

# The Health Risks of 5G Radiofrequency Radiation Technology

The Implications for UK Policymaking

By [Prof. Tom Butler](#)

Global Research, June 09, 2020

[Electromagnetic Sense Ireland](#) 30 May 2020

Region: [Europe](#)

Theme: [Environment](#), [Intelligence](#), [Science](#)  
[and Medicine](#)

## **Introduction**

*This short critical review explores the findings of extant research on the health risks posed by 5G technologies that emit radiofrequency radiation (RFR)<sup>1</sup>. It also provides evidence that the processes by which policy decisions have been made concerning the protection of public health may be significantly flawed, as the overwhelming body of scientific evidence appears to have been ignored by relevant government departments and agencies in arriving at decisions about the introduction of 5G. This lacuna comes about due to the over-reliance on expert opinion from the International Commission on Non-Ionizing Radiation Protection (ICNIRP), an NGO whose members have traditionally had close ties to industry. It is significant that the UK government and its agencies neither sought nor obtained independent scientific advice on a matter of importance to public health. Consequently, it failed in its duty to identify, assess, and mitigate the risks posed by RFR-based technologies before their introduction, specifically 5G networking and related technologies, thereby protecting public health.*

## **What does science have to say about the health risks of 5G Technology?**

The World Health Organization (WHO) classifies non-ionizing radiofrequency radiation (RFR) as a possible human carcinogen. It is, therefore, incredible that not a single, peer-reviewed scientific study has been carried out on the health risks associated with 5G technologies that emit low frequency (700MHz), high frequency (3.4- 3.8 GHz, centimetre (CM)) or extremely high-frequency millimeter (MM) (26 GHz and above) RFR. The overwhelming majority of published peer-reviewed scientific studies in biomedical research databases PubMed, Ovid Medline, EMBASE, Cochrane Library, and those listed in Google Scholar, indicate significant health risks with RFR of the type used in 5G technologies, both near field in the home and far-field in antennae, whether on access points or masts. This is the view of the majority of scientists across biomedical and related fields: However, the minority view is led by a group of 13 influential scientists from the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Significantly, commission members have strong links with the telecommunications industry and hold key roles in the WHO, the International Agency for Research on Cancer (IARC), and the EU's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). Thus, the minority view dominates through political influence, not the preponderance of scientific evidence.

The majority view is represented in the findings of thousands of peer-reviewed empirical studies on microwave non-ionizing RFR focusing on the biomedical effects of 2-4G and WiFi technologies (see Di Ciaula, 2018; Miligi, 2019; Russell, 2018; and Kostof et al. 2020, for examples). There are also several reviews and general studies focusing on extremely high frequencies up to 100GHz that may be used in 5G (Neufeld and Kuster, 2018; Simkó and Mattsson, 2019). The overwhelming majority of studies conclude that there is a high risk of adverse biological effects on humans at low, high and extremely high frequencies. Recent research funded by DARPA (US Defense Advanced Research Projects Agency) finds that ICNIRP guidelines focus on short-term risks only, not long-term exposures to weak RFR: this despite “a large and growing amount of evidence indicates that long-term exposure to weak fields can affect biological systems and might have effects on human health” with significant “public health issues” (Barnes and Greenebaum, 2020. p. 1). Furthermore, research also finds biological effects at high frequencies may add to and compound those predicted at lower frequencies (Kostof et al., 2020).

### **What are the health risks of non-ionizing RFR?**

A recent research review on the health risks of RFR, involving independent verification based on 5,400 studies in the MedLine database, concludes that **“the literature shows there is much valid reason for concern about potential adverse health effects from both 4G and 5G technology”** and that extant research “should be viewed as extremely conservative, substantially underestimating the adverse impacts of this new technology” (Kostoff et al. 2020).

Kostoff et al. report that peer-reviewed studies show the following adverse health effects well below the safety limits set by the UK based on ICNIRP guidelines:

- “carcinogenicity (brain tumors/glioma, breast cancer, acoustic neuromas, leukemia, parotid gland tumors),
- genotoxicity (DNA damage, DNA repair inhibition, chromatin structure), mutagenicity, teratogenicity,
- neurodegenerative diseases (Alzheimer’s Disease, Amyotrophic Lateral Sclerosis),
- neurobehavioral problems, autism, reproductive problems, pregnancy outcomes, excessive reactive oxygen species/oxidative stress, inflammation, apoptosis, blood-brain barrier disruption, pineal gland/melatonin production, sleep disturbance, headache, irritability, fatigue, concentration difficulties, depression, dizziness, tinnitus, burning and flushed skin, digestive disturbance, tremor, cardiac irregularities,
- adverse impacts on the neural, circulatory, immune, endocrine, and skeletal systems.”

### **What is the scientific consensus on health risks?**

It is significant that the vast majority of independent original experimental and epidemiological research studies and scientific review papers identify the health effects documented above (cf. Belpomme et al. 2018; Belyaev et al. 2016; Miller et al., 2018; Barnes and Greenebaum, 2020, for examples of the latter). In addition, following its own extensive empirical research on 2-3G radiation, which identifies clear evidence that RFR is

carcinogenic (Lin, 2019), the US National Institute of Environmental Health Sciences' National Toxicology Program (NTP) is investigating whether 5G poses similar risks to human health (National Toxicology Program, 2018b). Inter alia, "NTP scientists found that RFR exposure was associated with an increase in DNA damage. Specifically, they found RFR exposure was linked with significant increases in DNA damage in: the frontal cortex of the brain in male mice, the blood cells of female mice, and the hippocampus of male rats" (NTP, 2018b). These concerns are echoed and amplified in the conclusions of other systematic reviews (see Di Ciaula, 2018; Russell, 2018), which argue that precautionary approaches need to be adopted by governments, given the known risks (Miligi, 2019). Significantly, Italian medical consultant and researcher Agostino Di Ciaula (2018) underlines concerns and concludes from his review of the scientific and medical literature that 5G technology is of great concern as the "available findings seem sufficient to demonstrate the existence of biomedical effects, to invoke the precautionary principle, to define exposed subjects as potentially vulnerable and to revise existing limits." Thus, the majority of peer-reviewed scientific studies conclude that 2-4G and WiFi, and by logical generalization, 5G, puts those exposed to RFR signals at significant health risks, even at exposure levels 100,000 times lower than Public Health England (PHE)/ICNIRP safety guidelines. However, the European Academy for Environmental Medicine (EUROPAEM) EMF Guidelines (Belyaev et al., 2016) indicates a non-thermal safety level of 1,000,000 to 100,000,000 times less than PHE and ICNIRP guidelines.

### **Is 5G RFR carcinogenic?**

Few policymakers and healthcare professionals understand why in 2011 the WHO's IARC classified non-ionizing RFR as a Class 2B possible carcinogen. RFR's status as a major environmental toxin and probable carcinogen has been confirmed in numerous studies since. A recent scientific review of RFR studies and the links with cancer is unequivocal and states that "[m]obile phone radiation causes brain tumors and should be classified as a probable human carcinogen (2A)". However, new experimental and epidemiological research has scientists conceding that it should be reclassified as a Class 1 human carcinogen. Accordingly, an IARC Advisory Group of 29 scientists from 18 countries recommended that non-ionizing radiation be prioritized by the WHO's International Agency for Research on Cancer (IARC) Monographs programme during 2020-24 (IARC Monographs Priorities Group, 2019). It is significant that former ICNIRP members are now recognizing this and also calling on the IARC to review its classification (see Lin, 2019). It is therefore of concern that 5G RFR's status as a carcinogen is played down by the UK government and PHE: furthermore, it is clear that RFR's health risks as such are not understood, particularly by scientists and medical practitioners advising PHE.

### **What is the primary biological mechanism that leads to toxicogenic and carcinogenic effects?**

Non-ionizing RFR is considered by the majority of independent scientists as a potent environmental toxin, due to its ability to cause oxidative stress in animal and human cells (Belpomme et al. 2018; Yakymenko et al., 2016). The relationship between non-ionizing RFR, the increase in free radicals/reactive oxygen species, the reduction in anti-oxidants, and oxidative stress in human cells of all types is significant (Kivrak et al., 2017). The vast majority of studies identify oxidative stress as the mechanism through which cancer and a range of other more immediate health ill-effects, such as neurological and immunological

effects, occur through exposure to most environmental toxins, including RFR (cf. Barnes and Greenebaum, 2020). Of particular concern here to many scientists are the effects on children's neurological and psychological development caused by RFR exposure (Belyaev et al., 2016).

### **Why are the health risks of exposure to RFR significant?**

As with any environmental toxin, the risks related to RFR exposures increase with the frequency and duration of such exposures over time, even at low levels of exposure: put simply, it is the extent of the exposure to all sources of RFR that poses the greatest risk to individuals and society (Barnes and Greenebaum, 2020).

Unlike other toxins and carcinogens, RFR is truly ubiquitous: it radiates from multiple personal and WiFi devices, routers, access points—these radiate 3-5G telecommunications and data signals, 2.4 and 5G Wifi signals and Bluetooth RFR—in the home, public spaces, hospitals, cars, in schools, and a web of antennae across the built environment. Thus, exposure to this carcinogen and toxin is of high frequency and long, if not continuous, duration.

This continuous exposure maximizes the risk of persistent and continuous oxidative stress and, consequently, makes humans vulnerable to ALL the health risks listed earlier. Children are particularly at risk. Hence, scientists and medical practitioners globally believe that ubiquitous 5G sources present high levels of risk to human health and well-being (5G Appeal, 2019). Just how significant are the health risks? What follows is a precis of the major health risks.

[Click here to read full article.](#)

\*

Note to readers: please click the share buttons above or below. Forward this article to your email lists. Crosspost on your blog site, internet forums. etc.

*Featured image: Demonstrators at the anti-5G protest in Bern on Friday. (© Keystone / Peter Klaunzer)*

The original source of this article is [Electromagnetic Sense Ireland](#)  
Copyright © [Prof. Tom Butler](#), [Electromagnetic Sense Ireland](#), 2020

---

[Comment on Global Research Articles on our Facebook page](#)

[Become a Member of Global Research](#)

Articles by: [Prof. Tom Butler](#)

**Disclaimer:** The contents of this article are of sole responsibility of the author(s). The Centre for Research on Globalization will not be responsible for any inaccurate or incorrect statement in this article. The Centre of Research on Globalization grants permission to cross-post Global Research articles on community internet sites as long the source and copyright are acknowledged together with a hyperlink to the original Global Research article. For publication of Global Research articles in

print or other forms including commercial internet sites, contact: [publications@globalresearch.ca](mailto:publications@globalresearch.ca)

[www.globalresearch.ca](http://www.globalresearch.ca) contains copyrighted material the use of which has not always been specifically authorized by the copyright owner. We are making such material available to our readers under the provisions of "fair use" in an effort to advance a better understanding of political, economic and social issues. The material on this site is distributed without profit to those who have expressed a prior interest in receiving it for research and educational purposes. If you wish to use copyrighted material for purposes other than "fair use" you must request permission from the copyright owner.

For media inquiries: [publications@globalresearch.ca](mailto:publications@globalresearch.ca)