

EMR and Health

Report on electromagnetic radiation, health and well-being

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Electromagnetic fields & children

EMFs can affect children's brains, learning and behaviour, says pediatrician.

Electromagnetic fields (EMFs) can have harmful effects on children and precautions should be taken to protect their health, says Korean paediatrician Dr Jin-Hwa Moon in a review soon to be published in the *Journal of Clinical and Experimental Pediatrics*.

'The nervous systems of children are more vulnerable to the effects of electromagnetic waves,' says Moon, who points out that their thinner skulls allow radiation to penetrate further into the brain.

Moon says cancer is the biggest concern for children and exposure to EMFs can be a risk factor. Studies show that living near high voltage powerlines, for example, increased the risk of childhood leukemia.

The International Agency for Research on Cancer has classified both power-frequency and radiofrequency fields as Class 2B carcinogens.

Moon says that animal studies show that exposure to radiofrequency radiation had harmful effects on the brain such as:

- reductions in certain brain cells



- hyperactivity
- memory loss
- increased permeability of the blood-brain-barrier

He also found evidence that exposure to mobile phone radiation resulted in 'increased headache, sleep disruption, neurotransmitter release, synaptic plasticity alterations, and neuronal cell cycles.'

Mobile phone and tablet use also reduced sleep quality.

Children exposed to high radiation at home had 'lower verbal scores and higher internalizing and total problems ... and ... reduced visuomotor coordination'.

Even a pregnant mother's use of mobile phones can negatively affect the behaviour of her offspring, says Moon.

'Precautionary principles should be followed for children and the exposure to EMFs among children should be minimized, the paper concludes.

Moon, JH, 'Health effects of electromagnetic fields on children', *Clin Exp Pediatr* 2020 [in press]

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Australian & NZ scientists warn of 5G risks

Independent scientists from Australia and New Zealand have questioned official assurances that the 5th generation technology currently being rolled out is actually safe.

'Simply put, 5G is untested for safety on humans and other species and the limited existing evidence raises red flags,' the scientists say in a letter to the journal *Radiation Protection in Australasia*.

Among the concerns raised by the scientists is the fact that 5G technology will require the construction of millions more transmitters, increasing the cumulative exposure of the population and creating complex patterns of exposures that have never been seen before. Additionally, 5G will use high frequency signals that are currently used in radar and non-lethal weapons.

The letter refers to suggestions by experts that short bursts of high-intensity 5G signals could cause tissue damage, especially to children and animals. There are also concerns that the movement of beam-forming 5G signals may generate moving charges that penetrate deeply into the body, thus damaging tissues.

Moreover, radiofrequency radiation potentially causes 'many chronic diseases, including cancer, cardiovascular disease, immune diseases and neurodegenerative diseases.'

In light of their concerns, the scientists have called for more research.

'We, scientists and medical doctors from Australia and New Zealand who have been conducting our own independent research on the health impacts of RF-EMR, would like to urge the Australasian Radiation Protection Society (ARPS) to take an active role to encourage investigation into this contentious issue.'

'We urge ARPANSA and the respective health departments of Australia and New Zealand to present the primary scientific studies that can support their claims of safety for RF-EMR, and 5G in particular—to our knowledge they do not exist'

The letter refers to claims by Australian authorities that 5G is safe. The ARPANSA (Australian Radiation Protection and Nuclear Safety Agency) advises that 5G does not represent a risk to health and Professor Brendan Murphy, Chief Medical Officer of Australia has said that it is 'safe'.

But where is the evidence, the scientists ask.

'We urge ARPANSA and the respective health departments of Australia and New Zealand to present the primary scientific studies that can support their claims of safety for RF-EMR, and 5G in particular—to our knowledge they do not exist.'

The scientists conducted their own investigation of research on millimetre waves used in 5G technology. Of the 68 studies they investigated, almost 78% found 'significant' biological effects, where as only 19% did not. (The remaining papers did not report clear effects.)

The letter points out that ARPANSA's assessment that 5G technology does not represent a risk to health has been conducted without the input of medical professionals and suggest that its 'seriously questionable conclusions ... appear to mislead the

Australian medical system.'

If the Australian public is to have any confidence in 5G technology, it is clear that the issues raised in this letter need to be addressed and that, contrary to the situation at present, full and open debate on the topic be allowed and encouraged.

https://www.researchgate.net/publication/342085409_Serious_Safety_Concerns_about_5G_Wireless_Deployment_in_Australia_and_New_Zealand

Smart phones and fertility

Smart phone radiation may inhibit fertility, say researchers from China in what is thought to be the first study of its kind. ¹

The researchers conducted a study on 135 adult male rats to see if and how smart phone radiation could impact on fertility. Rats were housed in especially-designed 'units' and a smart phone placed directly below the animals' scrotums. The animals were exposed for six hours a day for various periods of time.

The results showed that rats exposed to smart phone radiation for 150 days had lower-quality sperm and testicular damage, but these effects were not noted in rats exposed for 50 or 100 days.

Furthermore, the rats exposed for 150 days showed increased expression of a gene known as Spock3 which the authors considered contributed to the sperm and testicular damage. When the researchers inhibited the expression of Spock3, the sperm and testicular damage did not occur.

'Long-term exposure to 4G SRF-EMF [smart phone radiofrequency electromagnetic fields] diminished the reproductive potential of adult male rats by directly disrupting the Spock3-BTB axis in the testes,' the authors said.

The results of the study are in line with previous research showing increased risks of sperm damage from earlier generations of mobile phone use. For example, Professor John Aitken from Newcastle University conducted a meta-analysis of 27 studies on the effects of radiofrequency radiation on male reproduction. He found that 21 of these showed negative impacts, including decline in sperm motility and DNA damage. ²

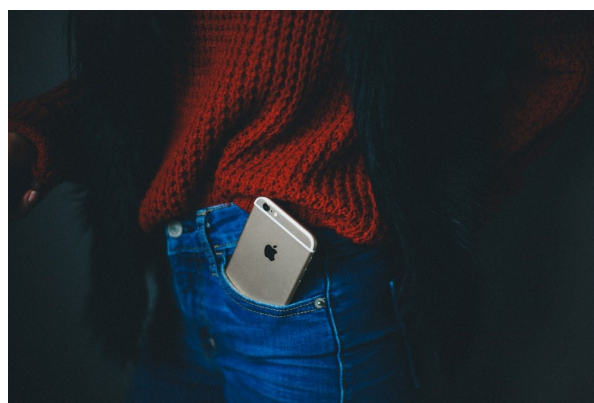
The results could well translate to harmful effects on human males and the authors offered the following advice: 'men are advised to keep smartphones away from their testes to avoid potential adverse effects of this neglected low-energy radiation.'

Given the extensive use of smart phones, the results of the latest study could be important to a generation of mobile phone users.

'Long-term exposure to 4G SRF-EMF [smart phone radiofrequency electromagnetic fields] diminished the reproductive potential of adult male rats by directly disrupting the Spock3-BTB axis in the testes'

1. Yu, G et al, 'Long-term exposure to 4G smartphone radiofrequency electromagnetic radiation diminished male reproductive potential by directly disrupting Spock3-MMP2-BTB axis in the testes of adult rats', *Sci Total Environ* 698, 13869, 2020. <https://reader.elsevier.com/reader/sd/pii/S0048969719338082?token=A095015A61B736D63BFC0ED592D5E066EC46A6CEFDC6B460F3FC14E565A8A211CAD958A911831BE1A784E43351EA6E>

2. Houston, BJ et al, 'The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function', *Reproduction*, 152(6):R263-R276, Dec 2016, doi: 10.1530/REP-16-0126. Epub 2016 Sep 6.



Burnout and depression

Exposure to high levels of magnetic fields (generated by power lines and other electrical sources) has been linked to increased risks of burn out and depression in a new study from Iran. The researchers found that 'the severity of depression, occupational burnout (including emotional exhaustion and cynicism) and levels of lipid peroxidation and SOD were higher among employees working at the power plant which had higher exposure to magnetic fields.'

Hosseinabadi, MB et al, 'Investigating the effects of exposure to extremely low frequency electromagnetic fields on job burnout syndrome and the severity of depression; the role of oxidative stress', *J Occup Health* 2020; 62 (1): e12136

WiFi and pregnancy

WiFi radiation (2.4 Ghz) had harmful effects on the placenta of pregnant mice in a study from Iran.

Scientists exposed the rodents to a WiFi signal for two or four hours and found that exposure increased cell death, free radicals, lipid peroxidation and the enzyme Superoxide dismutase that can cause different types of cell damage.

Vafaei H et al, 'Wi-Fi (2.4 GHz) affects anti-oxidant capacity, DNA repair genes expression and, apoptosis in pregnant mouse placenta', *Iranian J Basic Med Sci*, [23\(6\)](#), pp 833-40, June 2020, 10.22038/IJBMS.2020.40184.9512

US doctors

Over 400 doctors and health professionals from the US have endorsed a letter to the Federal Communications Commission (FCC) stating that the Commission has failed to adequately address the impacts of radiofrequency radiation on human health in a new publication (Docket No 19-266).

'We strongly urge the FCC to reconsider and re-evaluate its RF exposure standards with full consideration of potential adverse health effects for the general public as well as for occupational exposures,' the letter says.

The letter complains that the FCC has:

- not addressed the scientific literature on harmful effects of RF
- is rolling out 5G without evidence that it is safe
- is averaging exposures over time, thus ignoring the impacts of intense bursts of exposure.

<https://bit.ly/MDFCCletter62020>

Radiation-free preschool

The Swedish Foundation for Radiation Protection reports that the Gläntan preschool is going radiation-free. The school uses no WiFi and staff lock their mobile phones inside a shielded cabinet at the start of day. Signs at the entrance warn visitors to turn off their WiFi and mobiles when entering.

<https://www.stralskyddsstiftelsen.se/2019/03/forskola-blir-stralningsfri-utan-wifi-och-mobiler/>

Wireless radiation & lymphoma

Primary central nervous system lymphoma (PCNSL) is a rare malignancy with a low survival rate, but the incidence is now on the rise. One of the reasons for that may be the use of mobile and/or cordless phones, say Swedish oncologist, Professor Lennart Hardell and his team.

Hardell reports on the case of a 53-year-old woman diagnosed with PCNSL whose tumour was located in the temporal, parietal and occipital lobes on the right side of her brain. In the course of her work, she had used a mobile phone, provided by her employer, for approximately four hours a day for fifteen years. In all of these conversations, she had held the phone directly against the right side of her head. In other words, the tumours developed in the most-exposed parts of her brain. She had no other known risk factors for developing this malignancy.

Hardell and his team hypothesise that this rare condition may be related to exposure to radiofrequency radiation. This is consistent, they say, with animal studies that have found increased rates of lymphoma in exposed rodents.

'The effects from RF radiation through DNA damage and decreased DNA repair, by oxidative stress in the cells and increase in pro-inflammatory cytokines are some possible pathways that may influence the immune system and the lymphocytes,' the authors wrote.

Hardell, L et al, 'Central nervous system lymphoma and radiofrequency radiation—A case report and incidence data in the Swedish Cancer Register on non-Hodgkin lymphoma', *Med Hypoth* 144 (2020) 11052.

EHS diagnosis

A new paper shedding light on the diagnoses of electromagnetic hypersensitivity (EHS) and Multiple Chemical Sensitivity (MCS) has been published in the June issue of the journal *Diagnostics*.

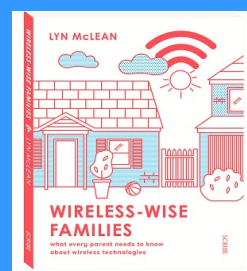
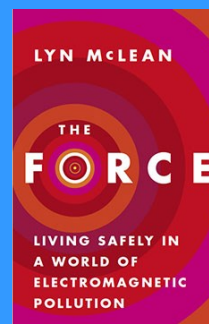
Dr Frederic Greco describes the benefits of using Ultrasonic cerebral tomography (UCTS) for this diagnosis. UCTS is a pulsatile ultrasound-based method for measuring the functional and anatomical characteristics of brain tissue that can be used to diagnose dementia and other conditions. It is more suitable for testing people with EHS than magnetic resonance imaging (MRI) which exposes patients to very high magnetic fields.

Greco and his team analysed data from previous studies involving approximately 100 people with EHS or MCS. They confirmed the findings of this research, showing that people with these conditions had lower MPIs (mean pulsometric index) than healthy controls.

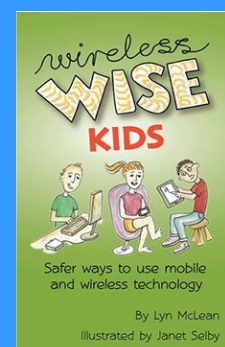
'We conclude that UCTS might be presently one of the best imaging techniques available for the medical diagnosis of EHS and/or MCS patients,' Greco concluded.

Frédéric Greco, 'Technical Assessment of Ultrasonic Cerebral Tomography and New Scientific Evaluation of Its Clinical Interest for the Diagnosis of Electrohypersensitivity and Multiple Chemical Sensitivity', *Diagnostics* 2020, 10, 427; doi:10.3390/diagnostics10060427

Books by Lyn McLean



Wireless-wise Families



'Wireless-wise Kids'

Wireless-wise Kids

for everything you need
to know about keeping

Doctors concerned about 5G

Belgian doctors and health professionals have signed an open letter—known as the ‘Hippocrates Electromog Appeal Belgium’ - expressing their concerns about the safety of 5G radiation. The text of the appeal appears below.

On the eve of the deployment of 5G, Belgian health professionals sound the alarm.

Smartphones, tablets, smart TVs, connected objects of all kinds, WiFi at home, at workplaces, nurseries, schools, transport and public places,... The exposure of the population to electromagnetic radiation from radio frequencies / microwave (RF / MO) keeps increasing. We are now talking about the arrival of 5G and its myriad of connected objects.

However, the safety of this ubiquitous and prolonged exposure has never been demonstrated.

On the contrary, evidence of its harmfulness accumulates. Since 2011, electromagnetic RF / MO radiation from wireless technologies is considered by the WHO as possibly carcinogenic.

The Precautionary Principle was by no means respected during the massive deployment of these wireless technologies. The standards intended to protect the population from exposure to electromagnetic RF / MO radiation only take into account the heating of tissues (thermal effect) during an exposure of limited duration (30 minutes). These standards do not take into account repeated and / or prolonged exposures or any other non-thermal biological effects that occur at values well below currently permitted values. They have not been designed to protect fetuses, children, adolescents, the elderly.

The widespread deployment of wireless technologies has had known health risks for several decades. Thousands of studies (cell, animal, epidemiological studies) confirm the existence of non-thermal biological effects induced by exposure to electromagnetic RF / MO radiation emitted by wireless technologies. For children, the risks may be increased due to cumulative effects of prolonged exposure. Their developing and immature brains, organs and tissues may be more sensitive to exposure.

As health professionals, we deplore more and more pathologies that may be related to environmental components such as the increasing exposure of the population to electromagnetic radiation from wireless.

We are also meeting more and more people with physical disorders potentially related to exposure to electromagnetic radiation. They describe headaches, tinnitus, vertigo, insomnia, skin rashes, muscle and / or joint pain, severe cognitive impairment (attention and concentration deficit, loss of immediate memory), heart problems (arrhythmia, tachycardia)... These symptoms disappear when the per-

‘Thousands of studies (cell, animal, epidemiological studies) confirm the existence of non-thermal biological effects induced by exposure to electromagnetic RF / MO radiation emitted by wireless technologies.



**MEASURE
YOUR
EXPOSURE**

**ELF AND WIRELESS
METERS FOR HIRE OR
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son moves away from the source of exposure. These people suffer from the so-called electro-hypersensitivity syndrome (EHS) syndrome recognized in Sweden as a functional disability. They are often unable to work and experience a form of social exclusion.

With reference to Resolution 1815 of May 2011 of the Parliamentary Assembly of the Council of Europe and in line with dozens of calls from doctors and scientists around the world, we ask that federal, regional and local public representatives take their responsibilities and take the necessary measures to obtain:

- the application of the precautionary principle in order to protect the population, especially the youngest,
- the prohibition of WiFi in kindergartens, nursery schools and places with young children,
- stopping the deployment of WiFi and connected objects in schools and return to unconnected or wired alternatives,
- health impact studies before deploying new wireless telecommunications technologies, including 5G,
- a moratorium on the deployment, distribution and sale of connected objects such as phones, tablets, games, watches, baby phones and other RF / MO transmitters for children,
- raising awareness among citizens, in particular parents, teenagers and pregnant women, to a reasoned and responsible use of wireless connected objects,
- educating health professionals about the biological and health risks of exposure to electromagnetic radiation,
- means to invest in research concerning the etiology, pathophysiology, diagnosis and management of electro-hyper-sensitivity (EHS),
- recognition of the existence and extent of EHS as a syndrome that affects more and more adults and children,
- the creation of a "vigilance center" to monitor the evolution of emerging EHS cases,
- the establishing of truly protective exposure standards based on the biological and non-thermal effects of EMF.

<https://en.hippocrates-electrosmog-appeal.be/appel>

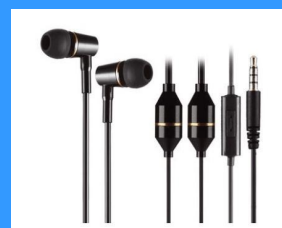
The Appeal has attracted 1078 signatories from scientists and medical practitioners internationally.

Mobile phone protection

Wavewall mobile phone cases protect the head , body and the phone



Airtube headsets keep mobile phone radiation away from the body.



emraustralia.com.au

'the safety of this ubiquitous and prolonged exposure has never been demonstrated'

Telcos set standards

The mobile phone industry effectively sets its own standards, says Professor Klaus Buchner, a retired lecturer at the Technical University of Munich.

In a post written on 18 June ¹, Professor Buchner comments on the lack of independence of the International Commission on Non-Ionizing Radiation Protection (ICNIRP), a body that sets guidelines for radiation protection that are adopted by many countries, including Australia.



According to Buchner, ICNIRP is a private association, registered in Munich, with 'numerous close ties to the mobile communications industry' and many of its members have received research funding from the telecommunications industry as well.

This brings into question the reliability of ICNIRP's pronouncements and creates a situation where industry is in fact influencing the setting of the standards that govern its activities.

Professor Lennart Hardell and coauthor Micahael Carlberg have also expressed concerns about the biased membership of the ICNIRP. In a comment to the journal *Oncology* they say that biased risk analysis potentially puts the public at risk.

1. <https://klaus-buchner.eu/bestimmt-die-mobilfunk-industrie-ihre-eigenen-grenzwerte/>
2. [Comment] 'Health risks from radiofrequency radiation, including 5G, should be assessed by experts with no conflicts of interest', <https://www.spandidos-publications.com/10.3892/ol.2020.11876>

ICNIRP funding

Where does the funding for the International Commission on Non-Ionizing Radiation Protection (ICNIRP) come from? A recent paper reveals, for the first time, that the majority of the group's funds are provided by the German Government.

<https://microwavenews.com/short-takes-archive/bfs-support-icnirp>

5G lawsuit, Turkey

Resident of Antalya, Turkey, Muammer Karabulut, has filed a lawsuit against Microsoft and Huawei, claiming that the 5G emissions from their technology compromise health.

<https://www.news1.news/n1/2020/04/huawei-and-microsoft-sued-due-to-5g-in-antalya.html>

Protect your family from wireless radiation



Shielding singlets for kids



Measure your family's exposure with our Home Test Kit



Head protection