on further developments such as 5G since the PP is enshrined in EU legislation.

(c) Studies show that near phone masts insect wildlife can cease to reproduce within five generations. During the last decade insect numbers have declined by 70-80% in the UK and it has been confirmed that bees especially are affected by RF wireless radiation.

19. Equal access and protection for children and adults harmed by RF wireless radiation

The UK Government is aware of people for whom 5G is not safe and who are sensitive to RF wireless radiation, since UK courts have recognised the condition since 2012 and the UK government states that it follows the WHO and ICNIRP.

(a) In 2002 the ICNIRP stated that governments must protect such people by adopting non-thermal safety guidelines below its own short-term and heating guidelines. The fact that the UK Government has not yet implemented the ICNIRP's requirement in this respect shows that the safety of 5G, like that of 3G and 4G, remains a very big issue among the many people affected by this radiation in the UK.

(b) The UK government rejected making wireless smart meters compulsory partly on health safety grounds on November 29 2011.

(c) The NHS endorses the chief medical officers' warning since 2011 that children under 16 should not use mobile phones except for essential purposes. Children absorb ten times more RF radiation in their bones than adults. Since wireless radiation has cumulative effects, children are especially vulnerable when faced with lifetime exposures. Some countries warn women not to use mobile phones during pregnancy and near babies. Some countries like Italy have instituted national EMR hygiene information campaigns.

(d) UK first tier tribunals have accepted since 2012 that children and adults can have real EHS and thus are unable in severe cases to attend schools and workplaces with Wifi and mobile phones. Tribunals have compensated adults with ESA, PIPs, early retirement, etc.

(e) A UK government-sponsored survey found that 4.0% (2,680,000 people in the UK) are sensitive to RF wireless radiation and EM fields, and 1.8% (1,206,000) are severely affected, while another [survey](#) estimated 0.65% (435,000) are denied full access to work or education because of their sensitivity to EMFs and RF wireless radiation, like 5G.

(f) The WHO in 2005 confirmed that the symptoms of electromagnetic hypersensitivity (EHS) can be disabling, putting EHS within the scope of the Equality Act 2010. Since 2005, when the WHO made its most recent non-peer-reviewed comments on EHS, real pathological EHS has been confirmed by many more studies as proven, following its discovery in 1750, and as caused by EM exposure. Its identification as an environmental intolerance is now possible through objective markers including 3d fMRI scans, cerebral blood perfusion scans, and testing for genetic haplotypes up to ten times more common in people with this environmental intolerance. It was allocated an ICD-10 classification as EI-Allergy in 2000. Also in 2000 EHS was recognised specifically in Sweden as a functional impairment, and Canada and the USA have done likewise since then.

20. The need to ban or limit RF wireless radiation, implement EM hygienic campaigns, and warn citizens

Other countries have

(a) banned Wifi and mobile phones in schools for safety reasons, such as France,

(b) launched EM hygienic campaigns, such as Berkeley CA, Cyprus and Italy,

(c) rejected ICNIRP's short-term heating guidelines, such as China, India, the USSR and some European states, covering a third to half the world's population.

The safety of 5G is a rapidly growing issue, with the BBC apparently repeating a report warning about 5G dangers four times on a single day in June 2019 and the UK media reporting recently that thousands in Switzerland demonstrated against 5G dangers.

21. Phonegate: the need to check the safety of mobile phones and to warn the public

5G's established and proven lack of safety, together with the wireless industry's denials and refusal to accept the majority established scientific evidence, is corroborated by the Phonegate scandal, similar to the Dieseltgate or Emissionsgate scandal.

(a) This Phonegate scandal concerns the sale of mobile phones with actual radiation emissions exceeding levels reported in their accompanying documentation. This apparent deception means that some mobile phones fail to comply with even ICNIRP's 1998 short-term heating guidelines, let alone international long-term biological guidelines.

(b) ANFR's testing in France in 2015 found that 90% of mobiles tested exceeded ICNIRP's guidelines when used next to the body. Some models were subsequently withdrawn from sale.

(c) In the USA testing by the Chicago Tribune in 2019 also found radiation levels allegedly exceeding FCC guidelines, leading to an investigation by the FCC and class action lawsuits against Apple and Samsung.

(d) It is not clear why similar models of mobile phones on sale in the UK do not yet seem to have been subjected to investigation and action by trading standards officers or PHE. Nor is it clear why the public has not been warned by trading standards or PHE of the danger that, if they have purchased abroad a mobile implicated in the Phonegate scandal, their mobile may be emitting excessive radiation.

(e) 5G phones would apparently have been likely to contravene not only long-term biological safety guidelines but even the 1998 ICNIRP short-term heating guidelines, so these latter guidelines were significantly relaxed in 2020. There is still the problem of adapting the phones so that they stop transmitting if the antenna is held too close to the body. This means that it is vital that the radiation levels of 5G mobile phones should be investigated carefully and impartially if users are to be kept safe.

22. Safe levels, long-term guidelines, and short-term guidelines

Back-ground (safe) levels	Majority mainstream guidelines			Minority 'industry' guidelines		
	Protective of ES/EHS: Yes, mainly			Protective of ES/EHS: No		
	Majority of expert scientists			ICNIRP, WHO, PHE, DHSC, DCMS, COMARE		
	Basis: majority scientific evidence			Basis: arbitrary invalidated thermal hypothesis		
	<i>Long-term and short-term</i>			<i>Short-term only</i>		
	<i>Non-thermal and heating</i>			<i>Heating only</i>		
	<i>Peak</i>			<i>Averaged over 6 or 30 minutes</i>		
$\mu\text{W}/\text{m}^2$	Date		$\mu\text{W}/\text{m}^2$	Date		$\mu\text{W}/\text{m}^2$
0.000001	1935	USSR	100,000	1953	US: Schwan's mistake	100,000,000
	1972	Poland	1,000	1998	ICNIRP	10,000,000
	2012	Bioinitiative	3	2020	ICNIRP	40,000,000

23. Percentage and numbers of people sensitive to EMFs in the UK

Percentage and numbers of people with ES/EHS in the UK						
	<i>ES subconscious effects</i>	<i>ES subconscious and conscious effects Including cancers etc</i>	<i>ES/EHS mild conscious symptoms</i>	<i>ES/EHS moderate conscious symptoms</i>	<i>EHS severe conscious symptoms</i>	<i>EHS restricted work and education</i>
<i>ES/EHS Percentage (UK population)</i>	100 %	79 %	29 %	3.6 %	1.2 %	0.65 %
<i>ES/EHS Number (UK: 67 million)</i>	67 million	53 million	19 million	2.4 million	804,000	435,500

Subconscious and conscious symptoms, recognised and unrecognised as caused by EMF and RFR exposure, can include:

- cancers
- cardiovascular harm
- electrosensitivity and electromagnetic hypersensitivity (ES/EHS)
- infertility
- neurological harm and illnesses.

24. Some references and news articles

For a detailed scientific and political overview, Professor Tom Butler's analysis of May 2020 is especially useful:

- Butler T: "[A Review of the Health Risks of Radiofrequency Radiation Employed in 5G Technology and the Implications for UK Policymaking](#)" (May 27 2020)
- Franz Adlkofer: "[How the Mobile Communication Industry Deals with Science as Illustrated by ICNIRP versus NTP](#)" (Pandora Foundation, October 26 2018)
Priyanka Bandara & David O Carpenter: "[Planetary electromagnetic pollution: it is time to assess its impact](#)" (The Lancet, 2018)
- Bandara P et al.: "[Serious Safety Concerns about 5G Wireless Deployment in Australia and New Zealand](#)" (Radiation Protection in Australasia, May 2020)
- Barnes F et al.: "[Setting Guidelines for Electromagnetic Exposures and Research Needs](#)" (Bioelectromagnetics, 2020)
- Buchner K & Rivasi M: "[ICNIRP: Conflicts of Interest](#)" (Brussels, June 2020)
- Butler T: "[A Review of the Health Risks of Radiofrequency Radiation Employed in 5G Technology and the Implications for UK Policymaking](#)" (May 27 2020)
- Dr Devra Davis: "[Dangers Of 5G: New Technology Draws Concerns For The Environment, Public Safety](#)" (International Business Times, March 14 2020)
- Claire Edwards: "[BBC Fake News on 5G Decoded: Health Impacts Denied Despite Overwhelming Scientific Evidence](#)" (Global Research, August 25 2019)

- Jerry Flynn: ["Champions of the "Thermal Effects Only" Dogma For EMFs"](#) (2019)
- Glastonbury Town Council: ["Glastonbury calls for 5G inquiry"](#) (April 29 2020) [Summary Report](#) (April 2020); [Full Report](#) (April 2020)
- Hardell L: ["World Health Organization, radiofrequency radiation and health – a hard nut to crack \(Review\)"](#) (Int J Oncology, 2017)
- Lennart Hardell: ["ICNIRP draft on new radiofrequency guidelines is flawed"](#) (June 25 2019)
- Hardell L et al.: ["Appeals that matter or not on a moratorium on the deployment of the fifth generation, 5G, for microwave radiation"](#) (Molecular and Clinical Oncology, 2020)
- Havas M: ["Electrohypersensitivity \(EHS\) is an Environmentally-Induced Disability that Requires Immediate Attention"](#) (J Sci Discov., 2019)
- Mark Hertsgaard & Mark Dowie: ["How Big Wireless Made Us Think That Cell Phones Are Safe: A Special Investigation: The disinformation campaign—and massive radiation increase—behind the 5G rollout"](#) (The Nation, March 29 2018)
- Simon Hodges: ["How ICNIRP, AGNIR, PHE and a 30 year old political decision created and then covered up a global public health scandal"](#) (Community Operating System, September 12 2019)
- Bryan Hubbard: ["5G network 'not proven to be safe', says leading scientist"](#) (WDDTY, December 2 2019)
- Derek Hunter: ["Defense Secretary Asks FCC To Limit 5G Deployment"](#) (Daily Caller, November 22 2019)
- The International EMF Alliance issued a [Letter of Notice for the Attention of Government Officials](#) calling for a Ban on 5G (November 2019).
- Investigate Europe: ["The 5G mass experiment: Big promises, unknown risks"](#) (January 13 2019)
- Investigate Europe: ["How much is safe? Radiation authorities rely on controversial group for safety advice"](#) (March 14 2019)
- Antoinette Janssen: ["ICNIRP guidelines are fraudulent"](#) (Mutterland, July 30 2019)
- Antoinette Janssen: ["ICNIRP"](#) (Mutterland, June 2 2019)
- Dr Shirin Joseph: ["Analysis of 5G and Its Implications in the UK"](#) (EM RRT, July 11 2020, 74 pages)
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