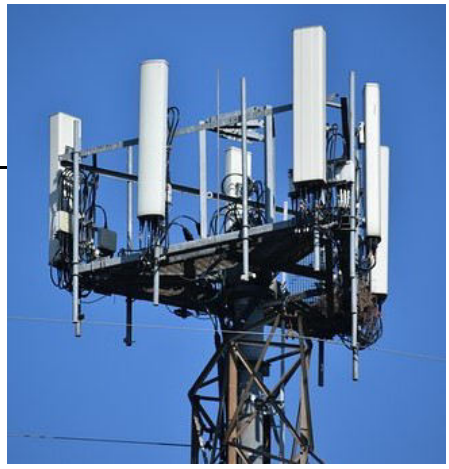
EMR and Health

Report on electromagnetic radiation, health and well-being Vol 17 No 5 July/Aug 2021

Telstra sells mobile phone towers

Australian telecommunications giant to sell portion of its mobile phone tower business



On 30 June, Andy Penn, CEO of Telstra, announced plans to sell 49 percent of Telstra's mobile phone base station business to a consortium of superannuation funds.

The three superannuation funds—Future Fund, Commonwealth Superannuation Corporation and Sunsuper—will spend $2.8 billion to acquire their share of the asset.

Under the agreement, Telstra will retain the majority ownership in InfraCo Towers and continue to own its radio access equipment and spectrum. It will also have access to existing and new infrastructure for fifteen years, with an option to extend.

Telstra InfraCo was established in 2018 as a specialist infrastructure business. It is the largest mobile tower infrastructure provider in Australia, with approximately 8,200 towers.

As well as mobile phone phone towers and poles, it also owns fibre optic cables, ducts, data centres, exchanges and subsea cables.

Dr Raphael Arndt, CEO of Future Fund, said, 'We are pleased to partner with Telstra to play an important role in strengthening Australia's 5G infrastructure.'

The deal will close in September.

This may not be a lucrative financial deal for superannuation companies and their investors long-term. As scientific evidence about the health effects caused by wireless radiation accumulates, there could be legal action against companies responsible for emitting it. It is also possible that the InfraCo super funds will see investors opposed to mobile phone infrastructure near their homes transfer to other super funds.

Telstra media release, 30 June 2010, file:///C:/Users/User/Downloads/02389413%20(1).pdf

Telstra Infraco Project, https://infrastructurepipeline.org/project/telstra-infraco-towers

In This Issue

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Children's sleep problems

Do your children have trouble sleeping?

Exposure to electromagnetic radiation could be a factor, according to a study published recently by scientists from Turkey.

In the first study of its kind, scientists from Gaziantep University investigated 400 healthy children between the ages of one month and five years. They found that 'maternal EMF exposure during pregnancy because of electronic devices was significantly associated with sleep disturbances in children at age 5 years.'

The study found that children were more likely to have sleep problems if:

- their mothers lived near a mobile phone tower during pregnancy
- their mothers used electronic media devices, such as computers, mobile phones, WiFi, TVs and microwave ovens—during pregnancy
- the children had electronic devices in the areas where they slept, whether the device was being used or not.

Although the findings need to be replicated, the study points to an alarming trend in a society where children are exposed to an increasing range of radiation-emitting technologies.

The authors warn, 'Obstetricians should be aware that pregnant women's EMD [electronic media device] usage may affect sleep patterns in children. Clinicians, parents, teachers, and children should be educated about the harmful effects of the presence of EMDs (even when not using them) in the sleeping environment at nighttime. … if our findings are true, considering the widespread use of EMDs, it is a very important problem for public health given the long-term consequences of sleep disorders in childhood.'

Çöl N, Kömürcü Karuserci Ö, Demirel C. 'The possible effects of maternal electronic media device usage during pregnancy on children's sleep patterns' *Turk Arch Pediatr* 2021; 56(3): 254-60. 10.5152/; https://turkarchpediatr.org/en/the-possible-effects-of-maternal-electronic-media-device-usage-during-pregnancy-on-children-s-sleep-patterns-131219

'maternal EMF exposure during pregnancy because of electronic devices was significantly associated with sleep disturbances in children at age 5 years'

iPhone 12 risks

Can a mobile phone interfere with the implantable device a person wears?

Apparently, the answer is YES, according to new research published by the American Heart Association.

The researchers conducted two experiments in which they examined how the Apple iPhone 12 Pro Max affected cardiac implantable electronic devices.

In the first experiment, they placed the phone on the skin, directly over the position of the cardiac devices implanted in three patients.

In the second experiment, the researchers placed the iPhone 12 over implantable cardiac devices that were still in their packaging.

In both cases, they monitored the effects on the devices.

The researchers found that the iPhone 12 interfered with the operation of the cardiac implantable electronic devices in all three patients and in over 72% of the boxed equipment.

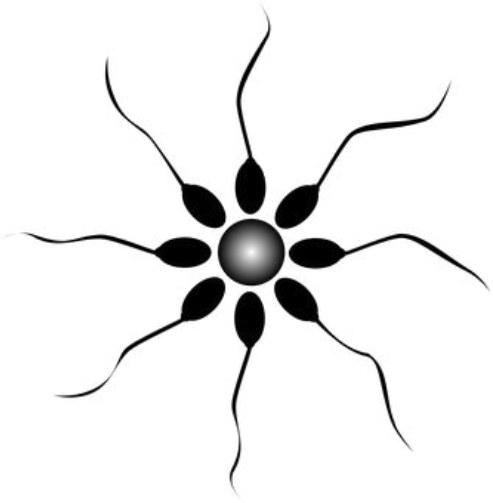
Some smart phones utilise magnets to enable them to charge wirelessly. The Apple iPhone 12 generates a particularly high magnetic because it has more magnets than previous generations of mobile phones.

The findings highlight potential risk for iPhone users with implantable cardiac devices. 'People often put their smartphones in a breast pocket over a device which can be in close proximity to CIEDs [cardiac implantable electronic devices]. This can lead to asynchronous pacing or disabling of anti-tachycardic therapies,' the authors wrote.

https://www.ahajournals.org/doi/10.1161/JAHA.121.020818

'the iPhone 12 interfered with the operation of the cardiac implantable electronic devices'

Female reproduction



Can wireless radiation interfere with the female reproductive system?

An animal study published in April suggests that it can.

In their study, the researchers exposed pregnant rats to mobile phone radiation and found that this resulted in changes in the reproductive system of their female offspring. The rat pups exposed in utero had less primary and secondary follicles—the sacs that contain immature eggs (oocytes). The pups also had a higher level of atresia—disintegration of eggless follicles.

The less follicles a female has, the lower the opportunity for fertilisation and pregnancy.

The researchers also exposed pregnant rats to mobile phone radiation while supplementing them with omega-3, an essential fatty acid. They found that supplementation counteracted the harmful effects of exposure and the female pups with the highest supplementation had a higher number of follicles than pups that had not been exposed.

Calis, P et al, 'Does Exposure of Smart Phones during Pregnancy Affect the Offspring's Ovarian Reserve? A Rat Model Study', *Fetal Pediatr Pathol,* 2021, Apr; 40(2): 142-52, doi: 10.1080/15513815.2019.1692112.

Sperm and kidney

What about wireless radiation and male reproduction?

A new animal study from Saudi Arabia adds to the already compelling body of science showing that mobile phone radiation has a harmful effect on sperm, reducing the likelihood of fertilisation and pregnancy, as well as on the kidneys.

The researchers exposed 30 male mice to different frequencies of mobile phone radiation for 40 minutes or 60 minutes per day then examined samples of blood and kidney and testes tissues.

In blood samples, they found increased levels of leucocytes which normally occurs when fighting infection. They also found higher levels of hemoglobin which usually occurs when the body requires more oxygen.

In kidney tissues, they found markers for inflammation in mice exposed to 4G mobile phone radiation.

They found indicators for inflammation In testes tissues as well.

Based on their results, the authors suggested that it is important that the public be advised of the potential harmful effects of mobile phone radiation.

Hasan, I et al, 'Hematobiochemical and histopathological alterations of kidney and testis due to exposure of 4G cell phone radiation in mice', *Saudi J Biol Sci,* 2021 May 28(5): 2933-2942; doi: 10.1016/j.sjbs.2021.02.028.

Vision

Mobile phone radiation may have a harmful effect on vision, according to a study from Turkey.

The researchers exposed 32 rats to mobile phone radiation from a 4.5 GHz (LTE Advanced-Pro network) for two hours a day for six weeks. They found that exposure changed visual evoked potential, and reduced the diameter of axons (which carry electrical impulses to nerve cells) and myelin (which surrounds and protects nerves).

They concluded that exposure resulted in evidence of optic nerve damage and could result in decrerased quality of life.

Ozdemir, E et al, 'The effect of 4.5 G (LTE Advanced-Pro network) mobile phone radiation on the optic nerve', *Cutan Ocul Toxicol.* 2021 Mar 3:1-27. doi: 10.1080/15569527.2021.1895825

Memory

Exposure to wireless radiation could have harmful effects on memory, according to a study from China, published in June.

The researchers exposed rats to radiation of 1.5 GHz, 2.856 GHz or both 1.5 and 2.856 GHz and found:

- 'Acute impairment of spatial memory abilities after 2.856 GHz and 1.5 GHz microwave exposure'
- 'Acute inhibition of EEG after 2.856 GHz and 1.5 GHz microwave exposure'
- 'Exposure to 2.856 GHz and 1.5 GHz microwaves caused signifcant structural injuries in the hippocampus' and
- 'Exposure to 2.856 GHz and 1.5 GHz microwaves induced cell apoptosis in the hippocampus.'

The results showed that exposure to both frequencies could reduce rats' spatial memory function.

Tan, S et al, 'Acute effects of 2.856 GHz and 1.5GHz microwaves on spatial memory abilities and CREB□related pathways', *Sci Rep* 2021; 11 (1): 12348; https://www.nature.com/articles/s41598-021-91622-4

At home with technology

When is a house not a home? When it's a smart mobile phone.

According to a group of UK anthropologists, people are now so attached to their smartphones, that these phones are literally becoming their homes.

The project, led by Professor Daniel Miller from Cambridge University, involves a study by 11 researchers over 16 months across nine countries. The research that has been published so far in a series of books reveals important insights into our relationship with this technology and its impacts.

'Instead of using the smart phone as just a device that we use, it should be seen as a place within which we live—a kind of transportal home,' the researchers found.

They also found that people's awareness was often more engaged in their phones than in their physical surroundings. According to Professor Miller, 'the smartphone is no longer just a device that we use, it's become the place where we live. The flip side of that for human relationships is that any point, whether over a meal, a meeting or other shared activity, a person we're with can just disappear, having 'gone home' to their smartphone.

'This behaviour, and the frustration, disappointment or even offence it can cause, is what we're calling the death of proximity. We are learning to live with the jeopardy that even when we are physically together, we can be socially, emotionally or professionally alone.'

The research also shows how the smart phone is impacting on communication, social media, ageing and family dynamics.

It gives a whole new meaning to the concept of being at home with technology.

'The Global Smartphone—Beyond a youth technology' by Daniel Miller et al, https://www.uclpress.co.uk/products/171335; https://science.news/2021-05-16-anthropologists-warn-attachment-smartphones-becoming-our-homes.html; https://www.youtube.com/watch?v=1roZ70N2gEI

'When is a house not a home?

When it's a smart mobile phone.'

EHS—a look at the evidence

Is electromagnetic hypersensitivity real?

In a study published online on July 6, Dr Dariusz Lezczynski, Adjunct Professor of Biochemistry from the University of Heksinki, reviewed the scientific evidence for this debilitating and controversial condition.

EHS is the term used to describe symptoms experienced by people when exposed to electromagnetic fields from electrical sources, such as powerlines and wiring, or telecommunications sources, such as mobile phones, phone towers, WiFi, Bluetooth and so on.

Symptoms often include headaches, sleep problems, memory and concentration problems, fatigue, anxiety and depression, though many more symptoms have been reported.

Lezczynski analysed the studies conducted on EHS prior to March 2021 which consisted, broadly, of three main types:

- population surveys to determine the incidence of EHS
- provocation studies, where subjects are exposed to a field and their reactions noted
- and biophysical studies, where subjects were exposed and changes to the body (skin, blood-brain barrier, urine etc) were tested.

According to Lezczynski, the overall evidence from this body of research is insufficient to prove that EHS exists.

But that doesn't prove that EHS does not exist. And that's because there are problems with the way that much of this research has been conducted that make its conclusions doubtful.

'The opinion that there is no causality link between EHS and EMF is unproven,' he concludes.'

In fact, EHS may very well be real. Individuals vary in sensitivity to many environmental agents. Why not electromagnetic fields?

Lezczynski says, 'The phenomenon of the individual sensitivity to radiation is well known for ionizing radiation, for non-ionizing ultraviolet radiation and for ultrasound.'

He also points out that studies have shown that different strains of cells react differently to the same exposures.

What's needed, Professor Lezczynski says, is a new approach. 'Research should focus on finding suitable biochemical and biophysical markers that could be used, in combination with single-individual-focused provocations studies, to determine the sources of the EHS symptoms.'

Mobile phone protection

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

Airtube headsets—no wire to conduct radiation into the head

Dariusz Leszczynski, 'Review of the scientific evidence on the individual sensitivity to electromagnetic fields (EHS)', *Rev Environ Health* July 6, 2021, file:///C:/Users/User/Downloads/10.1515_reveh-2021-0038.pdf

Memory: Paper vs devices

In a fascinating new experiment, scientists from Japan tested whether people remember information better when they record it using a paper and pen or a digital device.

You may have guessed. The paper and pen technique came out trumps.

The study involved 48 university students aged 18 to 29. Three groups of students were asked to write down appointments either on a paper notebook, a tablet or a smart phone and then given an 'interference' task. An hour after recording the appointments, the subjects were asked to remember them while undergoing functional magnetic resonance imaging.

The study found:

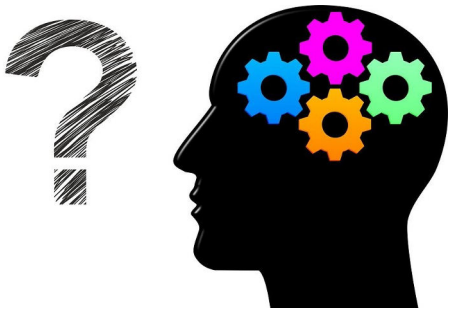
- the students in the tablet and phone groups took much longer to record the appointments than the students using paper (the note group)
- the students in the note group remembered information much more accurately than the tablet and phone groups
- the brains of students in the note group showed much deeper activation than the brains of students in the tablet and phone groups.

'Our results suggest that the use of a paper notebook affects these higher-order brain functions, and this could have important implications for education, particularly in terms of the pros and cons of e-learning. The expanded use of mobile devices or computers could undercut the use of traditional textbooks and paper notebooks, which may in fact provide richer information from the perspective of memory encoding,' the authors said.

The authors also referred to other research showing that:

- students who took long-hand notes performed better on conceptual questions than those who used took notes on laptops and were better at recognizing words than those who used keyboards
- students who read from paper had better comprehension that those who read from screens.

Umejima K, Ibaraki T, Yamazaki T, Sakai KL. Paper Notebooks vs. Mobile Devices: Brain Activation Differences During Memory Retrieval. Front Behav Neurosci. 2021 Mar 19;15:634158. doi: 10.3389/fnbeh.2021.634158. PMID: 33815075; PMCID: PMC8017158.



'students in the note group remembered information much more accurately than the tablet and phone groups'

Protect the body from wireless radiation

Shielding singlets for kids; head protection; shielded scarves