

EMR and Health

Quarterly report on electromagnetic radiation, health and well-being

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5G, health and the law

Legal and health concerns may threaten the rollout of 5G technologies.

Recent developments suggest that telecommunications carriers may face a number of headaches in their plans to rollout 5G technology.

On 1 April, the Brussels Times reported that the government of the region will not relax its standards to accommodate 5G technology.¹ The government introduced stricter regulations Brussels as a precautionary measure to protect people's health. They include a limit of 6 volts per metre, much lower than Australian and international standards.

Environment Minister Celene Fremault is reported as saying that the residents of Brussels were not guinea pigs and that the government was not willing to compromise their health.

According to Ericsson's Christer Tornevik, the 'size of the exclusion zone [in Brussels] makes 5G network roll-out a major problem or impossible.'²

Closer to home, TPG announced on 29 January that it will not be proceeding with the installation of its 5G Australian network, giving as reason the government's decision to ban the use of the Huawei equipment it was planning to use. The company, which would have been Australia's fourth mobile phone network, had already spent \$100 million on its network and had committed another \$30 million to it.³

Was TPG's backdown due to issues about equipment, or was it connected



with the legal risks it could face if it proceeded with its plans?

Not long before its announcement, TPG was engaged in a contest over the construction of a microcell in Sydney that involved barrister Raymond Broomhall.

The contest began when TPG announced plans to install a microcell at 14 Dundas Street, Coogee in a densely-populated residential area of Sydney, just metres from a bedroom.

The proposal was for a 4G LTE cell with exposures of over 8 volts per metre at a distance of up to 50m. This is above the level at which harmful biological effects have been observed and at which sensitive people often report symptoms. It is likely that the site would be used for 5G communications.

The proposal was strongly resisted by local residents and their concerns were the subject of a segment aired last year on *A Current Affair*.⁴

'Home should be our safe place,' said local resident Jenny Khan, who initiated an online petition against the proposal.

TPG began work on the site in September, 18 days before the end of the public consultation period.

A community meeting was held on

(Continued on page 2)

In This Issue

Children at risk from wireless radiation	3
Scientist slams ARPANSA	4
Oregon bill on wireless in schools	5
Sleep and screen time	6
Brain chemistry	6
Magnetic fields and cancer	6
An internet minute	7
Digital Pied Piper	7
Social media & depression	8
Smart phones—bad decisions	8



Publisher EMR Australia Pty Ltd

ABN 82 104 370 658

PO Box 347,
Sylvania Southgate NSW 2224

Tel: 61 2 9576 1772

Web: www.emraustralia.com.au

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(Continued from page 1)

October 15, and was addressed by Raymond Broomhall and medical practitioner Dr Russel Cooper. Mr Broomhall, who specialises in EMR-related legal issues, advised the meeting of the legal situation and residents issued TPG with a legal warning notice.

Representatives from TPG told the meeting that the company proposed to relocate the infrastructure from Dundas St to nearby Blenheim Park. However, that was not the end of the matter.

After taking legal advice, Randwick Council made this announcement on the following day. Council resolved that TPG's 'proposed roll out came at a time when international research reported a link between cell tower radiation and the development of cancer. Accordingly, Council called on the federal Government to intervene and suspended the roll out, pending a review of the relevance of the international findings to the safety of residents in urban Australia.'⁵

And on 29 January, TPG announced that it would no longer be rolling out its 5G network.

The TPG decision comes at a time when there is more evidence of the harmful effects of radiofrequency radiation than ever and many scientists are speaking publicly about its risks.

Could it be that the telecommunications industry and its supporters are becoming concerned about the legal risks of rolling out radiating infrastructure that's been shown to damage the body and affect mood and behaviour?

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has now added a disclaimer to its website, in which it disclaims liability for the contents of its site, which includes Australia's Australian radiation protection standard RPS 3.⁶ The disclaimer says:

This website is not a substitute for independent professional advice. Nothing contained in this site is intended to be used as medical advice and it is not intended to be used to diagnose, treat, cure or prevent any disease, nor should it be used for therapeutic purposes or as a substitute for your own health professional's advice. ARPANSA does not accept any liability for any injury, loss or damage incurred by use of or reliance on the information.

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'Council called on the federal Government to intervene and suspended the roll out, pending a review of the relevance of the international findings to the safety of residents in urban Australia.'

If ARPANSA is not willing to take liability for its own material, then where does that leave carriers? Does compliance with the standard protect them against litigation? Does it protect businesses and organisations that expose their workers or require them to use wireless devices?

Only time and litigation will tell.

1. Brussels Times, 'Radiation concerns halt Brussels 5G development, for now.' 01.04.2019
2. Christer Tornevik, 'ITU Workshop on 5G, EMF and Health', Warsaw, Dec 5, 2017.'
3. ABC News, 30.01, 2019
4. <https://www.9now.com.au/a-current-affair/2018/extras/latest/180918/mobile-tower-warning>
5. <https://www.randwick.nsw.gov.au/about-council/news/news-items/2019/march/tpg-small-cell-towers-will-not-roll-out;>
6. <https://www.arpansa.gov.au/about-us/disclaimer>

Children at risk from wireless radiation

Expert warns radiation from smartphones and WiFi is dangerous for kids and authorities should take action to reduce their exposure.

Radiofrequency radiation produces a range of harmful effects on the body, including cancer, and children are most at risk, says Professor Tom Butler, a social scientist at University College in Cork and a former satellite and microwave communications engineer and IT professional.

In a new paper, published recently online, Butler writes that 'children's health and well-being is under significant threat from everyday digital technologies' and warns that governments and parents must take action to protect them.

He said, 'Epidemiological and experimental research reports increased risk of pathophysiological conditions with current exposures to Smartphone and WiFi RFR that include: cellular DNA damage, leading to a range of cancers; sperm and testicular damage leading to male infertility; neuropsychiatric conditions, including post-natal neural development, and learning and cognitive problems; and melatonin reduction leading to sleep disruption among others.'

Butler refers to a large body of evidence that this radiation is harmful, including:

- results of the National Toxicology Program (USA) which showed increased rates of tumours and DNA damage in exposed rodents;
- results of the Ramazzini Institute's study (Italy) which found increased tumours in exposed rats;
- a French study (CERENAT study) which found increased numbers of tumours in people who were heavy mobile phone users;
- a number of studies by Prof Lennar Hardell who found increased rates of brain tumours in long-term and heavy mobile phone users.

As well as causing cancer, Professor Butler says that wireless radiation can promote cancer.

One of the ways that wireless radiation damages the body, Butler said, is through oxidative stress, also known as reactive oxygen species (ROS). 'A wealth of studies now illustrate ... that nonionizing radiation emitted from smart phones, cordless phones, WiFi, Bluetooth and other wireless technologies, such as those powering the Internet of Things (IoT) can severely disturb this balance, ... by amplifying ROS, suppressing antioxidants, and increasing oxidative stress.'

'research reports increased risk of pathophysiological conditions with current exposures to Smartphone and WiFi RFR that include cellular DNA damage ... sperm and testicular damage ... neuropsychiatric conditions and melatonin reduction'

Damage occurs at levels of exposure generated by typical wireless devices.

Butler believes that children are particularly vulnerable to the effects of wireless radiation. He says, 'A recent study demonstrated that in a child's brain the hippocampus and hypothalamus absorb 1.6—3.1 times the microwave energy of an adult brain. ... The same study found that the bone marrow in a child's skull absorbs microwave radiation at a level 10 times greater than that of an adult.' Children's eyes also absorb more radiation than adults' eyes, he said.'

Butler considers that international standards do not provide adequate protection and advises that governments and regulators should 'take immediate action to change policy and implement appropriate safety standards'. This includes removing WiFi routers and devices from all schools.

Professor Butler also recommends that parents take action to protect their children from exposure. This includes:

- educating children about the risks of wireless technology;
- restricting use of wireless devices;
- keeping wireless devices switched off where possible;
- holding wireless devices away from the body;
- keeping routers away from children's bedrooms.

Prof Tom Butler, 'On the Clear Evidence of the Risks to Children from Smartphone and WiFi Radio Frequency Radiation', https://www.gr3c.com/wp-content/uploads/2019/02/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation_Final.pdf

Scientist slams ARPANSA

A prominent scientist has criticised information about the health effects of wireless radiation written by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

In an unsigned letter of 18 December, ARPANSA reaffirmed its entrenched position that radiofrequency radiation only causes health problems at levels high enough to cause heating (ie thermal effects). The letter stated, 'there are no established health effects from RF (radiofrequency) EME at levels below current protection guidelines.' It dismissed evidence of harmful biological effects from exposure and of electromagnetic hypersensitivity.

On 4 March, eminent scientist Martin Pall, a professor of biochemistry at Washington State University, issued a critique of the ARPANSA letter.

He began by listing statements, signed by tens of thousands of scientists and medical practitioners, listing their concerns about the inadequacy of international standards that are based on the thermal-effects-only paradigm. 'It should be clear,' Pall wrote, 'that independent scientists and physicians know that these safety guidelines, which do not take into account the many thousands of studies on non-thermal EMF effects, have no connection with the genuine scientific literature.'

Professor Pall also referred to a large body of scientific evidence showing that exposures too low to cause heating can have extremely harmful effects on the body, including cancer. In his review of the scientific literature, he has shown that nonthermal exposures resulted in:

- endocrine problems
- increased levels of intracellular calcium which have been shown to cause other biological problems
- cancer
- fertility problems in males and females
- reduced libido
- neurological problems, including sleep problems, tiredness, headaches, depression, concentration and memory problems, dizziness, vertigo, anxiety, irritability, stress
- DNA damage and chromosome mutations
- free radical (oxidative) damage.

'We have here, a total of 158 bodies of evidence each showing that non-thermal exposures cause an important health-related effect,' he said.

'The majority of the claims made in the ARPANSA letter are completely undocumented and, in the minority of those claims where some documentation is provided, that documentation is completely inadequate,' Professor Pall told EMR Australia. He said, 'Each of the ARPANSA claims has been shown to be false, based on vastly larger and more convincing evidence from the scientific literature. Four of the ARPANSA claims are intentionally misleading and, therefore, meet the definition of scientific fraud. Six important, distinct and repeatedly reported findings in the scientific literature

(Continued on page 5)

'independent scientists and physicians know that these safety guidelines, which do not take into account the many thousands of studies on non-thermal EMF effects, have no connection with the genuine scientific literature'

(Continued from page 4)

show that the ICNIRP, ARPANSA and other national and international safety guidelines do not predict biological response to EMF exposures and are, therefore fraudulent. Hence, meeting those guidelines tells us nothing useful about safety or lack thereof.'

Professor Pall concluded by saying,

'With 100% consistency, ARPANSA avoids all of the strongest available science in this area.

'With 100% consistency, ARPANSA has produced a stunningly biased document, whose positions are repeatedly and consistently contradicted by the strongest science and by large numbers of independent scientists.

'With 100% consistency, ARPANSA has failed to protect the health and safety of the people of Australia.

'With 100% consistency, ARPANSA has protected the economic interests of the telecommunications industry.'

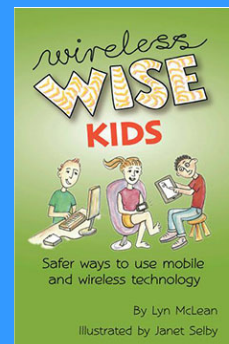
(correspondence)

Oregon bill on wireless in schools

A bill has been introduced to the Oregon State Legislature that, if passed, would require the Department of Education to warn the public about the risks of wireless radiation and take action to minimise exposure. The bill, introduced on 14 January reads as follows:

It 'Directs Department of Education to prepare and make available statement that discloses potential health risks of wireless network technology and requires public and private schools to distribute statement to employees, students and parents or guardians of students. Requires department to adopt by rule guidelines for including in school curricula, assemblies, open houses, meetings between parents and teachers and related settings information concerning hazards of exposure to microwave radiation and how to use wireless devices more safely to reduce risk. Requires department and Oregon Health Authority to conduct review of peer-reviewed, independently funded studies of effects of exposure to microwave radiation in schools and similar environments, particularly exposure that results from use of wireless network technologies, to develop recommendations to schools in this state for practices and alternative technologies that would eliminate students' exposure to harmful microwave radiation and report results of review and recommendations to interim committee of Legislative Assembly related to education not later than September 15, 2020.'

80th Oregon Legislative Assembly 2019 Regular Session Measure: SB 283 Only impacts on Original or Engrossed Versions are Considered Official Prepared by: Cameron D. Miles Date: 1/14/2019 SUMMARY; <https://olis.leg.state.or.us/liz/2019R1/Measures/Overview/SB283>



McLean
'The Force'

Sleep and screen time

Using wireless devices interferes with the quality and quantity of sleep, according to new research published in the April issue of *Environmental Research*.

Investigators from Spain and the Netherlands studied wireless device use and sleep quality in a group of Spanish adolescents aged 17 to 18. They found that making as few as one cordless phone call a week reduced sleep quality. Not surprisingly, sleep quality was also reduced by heavy mobile phone or tablet use.

Exposure to blue light as well as mental stimulation might be among the factors causing sleep problems, the researchers suggested.

Cabr -Riera A et al, 'Telecommunications devices use, screen time and sleep in adolescents', *Environ Rev* 171:341-47, 2019.

Brain chemistry

Radiofrequency (RF) radiation had harmful effects on brain architecture and chemistry in a study from Korea.

Researchers exposed mice to a signal of 835 MHz for five hours a day for 12 weeks. They found that exposure affected the striatum—the part of the brain that deals with rewards and movement. It reduced the number of synaptic vesicles that store neurotransmitters and this led to lower levels of dopamine. Dopamine, often described as a feel-good neurotransmitter, is linked with feelings of happiness, wellbeing and satisfaction. Reduced levels of dopamine are associated with lack of motivation.

Dopamine is also associated with movement and the researchers tested whether RF exposure would affect movement by treating animals with a drug that induces symptoms of Parkinson's disease. They found that exposure did impede the mice's ability to recover locomotion after treatment with the drug.

Kim, JH et al, 'Decreased dopamine in striatum and difficult locomotor recovery from MPTP insult after exposure to radiofrequency electromagnetic fields', *Sci Rep* 9 (1):1201, Feb 2019.

Magnetic fields and cancer

More evidence that radiofrequency (RF) radiation contributes to cancer comes from a new animal study from the Ramazzini Institute in Italy.

The researchers found that both male and female rats had a higher rate of malignant tumours when exposed to both power-frequency magnetic fields and formaldehyde. Formaldehyde is found in many homes and workplaces, being present in carpeting, building materials, glues and some fabrics and cosmetics.

Results of the Institute's previous research on mobile phones and tumours can be seen in the May 2018 issue of *EMR and Health*.

Soffritti, M and Giuliani, L, 'The carcinogenic potential of non-ionizing radiations: The cases of S-50Hz MF and 1.8 GHz GSM RFR', *Basic Clin Pharmacol Toxicol* Feb 2019.

'making as few as one cordless phone call a week reduced sleep quality'



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An internet minute

You mightn't feel that very much can be done in a single minute.

But every minute across the globe, millions of pieces of information are being transacted, tweeted, texted and watched. For example, each minute:

- over 18 million text messages are sent;
- 188 million emails are sent;
- four and a half million people watch a Youtube video.

You can see more fascinating statistics about society's love affair with the internet at: <https://www.visualcapitalist.com/what-happens-in-an-internet-minute-in-2019/>

Digital Pied Piper

Remember the story about the Pied Piper of Hamelin? Engaged to rid the town of rats, the piper so entranced the rodents with his playing that they followed him from the town. When the townsfolk reneged on their promise to pay the piper, he piped a tune that enraptured the children of Hamelin so that they abandoned their homes and followed him, too.

Today's children are entranced by another hook. Radiation-emitting digital devices.

In her new book, 'The Digital Pied Piper Effect', Dr Sivani Saravanamuttu discusses the wide ranging effects that digital technologies have on our children and our society. She touches briefly on the issue of wireless radiation on health but focuses more on other health problems—such as digital dementia, sleep problems, anxiety, body dysmorphic disorder, as well as eyesight and hearing problems.

Saravanamuttu considers the impact of digital technology and social media on people's relationships. 'Humans are inherently social creatures, but modern technology is not helping this cause, in fact, it is compartmentalising and isolating people more, creating a void in true engagement with others, leading to a lack of fulfilling relationships and social longing,' she writes. And, ironically, it's increasing loneliness.

The book also looks at the growing problem of addiction, the driver behind so many of these social problems. It looks at how technology is changing education—for better and for worse—and how teachers can utilise digital teaching aids more effectively. It considers the growing issue of cyberbullying and suggests strategies for dealing with it.

Each chapter of the book is aimed at a different audience: researchers, healthcare workers, technologists, teachers, lawmakers, parents and the general public. The book concludes with practical recommendations for governments, for academics and for the general population.

'Digital technology is a double-edged sword,' Saravanamuttu says. 'Depending on its use, it can be either destructive or constructive, rewarding or wrecking.'

The self-published book is thoroughly researched and referenced and can be obtained from Amazon at www.amazon.com.au and paperbacks from sivani.sarav@gmail.com.

Mobile phone protection

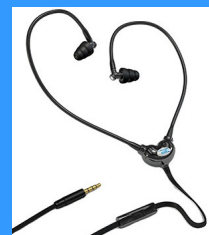
Blocsock mobile phone



pouches block 96% radiation



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



Pro Tubez airtube headsets - latest generation of airtube headsets - keep the phone away from the head

Social media & depression

Heavy social media use has been linked with depression in a study of over ten thousand teens from the UK.

Yvonne Kelly, from University College London, found that girls tended to use social media more than boys, with more than 40 percent of girls using it for over three hours a day.

‘Social media use was associated with experience of online harassment, short sleep hours, the time it takes to fall asleep, sleep disruption, being happy with appearance and body weight satisfaction among girls.’ All of these factors were connected with depression.

Girls tended to be unhappy with appearance and body weight and the most at risk were those in lower income and single-parent families, where teens often spent five or more hours a day using social media.

‘Our findings add weight to the growing evidence base on the potential pitfalls associated with lengthy time spent engaging on social media,’ the authors said.

Kelly and team suggested a number of ways in which people can minimise the negative impacts of social media use. Families, they said, can implement curfews on the use of social media and keep wireless devices out of bedrooms at night. Schools, they suggested, could teach students appropriate online behaviours and implement policies to boost students’ self-esteem.

Kelly, Y et al, ‘Social Media Use and Adolescent Mental Health: Findings from the UK Millennium cohort Study, *EClinical Medicine*, <https://doi.org/10.1016/j.eclinm.2018.12.005>, [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(18\)30060-9/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(18)30060-9/fulltext)

Smart phones—bad decisions

People who are addicted to smart phones are more likely to make bad decisions than those who are not addicted, according to a new study from Brazil.

The investigators compared the performance of 50 volunteers with smart phone addiction and 50 nonaddicted controls in several gambling games. They found that those with addiction had more trouble making decisions in ambiguous situations than those without. They suggested that addicted players had trouble recognising disadvantageous choices, were very sensitive to rewards and less sensitive to punishment.

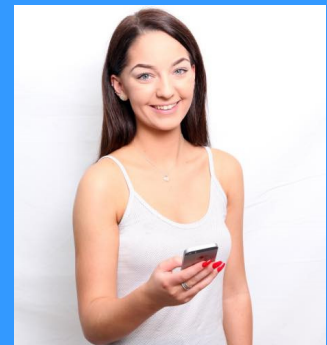
The authors suggest that this may be because addiction hyperactivates the insula, potentially increasing impulsiveness and reducing self-control. The pattern is similar to that seen in other addictive behaviours.

Khoury, JM et al, ‘Bad Choices make good stories: The impaired decision-making process and skin conductance response in subjects with smart phone addiction’, *Frontiers in Psychiatry*, 22.02.2019, 10.73, <https://doi.org/10.3389/fpsy.2019.00073>

Protect your
family from
wireless radiation



Shielding singlets for
kids & women



Head protection



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