

5G and wireless radiation - studies showing harm to health and the environment

A large body of authoritative research, some of which is outlined below, shows clear links between wireless radiation and harmful bio-effects including cancer. Independent experts claim that there is no longer any debate about whether or not this radiation is harmful and that the evidence that it is damaging to all living things is conclusive. Hundreds of scientists, environmentalists and public health experts are calling for an urgent ban on 5G as well as safety warnings regarding 4G.

Yet Public Health England persists in ignoring the evidence and continues to take its cue from the World Health Organisation and the International Commission on Non-Ionizing Radiation Protection (ICNIRP), bodies which have been widely accused of having conflicts of interest and loyalty to the telecoms industry. With British Members of Parliament now speaking out on this issue and cities such as Brussels and Geneva banning 5G on health grounds this is a state of affairs that can no longer continue.

- A December 2018 review in *The Lancet* of over 2,000 peer-reviewed studies on the impact of wireless technology on human and animal systems revealed that 68.2 per cent discovered significant biological effects. The Lancet review concludes: "This weight of scientific evidence refutes the prominent claim that the deployment of wireless technologies poses no health risks at the currently permitted non-thermal radio-frequency exposure levels".¹
- A 2018 overview of 23 studies in the academic journal *Environmental Research* by Professor Emeritus of Biochemistry Dr Martin Pall concludes that Wi-Fi causes seven 'very serious' health effects including *damage highly likely to produce mutations that impact future generations*. Professor Pall states: *Repeated Wi-Fi studies show that Wi-Fi causes oxidative stress, sperm/testicular damage, neuropsychiatric effects including EEG changes, apoptosis, cellular DNA damage, endocrine changes, and calcium overload...EMF effects are often cumulative; and EMFs may impact young people more than adults*.²
- A 2018 longitudinal study of 79,241 brain tumour incidences in England over 21 years reveals that rates of Glioblastoma Multiforme (GBM), the specific type of aggressive brain tumour associated with mobile radiation, have doubled from 1,250 per year in 1995 to just under 3,000. The researchers concluded that this *raises the suspicion that mobile and cordless phone use may be promoting gliomas*.³
- The 2018 US Department of Health National Toxicology Program study showed a 'clear link' between mobile radiation and cancer. When 7000 rats and mice were exposed to mobile radiation for nine hours a day, DNA strands were damaged in brain cells and male rats developed more heart and brain tumours; lower birth rates and higher rates of infant mortality were also observed. The study was reviewed for accuracy by 15 external physicians who confirmed the conclusion that there is a 'clear link' between mobile radiation and cancer.⁴ Attempts to downplay these findings have been rebutted by the study leader Dr Ronald Melnick.
- Cancer researcher Dr Fiorella Belpoggi of Bologna studied 2000 rats exposed to the equivalent amount of radio frequency radiation to which humans are exposed over a lifetime and obtained similar results.⁵ Dr Belpoggi has commented on attempts to downplay these findings: *We are scientists, our role is to produce solid evidence for hazard and risk assessment. Underestimating the evidence from carcinogen bioassays and delays in regulation have already proven many times to have severe consequences, as in the case of asbestos, smoking and vinyl chloride*.

- In a 2015 study in Germany, mice grew more tumours when exposed to mobile phone radiation 'well below exposure limits for users of mobile phones...our findings may help to understand the repeatedly reported increased incidences of brain tumours in heavy users of mobile phones.'⁶
- Two recent Swedish studies showed that mobile and cordless phone use leads to a five and four times higher risk respectively of brain glioma, particularly in those aged under 20. The study researchers commented that most tumours develop decades after the exposure period, and that as mobile phones are relatively new, it could take many years for the problem to manifest.^{7, 8}
- Expert cancer researcher Professor Emeritus Anthony Miller, advisor to the World Health Organization International Agency for Research on Cancer (WHO/IARC), states that radiofrequency (RF) radiation from any source – such as the signals emitted by cell phones, other wireless and cordless and sensor devices, and wireless networks – fully meets criteria to be classified as a "Group 1 carcinogenic to humans" agent, based on scientific evidence associating RF exposure to cancer development and cancer promotion. He says: *The evidence indicating wireless is carcinogenic has increased and can no longer be ignored.* His evidence includes the 2017 re-analysis of data from the Interphone study, the 2014 French National CERENAT Study, several new publications on Swedish cancer data, and the 2016 results of the National Toxicology Program.⁹
- Research has shown that industry-funded studies are less likely than independent studies to show a link with wireless radiation and health problems. Prasad et al (2017) write: *In our review of the literature and meta-analysis of case-control studies, we found evidence linking mobile phone use and risk of brain tumours...we also found a significantly positive correlation between study quality and outcome in the form of risk of brain tumour associated with use of mobile phones. Higher quality studies show a statistically significant association between mobile phone use and risk of brain tumour. Even the source of funding was found to affect the quality of results produced by the studies.*¹⁰
- Joel M. Moskowitz is a Professor Emeritus of radiation at the School of Public Health at the University of California Berkeley and an expert in mobile phone radiation and electromagnetic fields. He states: *Millimetre waves such as those in use by 5G are absorbed by the first 1-2 mm of skin and the eye cornea.* Since the skin contains nerve endings and capillaries, bio-effects may be transmitted further and *the peer-reviewed research demonstrates that short-term exposure to low-intensity millimeter wave (MMW) radiation not only affects human cells, it may result in the growth of multi-drug resistant bacteria harmful to humans. Since little research has been conducted on the health consequences from long-term exposure to MMWs, widespread deployment of 5G or 5th generation wireless infrastructure constitutes a massive experiment that may have adverse impacts on the public's health.*¹¹
- A 2018 study showed that due to the heating effect of 5G electromagnetic waves, the exposure times 'tolerated by the International Council on Non-Ionizing Radiation Protection guidelines may lead to permanent tissue damage after even short exposures, highlighting the importance of re-visiting existing exposure guidelines.'¹²

Despite these clear and unequivocal research findings, the ICNIRP has declined to update their guidelines. When indicating any potential harmful bioeffects they consider only thermal heating effects of non-ionising radiation and not the non-thermal effects as shown above.

The ICNIRP has been accused of bias when issuing safety guidelines which are followed by bodies such as the WHO and Public Health England (PHE)/Public Health Wales. It is also the case that members of PHE have also been members of ICNIRP.¹³ The author of an article in the *Journal of Oncology* writes: *In 2014 the WHO launched a draft of a Monograph on RF fields and health for public comments. It turned out that five of the six members of the Core Group in charge of the*

draft are affiliated with International Commission on Non-Ionizing Radiation Protection (ICNIRP), an industry loyal NGO, and thus have a serious conflict of interest. Just as by ICNIRP, evaluation of non-thermal biological effects from RF radiation are dismissed as scientific evidence of adverse health effects in the Monograph. This has provoked many comments sent to the WHO. However, at a meeting on March 3, 2017 at the WHO Geneva office it was stated that the WHO has no intention to change the Core Group. ¹⁴

Moreover, a memorandum attached to a resolution adopted by the Standing Committee of the Parliamentary Assembly of the Council of Europe in May 2011 reads: *it is most curious, to say the least, that the applicable official threshold values for limiting the health impact of extremely low frequency electromagnetic fields and high frequency waves were drawn up and proposed to international political institutions (WHO, European Commission, governments) by the ICNIRP, an NGO whose origin and structure are none too clear and which is furthermore suspected of having rather close links with the industries whose expansion is shaped by recommendations for maximum threshold values for the different frequencies of electromagnetic fields.* ¹⁵

In 2013 SSITA (Safe Schools Information Technology Alliance) complained to PHE about their failure to provide appropriate precautionary advice on pulsed microwave-emitting technologies other than mobile phones, particularly the use of wireless networks in schools and homes, and Smart Meters in homes and small businesses. They state: *This is arguably a violation of the Right to Health Protection as outlined in Section 4 of the article 'Precautionary Environmental Protection and Human Rights' (2007).* They also state that advice to PHE from the government advisory group AGNIR is inadequate: *a large body of published scientific data has found that pulsed radiofrequency microwaves below the guideline levels can cause biological and adverse health effects, although many of these papers were omitted from the AGNIR 2012 report...As stated in the Benevento Resolution (2006) from the International Commission for Electromagnetic Safety, 'arguments that weak (low intensity) EMF cannot affect biological systems do not represent the current spectrum of scientific opinion.'* ¹⁶

To date, 240 scientists have signed an appeal urging the UN and WHO for greater health protection on electromagnetic frequency (EMF) exposure. These scientists, who have published over 2,000 papers in professional journals on EMF and biology or health, state: *The various agencies setting safety standards have failed to impose sufficient guidelines to protect the general public, particularly children who are more vulnerable to the effects of EMF. The [ICNIRP] guidelines are accepted by the WHO and numerous countries around the world...In 2009, the ICNIRP released a statement saying that it was reaffirming its 1998 guidelines, as in their opinion, the scientific literature published since that time has provided no evidence of any adverse effects below the basic restrictions and does not necessitate an immediate revision of its guidance on limiting exposure to high frequency electromagnetic fields. ICNIRP continues to the present day to make these assertions, in spite of growing scientific evidence to the contrary. It is our opinion that, because the ICNIRP guidelines do not cover long-term exposure and low-intensity effects, they are insufficient to protect public health.*

With the addition of 5G electromagnetic radiation (EMR) to the existing 'electrosmog' from Wi-Fi, 2G, 3G and 4G, levels of exposure of the population to wireless radiation will be increased, with unknown effects. Furthermore every member of the population, including children and those who suffer from electrosensitivity (a condition now recognised by researchers), will be mandatorily exposed 24/7. We therefore challenge the Public Health Eng-

land's safety assurances which rest on the ICNIRP claims. The PHE official response to those who raise concerns includes these statements which we believe to be misleading:

'...exposures of the general public to radio waves are well within the international health-related guideline levels that are used in the UK. These guidelines are from the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and underpin health protection policies at UK and European levels.'

'Current technical standards that draw on the ICNIRP guidelines will apply to the products that are developed and the UK network operators are already committed to complying with the ICNIRP guidelines.'

'It is possible that there may be a small increase in overall exposure to radio waves when 5G is added to an existing network or in a new area; however, the overall exposure is expected to remain low relative to guidelines and as such there should be no consequences for public health.'

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