

CRITIQUE OF WORLD HEALTH ORGANIZATION'S DEFENCE OF MOBILE PHONES

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<https://www.who.int/news-room/fact-sheets/detail/electromagnetic-fields-and-public-health-mobile-phones>

[accessed: October 12 2019] Comments in red italics on text highlighted in blue.

Electromagnetic fields and public health: mobile phones

8 October 2014

Key facts

- Mobile phone use is ubiquitous with an estimated 6.9 billion subscriptions globally
- The electromagnetic fields produced by mobile phones are classified by the International Agency for Research on Cancer as possibly carcinogenic to humans.
- Studies are ongoing to more fully assess potential long-term effects of mobile phone use.
- WHO will conduct a formal risk assessment of all studied health outcomes from radiofrequency fields exposure **by 2016**.

The WHO Environmental Health Criteria on RF radiation has not yet (October 12 2019) been published.

Mobile or cellular phones are now an integral part of modern telecommunications. In many countries, over half the population use mobile phones and the market is growing rapidly. In 2014, there is an estimated 6.9 billion subscriptions globally. In some parts of the world, mobile phones are the most reliable or the only phones available.

Given the large number of mobile phone users, it is important to investigate, understand and monitor any potential public health impact.

Mobile phones communicate by transmitting radio waves through a network of fixed antennas called base stations. Radiofrequency waves are electromagnetic fields, and unlike ionizing radiation such as X-rays or gamma rays, can neither break chemical bonds nor cause ionization in the human body.

Exposure levels

Mobile phones are low-powered radiofrequency transmitters, **operating at frequencies between 450 and 2700 MHz** with peak powers in the range of 0.1 to 2 watts.

Many mobile phones now have Wifi which can also operate at 5 GHz.

The handset only transmits power when it is turned on. The power (and hence the radiofrequency exposure to a user) falls off rapidly with increasing distance from the

handset. A person using a mobile phone 30–40 cm away from their body – for example when text messaging, accessing the Internet, or using a “hands free” device – will therefore have a much lower exposure to radiofrequency fields than someone holding the handset against their head.

In addition to using "hands-free" devices, which keep mobile phones away from the head and body during phone calls, exposure is also reduced by limiting the number and length of calls. Using the phone in areas of good reception also decreases exposure as it allows the phone to transmit at reduced power. The use of commercial devices for reducing radiofrequency field exposure has not been shown to be effective.

Mobile phones are often prohibited in hospitals and on airplanes, as the radiofrequency signals may interfere with certain electro-medical devices and navigation systems.

Are there any health effects?

A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. [To date, no adverse health effects have been established as being caused by mobile phone use.](#)

Wrong and misleading: there are hundreds of studies proving adverse health effects. For some references see: [Selected Studies on ES and EHS](#)

Short-term effects

[Tissue heating is the principal mechanism of interaction between radiofrequency energy and the human body.](#)

Wrong: the principal mechanisms are all non-thermal. There are numerous proven non-thermal effects established since 1932. In contrast, there is no proof at all that tissue heating is the cause of the established effects of electrosensitivity, infertility, neurological and cardiovascular damage, and cancers, since studies solely with heat do not show these effects caused by non-thermal RF radiation.

At the frequencies used by mobile phones, most of the energy is absorbed by the skin and other superficial tissues, resulting in negligible temperature rise in the brain or any other organs of the body.

A number of studies have investigated the effects of radiofrequency fields on brain electrical activity, cognitive function, sleep, heart rate and blood pressure in volunteers. [To date, research does not suggest any consistent evidence of adverse health effects from exposure to radiofrequency fields at levels below those that cause tissue heating.](#)

Wrong and misleading: there are hundreds, if not thousands, of studies consistently confirming such adverse non-thermal effects. Since all mobile phones are not allowed to exceed heating guidelines, all the proven effects including electro-sensitivity and cancers must be caused by non-thermal exposures.

Further, research has not been able to provide support for a causal relationship between exposure to electromagnetic fields and self-reported symptoms, or “electromagnetic hypersensitivity”.

Wrong and misleading: there are hundreds, if not thousands, of studies confirming such effects since the first description of RF electro-sensitivity in a medical study of 1932.

Long-term effects

Epidemiological research examining potential long-term risks from radiofrequency exposure has mostly looked for an association between brain tumours and mobile phone use. However, because many cancers are not detectable until many years after the interactions that led to the tumour, and since mobile phones were not widely used until the early 1990s, epidemiological studies at present can only assess those cancers that become evident within shorter time periods. However, results of animal studies consistently show no increased cancer risk for long-term exposure to radiofrequency fields.

Wrong and misleading: for instance, the \$4.5 million USAF study from 1980 showed that RF radiation caused cancer with an odds ratio of 4.27, confirmed by the \$30 million NTP study from 1999 which showed 'clear evidence' that RF radiation causes cancer.

Several large multinational epidemiological studies have been completed or are ongoing, including case-control studies and prospective cohort studies examining a number of health endpoints in adults. The largest retrospective case-control study to date on adults, Interphone, coordinated by the International Agency for Research on Cancer (IARC), was designed to determine whether there are links between use of mobile phones and head and neck cancers in adults.

The international pooled analysis of data gathered from 13 participating countries found no increased risk of glioma or meningioma with mobile phone use of more than 10 years. There are some indications of an increased risk of glioma for those who reported the highest 10% of cumulative hours of cell phone use, although there was no consistent trend of increasing risk with greater duration of use. The researchers concluded that biases and errors limit the strength of these conclusions and prevent a causal interpretation.

Since then the conclusion that the increased risk of cancer was caused by RF radiation has been confirmed by other studies, such as the CERENAT study from 2004 and further studies by Hardell et al.

Based largely on these data, IARC has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), a category used when a causal association is considered credible, but when chance, bias or confounding cannot be ruled out with reasonable confidence.

Most carcinogens are first categorized as 2B Possible until there is sufficient evidence to reclassify them as 2A Probable or class 1 Certain. Since 2011 the quality and quantity of evidence that RF radiation is a carcinogen has grown considerably. The 'clear evidence' (top category) that RF causes cancer found by the NPT and Ramazzini studies provides 'sufficient animal evidence', which, together with the established mechanisms, such as gene expression, DNA damage, VGCCs, oxidative stress, free radicals etc, means that the majority-viewpoint scientists have considered since 2018 that the evidence now meets the criteria for RF radiation to be reclassified as a class 1 Certain human carcinogen.

While an increased risk of brain tumors is not established,

Wrong: the Philips et al study showed a doubling of the worst form of brain tumour over 1995-2015. This has now been confirmed by similar studies elsewhere.

the increasing use of mobile phones and the lack of data for mobile phone use over time periods longer than 15 years warrant further research of mobile phone use and brain cancer risk. In particular, with the recent popularity of mobile phone use among younger people, and therefore a potentially longer lifetime of exposure, WHO has promoted further research on this group. Several studies investigating potential health effects in children and adolescents are underway.

Exposure limit guidelines

Radiofrequency exposure limits for mobile phone users are given in terms of Specific Absorption Rate (SAR) – the rate of radiofrequency energy absorption per unit mass of the body.

Wrong: international long-term biological guidelines give exposure limits in terms of the peak electric field in Volts per metre (V/m) or power density (Watts per metre). Only the obsolete short-term heating guidelines such as ICNIRP's and IEEE's still use the invalidated heating metrics such as Watts per kilogram (W/kg) or SAR.

Currently, two international bodies [ICNIRP and IEEE],

Misleading: these two private and self-elected groups, the ICNIRP and IEEE, are simply the two composed of minority-viewpoint members who support the wireless industry. There are other international and independent groups composed of majority-viewpoint scientists which produce international long-term biological guidelines. These include:

[Bionitiative 2012](#),

[EUROPAEM EMF Guideline 2016](#),
[IGNIR 2018](#),
[Seletun 2010](#).

have developed exposure guidelines for workers and for the general public, except patients undergoing medical diagnosis or treatment. [These guidelines are based on a detailed assessment of the available scientific evidence.](#)

Misleading: the detailed assessment by ICNIRP cherry-picks the, say, 20% of studies showing no effect, and dismisses the 80% of positive studies showing an effect. In contrast, the international long-term biological guidelines are based on all the available scientific evidence.

WHO response

In response to public and governmental concern, WHO established the International Electromagnetic Fields (EMF) Project in 1996 to assess the scientific evidence of possible adverse health effects from electromagnetic fields.

Misleading: the WHO's EMF Project was intended to 'deal' with the 'problem' of the majority science proving that RF radiation causes electrosensitivity, cancers and other adverse effects. It is headed, not by a medical doctor experienced in diagnosing and treating people with real electrosensitivity and cancers caused by RF radiation as might be expected, but by a trained electrical engineer. It relies extensively on the cartel of the 14 members of ICNIRP who all hold to the minority-viewpoint based on Schwan's heating mistake of 1953.

WHO will conduct a formal risk assessment of all studied health outcomes from radiofrequency fields exposure [by 2016](#).

This Environmental Health Criteria has not yet (October 12 2019) been published.

In addition, and as noted above, [the International Agency for Research on Cancer \(IARC\)](#), a WHO specialized agency, has reviewed the carcinogenic potential of radiofrequency fields, as from mobile phones in May 2011.

Misleading, in that it implies that IARC has now concluded its review of the carcinogenicity of RF radiation. In fact, IARC has categorised a fresh review of the carcinogenicity of RF radiation as a 'high priority', and it is scheduled for 2022-24. As stated above, the majority-viewpoint scientists since 2018 have considered that evidence accumulated since 2011 now requires RF radiation to be reclassified as a class 1 Certain human carcinogen.

WHO also identifies and promotes research priorities for radiofrequency fields and health to fill gaps in knowledge through its research agendas.

WHO develops public information materials and [promotes dialogue among scientists](#), governments, industry and the public to raise the level of understanding about potential adverse health risks of mobile phones.

Misleading, since the WHO has often refused to engage effectively with majority-viewpoint scientists on the issue of the proven adverse effects of RF radiation. See: Hardell L: ["World Health Organization, radiofrequency radiation and health – a hard nut to crack \(Review\)"](#) (Int J Oncology, 2017)

Key points:

This article by the WHO, in defence of the mobile phone industry, is not peer-reviewed and could not pass peer-review by a reputable scientific institution since it makes so many unscientific claims without any evidence or against the majority scientific evidence.

The WHO, like its ICNIRP and IEEE, still keeps to a single minority viewpoint, that the only adverse effect is heating and that this is short-term, against the majority viewpoint that there are proven numerous effects which are not overtly related to heat and can be cumulative, meaning that there are also long-term effects.

It was discovered in 1953 that RF radiation causes cancer. In 1953 the US decided to follow Herman Schwan's mistaken and invalidated hypothesis that the only adverse effect is heating, and so set limits to prevent a temperature rise of one degree in six minutes. In fact, exercise can lead to a bodily temperature rise of one degree within that time, but without the proven adverse effects of electrosensitivity, infertility, neurological and cardiovascular damage, and cancers, all of which are caused by non-thermal effects.

In contrast, the USSR accepted non-thermal effects for their guidelines in 1959 and Poland in 1961. Now about half the world does not follow ICNIRP and IEEE but instead follows non-thermal guidelines, although in 2007 the WHO still supported the ICNIRP's and IEEE's invalidated short-term heating guidelines, which the majority-viewpoint scientists regard as unscientific and not protective of health. The UK still follows ICNIRP's guidelines, even though in 2009 the EU Parliament voted that they were 'obsolete'.

International long-term biological guidelines, based on scientific evidence and to protect health, include: Seletun 2010, Bioinitiative 2012, EUROPAEM 2016 and IGNIR 2018.

- *Background levels:* 0.00002 V/m (0.000001 $\mu\text{W}/\text{m}^2$)
- *International long-term biological guidelines:* 0.006-0.2 V/m (0.1-100 $\mu\text{W}/\text{m}^2$)
- *ICNIRP's short-term heating guidelines:* 61 V/m (9,200,000 $\mu\text{W}/\text{m}^2$)

Majority-viewpoint scientific groups with an evidence-based approach to radiation:

[International EMF Scientist Appeal](#)
[5G Appeal](#)
[EMF Call](#)
[Stop 5G On Earth and In Space](#)

International long-term biological guidelines include:

[Bioinitiative 2012](#),
[EUROPAEM EMF Guideline 2016](#),
[IGNIR 2018](#),
[Seletun 2010](#).

See also: [Serious flaws in the WHO & ICNIRP claims on 5G Biological Effects: Majority and Minority viewpoints, and Guidelines](#)