

# EMR and Health

Quarterly report on electromagnetic radiation, health and well-being

Vol 10 No 3 Sept 2014

## Mobiles and children

An important new review shows the need to reduce children's exposure to wireless radiation.

Children are more at risk from wireless radiation than are adults and safety standards are not adequate to protect them, say US researchers in the *Journal of Microscopy and Ultrastructure*.

In their review, the researchers identified examples in which microwave radiation had adversely impacted on the young and very young:

- Children absorb more microwave radiation—their bone marrow absorbs about ten times more radiation—than do adults.
- Prenatal exposure to microwave radiation lead to ADHD-like symptoms, death of brain cells, changes to the hippocampus and degeneration of the myelin sheath that protects neurons.
- Children who used mobile phones had increased risks of brain cancer and parotid gland tumours.
- Children with high lead levels who used mobile phones had ADHD-like symptoms.
- Teens who kept their phone in



their bras developed breast cancer in their early 20s.

- Mobile phone radiation adversely impacted sperm, decreasing sperm count, motility, viability and morphology of sperm.

If childhood exposure to mobile phone radiation causes brain tumours, the authors say, the problem is that they may not be diagnosed until years or decades later.

Wireless products sold for use by babies and young children potentially expose children to levels of microwave radiation higher than

*(Continued on page 2)*

### In This Issue

Lloyd's recommendations for parents	2
French bill	3
Fertility	3
Brain effects	3
Research updates	4-5
Legislation remade	6
Teen trends	6
Mental health risk	6
Updates from around the world	7
Electromagnetic hypersensitivity	8
Phone warnings	9
Hybrid cars	10
Terahertz risks	10
iPads	10
Not to be missed online	10
Watt's the Buzz	11
Servant or master?	12

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](http://www.emraustralia.com.au)

© EMR Australia Pty Ltd, 2014.  
Information contained in this newsletter does not constitute medical advice and EMR Australia PL disclaims any liability incurred as a consequence of its use. Contents may not be reproduced without permission.

(Continued from page 1)

allowed by international standards, the authors said. This is because the standards require such devices to be measured at a distance from the body—whereas the devices are normally used in close contact with the body. Sales of toys which emit microwave radiation should be banned, the authors said.

‘Because we live in an entrepreneurial world, if someone has an idea that a product will sell it will be developed,’ Lloyd Morgan, one of the study’s authors, told *EMR and Health*. Thus we have radiating toys as described in the paper, radiating baby monitors placed in cribs, cell phone apps that require placing the phone beneath a sleeping infant and, if the infant moves or makes a sound, the mother’s soothing voice is played, not to mention cell phone pockets for placement in bras.

‘There needs to be regulation against such dangerous products and general education about the dangers of microwave radiation. Without this, ever more dangerous products will continue to be invented.’

Mr Morgan’s recommendations for reducing children’s exposure to wireless radiation follow.

(Morgan, LL et al, ‘Why children absorb more microwave radiation than adults: The consequences’, *J Microsc Ultrastruct*, available online 15 July, 2014 at: <http://www.sciencedirect.com/science/article/pii/S2213879X14000583>.)

## Lloyd’s recommendations for parents

- “Distance Is Your Friend.” The intensity of radiation decreases as the square of the distance from the source increases (the [inverse-square law](#)). To illustrate how effective “Distance Is Your Friend” can be, I have estimated that holding a cellphone six inches (15 cm) from your ear provides a 10,000-fold reduction in risk!
- Cellphones are always radiating unless they are turned off (AKA airplane mode). They continuously tell cell towers “I am here,” which is how the cell tower knows where to direct a given call. They should not be kept on the body when not in use. Instead, they can be placed in purses, bags, backpacks, etc.
- Among parents’ duties is to keep their children safe. The risk from exposure to any carcinogen is higher in children and, the younger the child, the higher the risk. The risk to adults from exposure to any carcinogen does not vary with age.
- During pregnancy, keep any Wireless Transmitting Device (WTD) away from the mother’s abdomen.
- A nursing mother should not use a cellphone or any kind of WTD while nursing.
- Baby monitors (another WTD) should not be placed in infants’ cribs.
- WTDs are not toys for children.
- Among parents’ duties is to teach adolescents how to be safe.
- Studies have shown the risks are comparable from cellphones and cordless phones.
- Once a child is given a cellphone (at what age is a parent’s choice, but older is better), phones should not be allowed in the bedroom at night. Pew Research has reported 75% of pre-teens and early teens sleep all night with their cellphones under their pillows.
- Children should be taught to minimize their wireless phone (cell and cordless) use. The risk is cumulative with hours of use and with the amount of radiation absorbed (“Distance Is Your Friend”). A landline phone does not radiate. Use of Skype or similar Internet phone services does not radiate when the computer is connected to the Internet with a cable. (If the computer has a Wi-Fi card it should be turned off).
- If there is a Wi-Fi router in the house it should be placed in a location far from where people, particularly children, will commonly be located in the house.
- Cellphones should never be used in a car while driving.
- Boys should not keep cellphones in their front pants pockets; girls should not place cellphones in their bras.

---

## French bill

---

A French bill on radiation from mobile phone networks has passed its second reading in the Senate—with one more reading required to become law.

In its current form, the bill on 'Sobriety, transparency, information and consultation regarding exposure to electromagnetic fields' stipulates measures to reduce exposure—particularly that of children. The bill requires that:

- exposure levels should be reduced in areas ('outliers') where levels are higher than normal;
- WiFi in schools must be switched off when not in use;
- WiFi symbols must be displayed at the entrance to institutions that offer public WiFi availability;
- advertisements for mobile phones must include advice to limit exposure of the head;
- when requested, retailers must provide a hands-free kit to children under the age of 14 when they purchase a mobile phone;
- after one year, the Government is required to provide Parliament with a report on electromagnetic hypersensitivity;
- building owners and occupants are to have access to results of radiation measurements in buildings.

It also stipulates consultation during the installation of mobile phone networks and prohibits advertisements for tablets aimed at children under the age of 14.

The bill was voted for by 163 senators and opposed by 149. It will now return for a second vote in the Assembly which voted in favour of the bill in January this year.

<http://www.senat.fr/petite-loi-ameli/2013-2014/595.html>

---

## Fertility

---

Mobile phone radiation could be interfering with male fertility, say researchers from Britain.

'This study strongly suggests that being exposed to radio-frequency electromagnetic radiation from carrying mobiles in trouser pockets negatively affects sperm quality. This could be particularly important for men already on the borderline of infertility,' said Dr Fiona Mathews from the University of Exeter, one of the study's authors.

Approximately 14% of couples in high and middle income countries have trouble conceiving and there is evidence from several countries that semen quality is declining.

In their study, the researchers reviewed the results of ten studies with over 1400 participants. They found that mobile phone radiation reduced sperm motility (movement) and viability.

'Further research is needed to determine the full clinical implications for the general population,' the authors said. (Adams, JA et al, *Environ Int* 70C:106-112, June 2014.)

---

*“being exposed to radio-frequency electromagnetic radiation from carrying mobiles in trouser pockets negatively affects sperm quality.”*

---

---

## Brain effects

---

Mobile phone radiation may have harmful effects on the developing brains of the young, according to a study published recently in the *Journal of Neural Research*.

In their study, the authors exposed young rats, chosen to simulate teenagers, to mobile phone radiation of 900 MHz for four hours a day for 15 days.

'The results demonstrated marked effects on behaviour, the authors said. They found indicators of anxious behaviour and effects on learning and memory from a battery of tests. The rats showed degeneration of several areas of the brain: the hippocampus—responsible for behaviour—and the cerebral cortex—responsible for memory, attention, perception, thought, language, consciousness and sleep.

The authors suggested exposure caused neurodegeneration by increasing the production of ROS [reactive oxygen species] and exhausting important enzymes.

The authors suggested their findings have implication for teenagers' use of mobile phones. As well as the short term effects observed, they say exposure could also lead to neuronal diseases in the long-term. 'We cannot exclude the possibility that after some decades of daily (often) use, a whole generation of users may suffer from the negative effects, perhaps as early as in middle age,' they said.

---

*“The rats showed degeneration of several areas of the brain: the hippocampus and cerebral cortex”*

---

# RESEARCH UPDATES

## ELF fields (from electrical sources)

### Brain tumours

Power frequency electromagnetic fields may promote the development of brain tumours, according to the results of a large, seven-nation study published in June. Scientists considered exposure of 3,761 people with gliomas and meningiomas and nearly five-and-a-half-thousand controls. They found that workers who had been exposed to high fields in the previous five years had higher rates of both types of brain tumours, the more so for gliomas. (Tuner, MC et al, *Cancer Epidemiol Biomarkers Prev* June 16, 2014.)

### Breast cancer

Exposure to magnetic fields from electrical sources increases the risk of breast cancer, according to a new meta-analysis. The authors analysed 16 studies published between 2000 and 2007 and found an increased risk of breast cancer among most exposed women in the non-menopausal group. 'ELF-EMFs may be [stet] increase the risk of human breast cancer,' the authors concluded. (Zhao, G et al, *Eur J Gynaecol Oncol* 35(3):264-9, 2014.)

### Developing foetus

Exposure to magnetic fields from electrical sources might have harmful effects on the developing foetus, according to a study from China. Scientists examined the aborted foetuses of 149 women who chose to terminate their pregnancies. The women wore a magnetic field meter for 24 hours shortly after the termination to assess their typical exposure. The study showed that women exposed to just 0.82 mG daily were nearly four times more likely to have a foetus with a shorter embryonic bud than those who were exposed to less than that level. (Su, XJ et

al, *PLoS One* 9(6), 2014.)

### Autism

Magnetic fields may play a role in the spiralling incidence of autism spectrum disorders (ASD), according to the results of a new study from Bahrain. The authors exposed male mice to a magnetic field for a week before and a week after birth. The exposed mice were less social, preferred 'social novelty' and were less likely to explore than unexposed mice. These behaviour were symptomatic of ASD, they said. (Alsaeed, I et al, *Int J Dev Neurosci*, 23 June, 2014.)

### Sleep problems

Exposure to high magnetic fields was associated with sleep problems in a study from Iran. Researchers surveyed a group of 40 people who worked in a substation for sleep quality and health. They found that 28% of substation workers had poor health and 61% had a diagnosed sleep disorder, compared to only 4.5% of unexposed controls. The authors recommended future testing of workers in high voltage substations. (Monazzam, MR et al, *J Environ Health Sci Eng*, 2014.)

### Heart problems

Exposure to magnetic fields could cause cardiovascular damage, according to the results of a recent study on rats. Scientists exposed healthy rats and rats with chronic kidney disease to magnetic fields from 150—155 kHz at strengths of 4 to 7 mG. They found that exposure caused 'massive' calcification in the aortas of rats with kidney disease and the pattern of this calcification was unique. The authors suggest that these fields could possibly be harmful to the cardiovascular system. (Shuvy, M et al, *Exp Toxicol Pathol* 66 (7):345-50, 2014.)

### Magnetic compass

Artificial magnetic fields affected the orientation of trout, interfering with their navigational abilities and homing ability. The scientists who conducted this



*Magnetic fields may play a role in the spiralling incidence of autism spectrum disorders (ASD)*

## Abbreviations

RF radiofrequency radiation (including mobile technology)

ELF extra-low frequency radiation (including electrical sources)

EMF electromagnetic fields (often used alternatively for ELF)

mG milliGauss (measurement of magnetic field)

T Tesla - alternative measurement of magnetic field; also milliTesla (mT) and microTesla ( $\mu$ T)

0.1 mT = 1000 mG

0.01 mT = 100 mG

1  $\mu$ T = 10 mG

Hz Hertz - a measure of frequency (cycles per second).

Megahertz (MHz) - million Hz

GigaHertz (GHz) thousand million hertz

experiment recommended further testing to examine the effects of magnetic fields on fish in hatcheries. (Putman, NF et al, *Biol Lett* 10(6), 2014.)

### Neurological damage

Mice exposed to 50 Hz magnetic fields for 28 days had changes in the hippocampus consistent with neurological damage (such as increasing levels of glutamate). Treatment with the antioxidant Lotus seedpod procyanidins counteracted some of the damage. (Duan Y et al, *Food Funct* July 28, 2014.)

---

## RF/wireless radiation

---

### Liver damage

Mobile phone radiation causes liver damage, say Chinese researchers. Y Luo and team exposed rats to mobile phone radiation of 900 MHz for 4 hours a day for 12 days. Some of the animals were also given ginseng. The researchers found that exposure caused 'oxidative injury and abnormal morphology' of the liver cells. Exposure affected the expression of the Nrf2 protein which produces antioxidants that combat free radical action. Ginseng counteracted some of the radiation damage. (Luo, YP et al, *Zhongguo Zhong Xi Yi Jie He Za Zhi* 34(5):575-80, 2014.)

### Brain development

Mobile phone radiation could have harmful effects on the developing brain. Scientists exposed embryonic neural stem cells—which play an important role in the development of the brain—to mobile phone radiation at 1800 MHz for 1, 2 or 3 days. They found that exposure inhibited the growth of neurites—which are growths that emanate from neurons—and affected genes critical for this growth. (Chen, C et al, *Sci Rep* 4:5103, 2014.)

### Sperm damage

Mobile phone radiation had harmful effects on human sperm in a study on 32 healthy men. Samples of sperm from each volunteer were either exposed or nonexposed to mobile phone radiation and then examined. The authors found that the

exposed sperm showed less movement and more DNA fragmentation.

(Gorpinchenko, I et al, *Cent European J Urol* 67(1):65-71, 2014.)

### Sensitivity

Radiation from mobile phone base stations affected proteins and enzymes in exposed cows. The researchers observed different sensitivities to exposure among the ten cows tested, supporting the argument that some individuals may be more sensitive than others. (Hässig, M et al, *BMC Vet Res*, 10(1):136, 2014.)

### Free radical damage

Wireless radiation increases the production of free radicals which can lead to symptoms and diseases, say authors from Ukraine, US and Brazil. In their review, the authors analysed 80 peer-reviewed studies on radiofrequency radiation and oxidation, 76 of which found that exposure caused significant oxidative stress. Moreover, these effects were founds at levels dramatically lower than international standards—at 0.1  $\mu\text{W}/\text{cm}^2$  (standards: 450-1000  $\mu\text{W}/\text{cm}^2$ ) and at a Specific Absorption Rate (SAR) of 0.3  $\mu\text{W}/\text{kg}$  (standards: 2 W/kg). The studies reviewed showed that the oxidative damage caused by exposure could be reversed by treatment with antioxidants, such as melatonin, vitamin E, vitamin C, caffeic acid phenethyl ester, selenium, L-carnitine and garlic. 'It is clear that the substantial overproduction of ROS [reactive oxygen species] in living cells under low intensity RFR exposure could cause a broad spectrum of health disorders and diseases, including cancer in humans,' the authors wrote. (Yakymenko, I et al, *Oxid Antioxid Med Sci* 3(1):1-3, 2014.)

### Breast cancer

Selenium counteracted the harmful effects of mobile phone radiation in a study on breast cancer cells. The researchers exposed the cells to radiation at 900 MHz for one hour. They found that selenium was effective at counteracting oxidative damage, cell death and depolarization of mitochondria. (Kahya, MC et al, *Biol Trace Elem Res* 27 June, 2014.)

(Continued on page 9)

---

*Mobile phone radiation could have harmful effects on the developing brain*

---



---

**MEASURE  
YOUR  
EXPOSURE**

---

**ELF AND WIRELESS  
METERS FOR HIRE OR  
PURCHASE**

[www.emraustralia.com.au](http://www.emraustralia.com.au)



---

*Mobile phone radiation had harmful effects on human sperm*

---

## Legislation remade

The Australian Communications and Media Authority (ACMA) has adjusted two pieces of legislation—taking into account industry over community input.

In March this year, the ACMA invited submissions on its intention to remake two pieces of legislation what were due to automatically expire on 1 October 2015. They are the:

- Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003
- Radiocommunications (Compliance Labelling– Electromagnetic Radiation) Notice 2003 (EME Labelling Notice).

It received 22 submissions, which are published on its website.

According to the ACMA, submissions that were not from industry groups or ARPANSA, 'expressed dissatisfaction with the ACMA's reliance on the technical expertise of ARPANSA—in particular, the use of the exposure limits in the ARPANSA Standard. These submissions focused on concern about adverse health effects of exposure to EME and claimed that the ARPANSA Standard provided inadequate protection.'

The ACMA ignored public comments that the legislation should not require compliance with the ARPANSA standard because it does not adequately protect public health and requests for labels on mobile phone packaging that specify SAR levels.

On the other hand, ACMA took into account industry comments. 'The ACMA considers that industry is generally satisfied with the operation of the current instruments. Industry submissions proposed additional minor amendments that the ACMA has accepted and incorporated in the finalised instruments.'

Only two changes were made to the legislation, and these at the behest of ARPANSA and industry.

- the option to test to EN 62209-2 for devices operating in multi-band transmission mode
- correct title for the publication *AS/NZS 2772.2:2011 Radiofrequency fields - Principles and methods of measurement and computation - 3 kHz to 300 GHz*

Reference: 'Remaking the EME instruments—Outcome of the public consultation', July 2014, <http://www.acma.gov.au/theACMA/Consultations/Consultations/Sunsetting/remaking-the-radiocommunications-human-exposure-standard> and correspondence.

## Tubez airtube mobile phone headsets

- **block up to 98% mobile phone radiation**
- **nonconductive tubes**
- **microphone for speaker function**
- **3.5 mm jack, for use with mobiles, iPads, Mp3 players, computers.**

Now available from EMR Australia at:

<http://emraustralia.com.au/shielding-products/tubez-air-tube-headsets>



## Teens trends

Australian teenagers love the internet. That's the conclusion of a new report by the Australian Communications and Media Authority (ACMA) based on the findings of Roy Morgan Research. Published on 1 July, the report compares internet use of teens aged 14 to 17 in December 2013 with use in December 2009.

The report showed that teens spend over 14.5 hours a month on the internet. 89% of those interviewed said that the internet was 'very important' and 50% described it as 'extremely important' to their lives.

Teens most commonly use the internet for entertainment (90%), closely followed by communication (85%), with most teens being users of social media.

The report shows that more teens are using wireless devices to access the internet. The number who use mobile phones to access the internet has tripled since 2009. 89% of teens use a mobile phone and, of these, 69% use a smart phone. 23% of teens are using tablets and 74% use a computer to go online.

'Aussie Teens Online, ACMA, 1 July, 2014, <http://www.acma.gov.au/theACMA/engage-blogs/engage-blogs/Research-snapshots/Aussie-teens-online>

### Mental health risk

Children who spend longer in front of a screen have more mental health problems, says Child psychologist Stephen Houghton from the University of Western Australia. In a study of 3000 school children, he found that 63 to 70% of children from the ages of 8 to 16 spend more than two hours a day using screen-based devices and some use them for up to 12 hours a day. The longer the children spent on these devices, the lower they scored in mental wellbeing. (*Australian IT*, 14.07.14.)

# UPDATES FROM AROUND THE WORLD

## Israeli settlement

Mobile phone companies have agreed to a settlement in late July, ending a class action lawsuit against them begun in 2010. The companies, Pelephone and Partner have agreed to add to their customer contracts a warning against carrying mobiles closer than 2.5 cm from the body. They will also sell radiation-reducing headphones at the point of sale on a temporary basis. Thirdly, the companies will provide free radiation testing of mobile phones. Finally, the companies have made a substantial payments to the plaintiffs and their lawyers. (<http://www.calcalist.co.il/internet/articles/0.7340.L-3637149.00.html>)

## Scientists urge precaution

More than 50 international scientists have called on the Canadian government to amend its radiation standards to address biological effects of exposure and to encourage the adoption of precautions. In a statement issued on 9 July, the scientists said, 'Epidemiological studies show links between RF exposure and cancers, neurological disorders, hormonal changes, symptoms of electrical hypersensitivity (EHS) and more. Laboratory studies show increased cancers, abnormal sperm, learning and memory deficits, and heart irregularities.'

'The public's health and the health of the environment are threatened by ever-evolving RF emitting technologies, without due consideration for what the potential cumulative impacts on biological systems are likely to be in the future,' the scientists said. (<http://www.c4st.org>)

## Adelaide: WiFi network

The city of Adelaide has turned on a free public WiFi network with 300 transmitters covering the central business district. iiNET, who constructed the network with funding from Adelaide Council and the South Australian government, aims to replicate the experiment in other Australian cities. (*Australian* 26.06.14.)

## Canadian court ruling

The Canadian City of Châteauguay has won a legal victory regarding its right to have a say about the location of mobile phone base stations in its domain. The Québec Court of Appeal affirmed the City's right to ask Rogers Communications Inc to find an alternative location for its tower due to concerns of local residents. Mayoress Nathalie Simon said, 'The Court of Appeal is clear: the cities can decide what type of development that it wishes to have on their territory. It is also a beautiful victory for the citizens whose opinion was a determining factor in this decision.' (Press release, Châteauguay, 02.06.14.)

## Brazil's new limits

A Brazilian court has ruled that emissions from power lines should be reduced to one microTesla (10 mG). The Court of State São Paulo determined in favour of resident groups concerned about their exposure following expert testimony from Dr Martin Blank. Judge Renato Nalini said that the emissions from power lines were potentially carcinogenic and ruled that the fields from the lines in question be reduced to comply with the new limit. (*Environmental Network News*, 12.06.14.)

## Ghent's WiFi ruling

The municipality of Ghent in the Flemish region of Belgium has taken action to reduce the exposure of young children to WiFi radiation. In a new policy for schools, wireless devices will be banned from facilities used by preschools aged up to three years, though wired internet will be permitted. Alderwoman Elke Decruynaere said that the decision had been made as a precaution to protect the young. (*Flanders Today*, 07.07.14.)

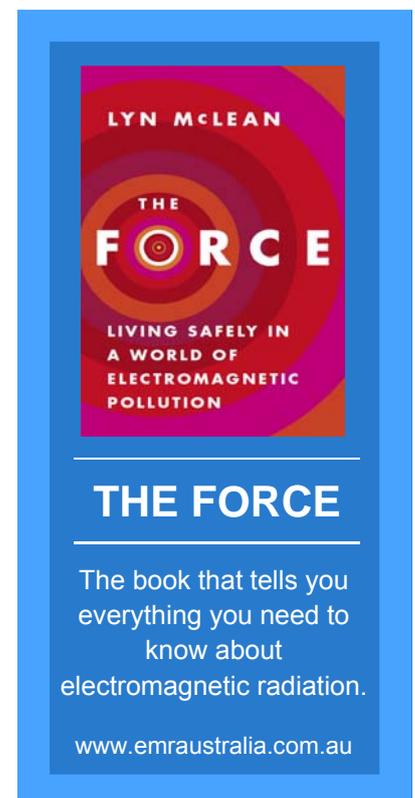
## Legal action pending

With a US court decision issued on 8 August, litigation against mobile phone companies enters a new phase. Judge Frederick H Weisberg from a Washington

DC superior court, announced that testimony from scientific experts on the connection between mobile phone radiation and brain tumours will be admitted in court. Previously, courts have maintained that scientists could not connect exposure to tumours. Currently there are 13 lawsuits in the US in which brain tumour victims or their families are seeking compensation from the mobile phone industry. (PR Newswire, 08.08.14.)

## Big teacher

A New Zealand primary school is considering electronic scanning of students as a way of monitoring student behaviour. The Swannanoa School in North Canterbury wants to install a \$7000 system in which students would wear microchipped bracelets that would store points awarded for good behaviour. Parents were notified about the plan only after media contacted the school for information. (Fairfax Media, 31.07.14.)



## THE FORCE

The book that tells you everything you need to know about electromagnetic radiation.

[www.emraustralia.com.au](http://www.emraustralia.com.au)

---

# Electromagnetic hypersensitivity

---

Guest writer Richard Conrad PhD shares his experiences of EHS with readers.

I used to sit for many hours every day writing patent applications with my body two feet from a computer and with the switching power supply of an overhead projector one foot behind my shoulder. At the time I was also building and testing a high voltage pulsed switching power supply. I had MCS, but no symptoms of electrical sensitivity at all. A friend of mine with MCS told me she had EHS and described it to me. I was very sceptical and chalked it up to her emotional fears. I continued working for a few more years without any EHS symptoms.

Then I purchased a data projector to use with a rear projection screen as my computer monitor (to try to solve my subliminal flicker problem; see my article: [Subliminal Flicker I](#)). The projector was a full ten feet in front of me, and the image was beautiful and had less flicker than anything else I had tried. I used it successfully for a few hours a day for about a week but then began to notice a strange burning sensation on the skin all over my body. At first the burning started after the projector had been on for two hours, then a few days later after it had been on for 20 minutes and, by the end of the next week, the burning started within a few minutes. I returned the projector. This was my first experience of EHS. I assume that I had been predisposed to developing EHS and that this projector was my initial trigger. (Projectors have a powerful and noisy switching power supply used to power their lamp.)

Soon after that I bought an external back-up drive for my computer. I set it up 10 feet from me and, as soon as I powered it up, I felt a tightness in my arms and other symptoms. Then my beloved electronic MIDI keyboard began to give me problems - my hands and wrists began to hurt after playing it for only a few minutes and left residual stiffness and pain that began to resemble carpal tunnel syndrome. I



Dr Richard Conrad is a biochemist, biophysicist, electronics designer and EHS consultant in Hawaii.

developed similar symptoms in one hand that was close to a CRT monitor for a while.

Once I walked up to an cardiac ultrasound machine to see if I could tolerate it. I was not afraid of ultrasound, I thought it was neat; I had had a gall bladder ultrasound scan many years before—before I was electrically sensitive— with no problem. When I was about five feet from the powered-up cardiac ultrasound machine and two feet from its transducer, the skin all over my body began to burn. I walked away immediately and the burning lasted four hours.

Some computers seem fine in the short-term and some immediately cause a burning, prickly sensation on my skin from eight feet away. Once I reached over a flat-bed scanner while it was operating The muscles in my forearms went into spasm and hurt for a few minutes.

I have tested six different data projectors to choose one for shielding for use at a distance as a rear-projection computer monitor for electrically sensitive persons - a few of my clients are electronic engineers desperate to get back on-line. My symptoms at 10 feet: tinnitus, skin burning, muscles and/or joints hurting,

ADD, peripheral neuropathy. Each projector produced a slightly different combination of symptoms. Some projectors caused more pain than others. With some, the symptoms disappeared almost immediately when I shut the projector off. With others, symptoms persisted for a few days and made me more electrically sensitive to other devices for awhile. Of course,

of all of these projectors were rated to be within the FCC Class B (for residential use) guidelines for EMF emissions.

I am a hands-on experimental basic research scientist, very objective, with a good nose for artifacts. I know how to keep my variables separate - one thing at a time. I am a real techie and love electronic devices. EHS is absolutely real. Sigh.

One of the strongest symptoms I experienced was when I test drove an older Saab that I wanted to buy. By the time I got half-way around the block, I had terrible chest pains, like my heart was clutching, which I had not experienced before or since (my heart is fine) and my legs muscles cramped (also unusual for me). I almost did not make it the rest of the way around the block to the dealership. The symptoms disappeared within a minute after I turned off the ignition. It turns out that the Saab had three computers in the engine compartment just behind the firewall. I came back later with a gaussmeter (VLF range) and it read 100 milligauss at the driver's seat.

None of my statements are based on belief but on a great deal of direct experience, carefully critiqued by my experimenter's mind. People only realize that they have become electrically sensitive because of repeated correlation of symptoms with exposures, sometimes

*(Continued on page 9)*

(Continued from page 5)

### Eye problems

Using a VDU can cause eye problems, according to research from Japan. Dr Y Uchino and team examined the eyes of 96 office workers who used VDUs for much of their day. They found that people with prolonged screen use and eye strain had lower levels of mucus protein Mucin 5AC which is important for keeping eyes moist and avoiding dry eye disease. (Uchino, Y et al, *JAMA Ophthalmol* June 5, 2014.)

### Protective effects

More evidence that antioxidants protect against EMR exposure comes from a study by S Hu and team. The authors exposed rats to high frequency microwaves for 15 minutes a day and gave them the antioxidant-containing supplement Kang-fu-ling (KFL). They found that KFL reversed memory loss and oxidative stress caused by exposure. (Hu, S et al, *Food Funct*, July 24, 2014.)

### Male fertility

In addition to the effects found on sperm, mobile phone radiation can adversely affect the epididymis—the tubes that carry the sperm and in which sperm matures. Scientists in Iran exposed male rabbits to a mobile phone signal of 950 MHz for two hours a day for two weeks. They found that exposure decreased the height and diameter of the epididymis and reduced testosterone levels in some cases. (Azadi Oskouyi, E et al, *Andrologia* July 25, 2014.)

### Hearing effects

To see whether mobile phone radiation could affect the auditory system, scientists from Korea exposed mice to a signal of 835 MHz for three months and examined the effects on molecules involved in auditory processes. They found that exposure caused changes in the auditory brainstem that could affect hearing. (Maskey, D et al, *Int J Mol Med* 34(2):409-19, 2014.)

### Awareness

A new study has confirmed what most of us observe firsthand—that people who text while they walk do not pay as much

attention to their surroundings as people who don't. Researchers from the University of Florida monitored the movement of 30 volunteers as they walked and texted. They found that texting affected the volunteers' gait and attention levels and suggested that people who text as they walk are at more risk of accidents. (Parr, ND et al, *J Appl Biomech* July 9, 2014.)

---

## Now you see it; now you don't

---

The US Centre for Disease Control was the first US Government Agency to recommend precautions when using mobile phones.—at least for a while.

The Centre said, 'we recommend caution in cell phone use' on its webpage, updated on 9 June. However, that recommendation was removed from the site by 20 August.

The site now states, 'We don't know for sure if RF radiation from cell phones can cause health problems years later. The International Agency for Research on Cancer (IARC) has classified RF radiation as a "possible human carcinogen." (A carcinogen is an agent that causes cancer.)'

The Centre refers to research on the link between mobile phone use and the risk of acoustic neuromas which have been found among long-term phone users.

As to whether mobile phones cause problems for children, the Centre says, 'It's too soon to know for sure'.

It offers the following advice for people to reduce their exposure to mobile phone radiation:

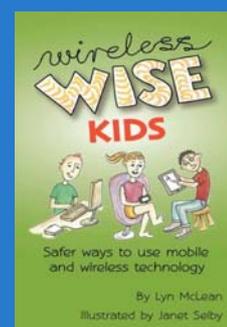
- 'Get a hands-free headset that connects directly to your phone.'
- 'Use speaker-phone more often.'
- 'If you have a pacemaker, keep cell phones at least 8 inches away from it.' ([http://www.cdc.gov/nceh/radiation/cell\\_phones.\\_FAQ.html](http://www.cdc.gov/nceh/radiation/cell_phones._FAQ.html))

(Continued from page 8)

in inadvertently "blind" experiments where they were not at first aware that they were being exposed. Anecdotal evidence is irrefutable when it comes from the *independent* testimonies of many people who were *initially naive*.

It is understandable that someone who has never experienced EMF symptoms in their own body would reject the possibility of EHS at first, thinking the person claiming EHS to be an impressionable fearful nut. It takes hearing about EHS from more than one person, reading about it in more than one place, to begin to be convinced. Being convinced at the intellectual level is only the first step; getting it emotionally is even more difficult. Years ago, before anything had been written about EHS, I did not think it was real until I experienced it myself.

Richard's website is at: [www.conradbiologic.com](http://www.conradbiologic.com) and he advises that he is currently working on a projector for use as a computer monitor for people with EHS.



---

### WIRELESS-WISE KIDS

---

Teach your kids how to use wireless technology more safely.

[www.emraustralia.com.au](http://www.emraustralia.com.au)

---

## Hybrid cars

---

Radiation from electric and hybrid cars could pose a cancer risk to drivers and passengers, according to the Wyoming Institute of Technology (WIT).

'Hybrid and fully-electric automobiles pose very serious health risks to consumers, with SAR+ ratings several times more than recommended, regulated safety levels,' said Dr Matt Stone, Chief of Staff at the Institute.

During a two-year investigation, researchers at the WIT investigated the emissions of hybrid cars and compared them to emissions from other vehicles and electronic devices. To do this, they employed a novel measurement system that they called 'SAR+' - the specific absorption rate of power-frequency fields, electromagnetic force and high frequency radiation.

They found that hybrid cars had a SAR+ of up to 5.3 Watts per kilo (W/kg). By comparison, the US government limits SARs from mobile phones at 1.6 W/kg (averaged over 1 gram of tissue) and the Australian limit is 2 W/kg (averaged over 10 grams of tissue).

In fully electric cars, the SAR+ level in the tests at the Institute was as high as 15.69 W/kg for the Tesla Model S.

Dr Stone said that he had contacted the US government and car manufacturers with the findings.

(Media release, Wyoming Institute of Technology, 11.06.14.)

---

## Terahertz risks

---

For years researchers have been developing technologies using terahertz signals in the belief that they posed no risk to humans. These frequencies, which are located between microwave radiation and infrared on the electromagnetic spectrum, have been widely used for medical imaging, security checks and next-generation wireless communications.

However, now there's evidence that terahertz radiation may not be as innocuous as previously thought.

In a study published in *Optics Express*, Professor Philhan Kim and Dr Young-wook Jeong from Korea exposed genetically-modified mice to tetrahertz signals from a generator they developed for half an hour at a time. After six hours of exposure, the mice had six times the expected number of inflammation cells. The authors described this as an 'acute inflammatory response'. However, no heating was detected and there was no structural damage of the skin.

This is the first time that harmful effects of terahertz radiation have been observed and the authors recommend that these findings should be investigated further.

Profess or Kim said, 'We will use this research to analyze and understand the effects of other EM-waves on organisms.'

Hwang, Y et al, *Optics Express* 22(10), pp 11465-11475 2014.

---

## iPads

---

With over 140 million iPads in circulation globally, it's likely that the devices are used by many people with implantable cardioverter defibrillators. Yet, people with these implants shouldn't use iPads close to their body, according to a new study for the American Heart Association.

In their study, researches from The Stanford University School of Medicine in California tested the operation of the defibrillators tested when the iPads were placed directly on top of them. The team found that the ipads caused problems in 33% of the defibrillators.

This could cause serious problems if patients developed a serious arrhythmia at the same time, the authors said. (Kozik, TM et al, *J American Heart Association*, Jul 28;3(4), 2014.)

**Not to be missed online:**

**Mobilize—a documentary about the effects of mobile phone radiation:**  
[www.mobilizemovie.com/](http://www.mobilizemovie.com/)

**"Diagnosis and Management of EHS, a rapid overview for mixed audience"**  
**presentation by Dr Erica Mallery-Blythe,**  
<https://vimeo.com/100623585>

---

# WATT'S THE BUZZ?

---

## Telco's precautions

Australian telecommunications giant Telstra has messaged its customers, referring them to a link on its website that contains precautionary information for reducing exposure to EMR. The message said: 'For information on mobile use, Electromagnetic Energy and tips to reduce exposure visit: <http://telstra.com.au/mobiletips>'. (*The Chronicle*, 04.07.14.)

## Cyber safe?

Electromagnetic radiation is not the only risk from electronic media. In late June the Australian Parliament heard that government agencies are vulnerable to cyber attack. The report by the Australian National Audit Office showed that close to 2000 'security incidents' had been reported in 2012. (*Australian* 25.06.14.)

## Circle of fire

Now there are rings that emit wireless radiation! Manufacturers of 'smart' jewellery have designed rings that can be used to open doors, play games, unlock phones or tablets and control PCs. The new rings are expected to be on the market this year. (*Australian* 20.06.14.)

## Not for the birds

Power lines are responsible for increased rates of mortality in the bird kingdom. A new report, reviewing 14 studies, estimates that somewhere between 12 and 64 million birds die annually in the United States alone as a result of collisions with power lines or electrocution. The authors suggest that steps are needed to address the problem. (Loss, SR et al, *PLoS One* 9 (7), 2014.)

## A mouthful to digest

Planning to brush your teeth? Better grab your mobile phone.

Now there are electric toothbrushes that can communicate with your mobile phone to let you know just how well you're brushing. The Oral-B toothbrushes emit a Bluetooth signal that advises your phone just how long you brush in each segment of your mouth, when it's time to move on and not to forget about flossing. (*Wall Street Journal*, 09.07.14.)

At least users will have the comfort of knowing their teeth care clean as they chat to their doctors about their headaches and jaw problems.

## Allergies

An 11-year old boy from the US received medical treatment for a severe rash that caused him to miss time at school. The cause of his rash: an allergy to the nickel in his family iPad.

Nickel may be present, not just in iPads, but in other electronic devices as well, including mobile phones and laptops. Approximately 10% of the population have allergies to it. (*Australian*, 16.07.14.)

## All heart

Human beings may soon be dispensable. Scientists from Newcastle Robotics Laboratory are developing a strain of robot that will be able to scan people's faces to identify emotion and to express emotion in the belief they will be able to communicate with people empathetically. The robots are intended to be used as people's companions and will be able to report

on their conversations. (*Australian* 15.07.14.)

What could be better than pouring your heart out to a machine of this sort?

## Where are you?

Sick of keeping an eye on the kids?

Don't want to take your eyes off your screen.?

Here's the perfect solution—a technology that allows you to keep tabs on your kids electronically. The KizON is a wrist band designed by LG for children. It uses GPS, WiFi and mobile phone technologies. Parents can not only find out where their children are at any time, they can even listen to their conversations. (*Washington Post*, 09.07.14.)

## Screen problems

How is screen technology affecting very young children? According to Tasmanian kindergarten teacher Judi Rhodes, the effects are not all positive. Rhodes says that children in her classes exhibit serious eye problems, have poor speech, short attention spans and often lack basic life skills, which she attributes to too much time in front of a screen. (*Mercury* 09.08.14.)

**SHIELDING  
PAINTS, FABRIC  
& WINDOW FILM**

[www.emraustralia.com.au](http://www.emraustralia.com.au)

---

## Servant or master?

---

Are mobile phones a convenient tool—or have they become our masters?

How would you feel if you couldn't use your mobile phone for an hour? A day? A week? If the very thought causes you to feel anxious, then you may be one of the millions of people suffering from Nomobophobia.

Nomobophobia—the fear of having No Mobile Phone—is a real and serious problem and studies on the extent and consequences of mobile phone addiction abound. Earlier this year Paul Mihailidis, from Emerson College in the US, released the findings of a study of mobile phone use by students from eight universities on three continents. He found that students were 'tethered' to their mobiles 'to the extent that they find it increasingly difficult to distinguish relationships that exist in their pockets from those that exist in their physical surroundings.'<sup>1</sup>

Mobile phone addiction is also evident in much younger students. In February this year, a Spanish and British team published the results of their study on over 1,500 British school students aged 11 to 18 years. They found that approximately ten percent of the students showed 'problematic' mobile phone use and the main culprits were students aged just 11 to 14 years.<sup>2</sup>

For people with existing phobias, the problem is worse. In February, scientists in Brazil assessed the effects of mobile phone deprivation in people with existing phobias and normal volunteers. They found that when deprived of the ability to use their phones, people with panic disorder and agoraphobia showed anxiety, tachycardia, breathing changes, trembling, sweating, panic, fear and depression. Alarmingly, the healthy volunteers also suffered from the absence of their phones.<sup>3</sup>

The fear of being without a mobile phone is such a problem that scientists from the University of Genoa believe it should be classified as a mental health disorder. Earlier this year, NL Bragazzi and G Del Puente called for Nomobophobia to be listed in the new edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) which is used to classify psychiatric diseases.<sup>4</sup> They said that the condition is likely to attract more interest from psychologists in the future.

1. Paul Mihailidis, 'A tethered generation: Exploring the role of mobile phones in the daily life of young people', *Mobile, Media and Communication*, 2(1), 2014.
2. Lopez-Fernandez O et al, 'Prevalence of problematic mobile phone use in British adolescents', *Cyberpsychol Behav Soc Netw*, 17(2):91-8, 2014.
3. King, AL et al, "'Nomophobia": impact of cell phone use interfering with symptoms and emotions of individuals with panic disorder compared with a control group", *Clin Pract Epidemiol Mental Health* 10:28-35, 2014.
4. Bragazzi NL and Del Puente G, 'A proposal for including nomophobia in the new DSM-V', *Psychol Res Behav Manag* 16;7:155-60, 2014

---

*"They find it increasingly difficult to distinguish relationships that exist in their pockets from those that exist in their physical surroundings."*

---



### BLOC SOCK

#### MOBILE PHONE SHIELDS

Block over 96% of radiation absorbed by the brain.

Available from

[www.emraustralia.com.au](http://www.emraustralia.com.au)

## EMR AUSTRALIA

Quality meters  
for sale or hire

Shielding paint, fabrics &  
window film

books

EMR testing  
& remediation

[www.emraustralia.com.au](http://www.emraustralia.com.au)