EMR and Health

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Phone towers—property owner risks

A German court decision leaves property owners at risk of litigation

If a telecommunications company leases a landowner's property to install a mobile phone base station and the radiation from that base station affects someone's health, then who is responsible for meeting compensation claims?

Is it the telecommunications company? Is it the property owner? Is it both?

A recent judgement by a German court shed light on this scenario and highlighted the risks that property owners can face.

The District Court of Munster found that property owners who lease space to telocos for the installation of mobile phone base stations share legal liable for harm that the equipment may cause.

The case was heard in the District Court of Munster. It concerned a local municipality who wanted to be released from its contract with a mobile phone company because of the risks that this contract posed to the municipality and its administrators.

Among the risks identified by the municipality's lawyers were:

- that the majority of scientific studies show that harmful effects occur at levels of radiation below those allowed by current radiation standards;
- that complying with these standards does not remove a municipality's legal risk;
- that municipality administrators are not adequately insured for liability and there are questions about how much additional funding should be allocated for adequate cover.

'Since even official bodies such as the European Parliament's Research Service (STOA) point out that the limit values for electromagnetic radiation are too high by at least a factor of 10, the owner takes a liability risk when he or she enters into an agreement with a operator

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Bee assault and the Stockholm Declaration

On 26 June, the NSW government ordered the destruction of beehives in Newcastle after the varroa bee parasite was found at the Newcastle Port. Hundreds of hives have so far been destroyed.

This is another blow for bees, whose numbers are declining worldwide and who are already under assault from chemical and electromagnetic pollution. Further, mass planting of single plant species is making bees more susceptible to attack by parasites.

Writing in the May issue of *Bee Culture,* Associate Professor Olle Johansson says it's time for humanity to step up and take action to protect bees – and other wildlife – and is calling for people to commit to 'The Stockholm Declaration about "Life EMC" '.

Johansson says that radiation standards exist to protect electronic equipment from electromagnetic exposures that would interfere with their operation, and this is called 'Technical EMC' (ElectroMagnetic Compatibility). Extending the principle, he says that living organisms should likewise be protected. He believes there is a 'need to establish stringent, law-abiding, hygienic absolute safety exposure standards for all life on the planet: "Life EMC".'

Johansson believes that such standards should 'not only protect life on this planet from serious damage and death but also from any form of disturbance, including physiological, genetic, behavioural, functional, and/or anatomic.'

Humans don't have God-given rights to destroy life, he says.

Johansson points out that international standards allow 3G wireless technologies to emit levels of radiofrequency radiation that are 1,000,000,000,000,000,000 times greater than background levels of radiation. In addition, we are exposed to radiation from other generations of wireless technologies.

This radiation has been convincingly shown to harm humans and there is increasing evidence that it has harmful effects on bees and other species of wildlife, even at 'vanishingly low intensities. He refers to research showing that it caused harmful effects on:

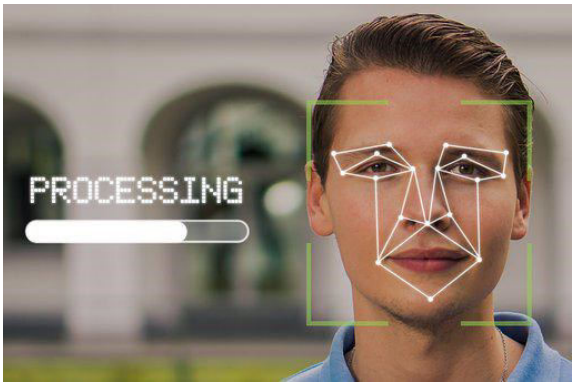
- migration
- location of food
- mating and reproduction
- building dens/nests
- defending territory
- longevity and survival
- and health.

Johansson says, 'to me as a scientist it is becoming more obvious that we, the humans, actually often don't have a clue any longer about what we are doing … money, profit and greed rule, but not common sense, and not the Precautionary Principle of "Life EMC".'

However, we can make a difference. 'If mankind gets real and makes "Life EMC" a genuine reality, then mankind has proven itself worthy of living 'shoulder-to-shoulder' with all other species – on this beautiful planet we call home.'

'The Stockholm Declaration about "Life EMC'' by Olle Johansson, *Bee Culture,* May 2022

Facial recognition technology



Did you know that your face is being scanned when you shop at some large Australian retail chains?

Recently, CHOICE magazine reported that Kmart, Bunnings and The Good Guys are using facial recognition technology to collect biometric data from customers and that most (76%) customers don't know this is happening.

Biometric technology allows the user to identify an individual by their face, eyes, DNA and/or other physical features. Images of the face can be used, not just to identify a person, but also to make inferences about their mood. It affects our privacy and this personal data can be shared and stored outside Australia.

'The use of facial recognition by Kmart, Bunnings and The Good Guys is a completely inappropriate and unnecessary use of the technology,' said CHOICE consumer data advocate, Kate Bower. 'Using facial recognition technology in this way is similar to Kmart, Bunnings or The Good Guys collecting your fingerprints or DNA every time you shop. Businesses using invasive technologies to capture their customers' sensitive biometric information is unethical and is a sure way to erode consumer trust.'

The online Privacy Policies of the three companies confirm that they collect images of users and Bunnings and Kmart refer specifically to their use of facial recognition technology which they say is 'for loss prevention or store safety purposes'.

According to CHOICE, Kmart and Bunnings placed small signs at the entry to stores using the technology but say that this is not an adequate way of warning consumers about it.

"CHOICE is concerned that Australian businesses are using facial recognition technology on consumers before Australians have had their say on its use in our community. With the government currently undergoing a review of the Privacy Act, now is the perfect time to strengthen measures around the capture and use of consumer data, including biometric data," says Bower.

CHOICE is referring the retailers to the Office of the Australian Information Commissioner (OAIC) to investigate potential breaches of the Privacy Act and calling on the Federal government to implement a modern regulatory framework that protects consumers from harmful and unfair practices.

The Australian Human Rights Commission believes that federal and state governments should implement laws to regulate the use of facial recognition and other biometric technology and that this legislation should be developed in consultation with stakeholders, including members of the community.

Choice media release https://us4.campaign-archive.com/?u=270103a13e38b9f6643b82a8e&id=c205aba59e
Australian Human Rights Commission: https://tech.humanrights.gov.au/artificial-intelligence/facial-recognition-biometric-tech
Privacy policies for Bunnings https://www.bunnings.com.au/policies/privacy-policy, Kmart https://www.kmart.com.au/privacy-policy/ and The Good Guys https://www.thegoodguys.com.au/privacy-policy

'Using facial recognition technology in this way is similar to Kmart, Bunnings or The Good Guys collecting your fingerprints or DNA every time you shop. Businesses using invasive technologies to capture their customers' sensitive biometric information is unethical and is a sure way to erode consumer trust.'

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Why does wireless radiation affects us and are we being protected?

If there's one thing we know about wireless (radiofrequency) radiation, it's that not everybody is affected by a signal in the same way.

But why is that?

Professor Henry Lai, a research scientist from the University of Washington, has the answer.

'RFR [radiofrequency radiation] is a complex entity. Its biological effects depend on many of its physical properties,' he and colleague Blake Levitt write in a paper published recently in the journal *Electromagnetic Biology and Medicine*.

While there are many factors that affect the way wireless radiation impacts our biology, the authors say there are a few keys ones that need to be considered.

Intensity

The first of these is the intensity – or strength – of the signal. This is reported as a measure of Specific Absorption Rate (SAR), which is how much radiation is absorbed by a certain amount of living tissue over a given duration of time. In general, the higher the SAR value, the more intense the signal a person is exposed to.

The radiation limits of the International Commission of Nonionizing Radiation Protection (ICNIRP) and the US Federal Communications Commission (FCC) are based on the idea that harmful biological effects can occur at a SAR of 4 Watts per kilo (W/kg), averaged over the entire body.

Lai and Levitt say that there are a number of key problems with this standards-setting approach.

- The first is that it's based on the results of just two sets of experiments, both from the 1980s (by De Lorge and Ezell, 1980, and De Lorge, 1984). These studies showed rats and monkeys stopped performing a task motivated by a food reward at a SAR of 4 W/kg with a rise in body temperature of 1 degree Celsius. Lai and Levitt say, 'Is this SAR level still valid based on recent research? And more to the point – was it ever valid to begin with?'

- Another problem is the way in which SARs are assessed. 'SARS are almost impossible to accurately study in living systems and are therefore typically computer modelled or conducted on phantom models … but such simulations leave much to be desired regarding accuracy,' they say.

- A third problem is that SARs reported in laboratory studies may not always be reliable. This is because it's hard to calculate SARs for moving objects, because 'the pattern of absorption changes with the orientation of the object.' So, a single laboratory animal in a small cage would absorb a different amount of radiation to the same animal in a huddle with others. It's also difficult to calculate SARs for cells and organs of the body because different cells and organs absorb radiation differently.

- Additionally, and importantly, research shows that a higher SAR/stronger signal doesn't always mean more harmful effects on the body. In fact, the opposite has sometimes been shown to be the case. 'Many EMF studies have found non-linear effects, e.g., low dose/intensity EMF exposures have shown higher effects than higher dose,' the authors say.

Lai and Levitt refer to a large number of studies (included in their paper) which show that an organism doesn't have to be exposed to a strong signal for biological, possibly harmful, effects to occur. In fact, biological effects occurred at levels of exposure below 4 W/kg – in other words, at levels of exposure much lower than those allowed by international standards.

They say, 'The studies encompass many different biological effects to myriad systems, including: apoptosis induction, adrenal gland activity, blood–brain barrier permeability, brain transmitter levels, calcium concentration in heart muscle, calcium efflux, calcium movement in cells, cell growth, cognitive functions, cellular damage in liver, decreased cell proliferation, embryonic development, endocrine changes, enolose activity, genetic effects, hippocampal neuronal damage, immunological

functions, kidney development, memory functions, latency of muscular contraction, membrane chemistry, nerve cell damage, metabolic changes, neural electrical activity, oxidative stress, plant growth, prion level, protein changes, renal injury, serum testosterone concentration, heat-shock protein induction, testis morphology, testosterone synthesis, thymidine incorporation, and ultrastructural alteration in cell cytoplasm. In fact, there are not many physiological functions in humans, animals, or plants that are not affected by low-level RFR.'

What does that mean for the adequacy of the ICNIRP Guidelines (on which Australia's standard is based) and the FCC standard?

'Given the large body of work … the SAR at, or below, 4 W/kg as a safe threshold is insupportable,' the authors say.

Duration

A second factor that determines how radiation affects living creatures is the duration of exposure.

That comes as no surprise. We know that the longer you spend in the sun, the worse the sunburn you develop. Similarly, the longer you're exposed to wireless (radiofrequency) radiation, the more likely you are to develop symptoms.

Professor Henry Lai and Blake Levitt examined studies in which organisms were exposed to wireless radiation for different periods of time. 'The majority of the studies, as expected, show that long-term exposure is more effective in causing effects than short-term exposure', they say.

However, the authors noticed that the link between exposure time and symptoms wasn't always straight forward. For example, some studies showed evidence that the exposed organism displayed symptoms then recovered or partly recovered. They explain it as follows.

'There are three basic phases of response to stressors – alarm, adaptation, and exhaustion – proposed by Selye (1951). For example, a response at even shorter duration of exposure may have occurred and gone unnoticed, after which the system adjusted, compensated and returned to normal after a longer period of exposure. But if exposures continue or are repeated, systems can break down and effects are then observed.'

Because duration of exposure is such an important factor for causing reactions, we could reasonably expect that international guidelines and standards would address it convincingly.

Not so, according to the authors.

They say that the Guidelines of the International Commission on Nonionizing Radiation Protection (ICNIRP), on which the Australian standard is based, and the Federal Communications Commission (FCC) standard address only short-term exposures – exposures of 30 minutes for the whole body and six minutes for parts of the body.

These guidelines/standards are based on the results of just two studies (by De Lorge and Ezell, 1980, and De Lorge, 1984), as explained above. Exposures in one lasted for 40 minutes; the other for 60 minutes.

However, Lai and Levitt say those experiments are not good indicators of duration and effects.

'…the animals used in the de Lodge studies were actually exposed to RFR many times at different intensities. … The same test animals were used repeatedly during different sessions over many days. But since we do not know if animals "remember" or "forget" previous exposures and simply adjust temporarily, we can't even be sure that the behavioral effects seen were due to acute exposures. Animals may have thermoregulated in idiosyncratic ways per animal, per species, and at different times.'

What does this mean for the adequacy of international standards to protect against the harmful effects of radiofrequency radiation?

The authors draw this conclusion: 'What we do know is that the supposition that all exposures are the same above and below the SAR threshold set by FCC/INCIRP is fundamentally flawed in light of the most current research. One feasible and

logical solution to such uncertainties regarding duration as an exposure factor would be to adopt an SAR level commensurate with the studies summarized in Supplement 1 at no higher than 0.00165 W/kg, no matter the exposure conditions.'

Modulation

A third factor determining the effects of wirleless radiation is modulation.

Modulation is the process of adding one signal to another (the carrier wave) in order to convey information.

You can think of it like a cake recipe. Take a basic cake recipe, add chocolate and you have a different outcome and a different biological effect (taste).

In the case of wireless radiation, the carrier signal (the basic cake mix) has a steady, regular pattern in which the wave form has regular frequency and amplitude (height). The modulated wave (chocolate) is superimposed on it, changing the characteristics (frequency, amplitude, etc) of the carrier wave.

The modulation is the part of the combined signal that provides the information. The authors say that, without it, the carrier wave would sound like static.

At the receiving end, the signal is demodulated so that the information can be extracted by the listener/observer.

There are many ways in which wireless signals can be modulated and, therefore, many potential wireless signals to which an organism can be exposed, all of them could have different characteristics. How might this affect the body?

The authors say, 'It is not known how these different forms interact synergistically or antagonize the effects of each other – possibly producing cascading subtle effects throughout a living system.'

Modulation could be a determining factor in how a signal affects the body in some cases. For example, some studies showed that wireless signals of the same frequency and the same intensity caused different effects on the body, depending on whether or not they were modulated.

The authors confidently say that both modulated and unmodulated (continuous-wave) signals can and do affect the body. 'What is clear is that both modulation and continuous-wave RFR are biologically active and both should be considered in exposure guidelines.'

However, Lai and Levitt say that international standards/guidelines do not take modulation into account.

'The FCC/ICNIRP exposure guidelines only take unmodulated continuous-wave radiation into consideration and have long been criticized for not considering modulation as a separate entity with effects of its own … enough research exists to indicate exposure guidelines that do not take modulation into consideration are insufficient. This could be especially true with 5G on the immediate horizon using signaling characteristics – such as complex phasing, beam steering, and MassiveMimo (multiple-in, multiple-out sourcing) – and frequency ranges (in high millimeter wave ranges) that have never been used before in broad civilian-based communications.'

'enough research exists to indicate exposure guidelines that do not take modulation into consideration are insufficient'

For each of the three key characteristics of wireless radiation that the authors examined – intensity of exposure, length of exposure, and modulation – international standards and guidelines fail to provide adequate protection, the authors conclude. Nor have the responsible standard-setters responded to calls to address the shortfalls.

This needs to change. 'We need to more responsibly address the increasing near- and far-field RFR exposures of contemporary life with an eye toward 5G technology's unique characteristics. A new conceptual framework is called for,' the authors say.

Lai H, Levitt BB. The roles of intensity, exposure duration, and modulation on the biological effects of radiofrequency radiation and exposure guidelines. Electromagnetic Biology and Medicine. 2022 Apr;41(2):230-255. DOI: 10.1080/15368378.2022.2065683. PMID: 35438055, https://europepmc.org/article/med/35438055

We would like to thank Professor Henry Lai for his assistance with this article.

French legal decision

In a precedent-setting judgement, a French court has awarded a dairy farmer compensation for damage to his herd from a high voltage powerline.

The court of Coutances ordered electricity company Réseau de transport d'electricité (RTE) to pay Gaec Vauprès 460,000 Euros for problems caused by the powerlines, including loss of milk production.

This is the first time a French court has recognised the link between emissions from powerlines and harmful effects on stock.

In a previous case, the Caen Court of Appeal ordered RTE to pay 200,000 Euros to dairy farmers Yves Larsonneur and Sylvie Hubert for loss of market value of their farm after the company installed electrical pylons on their land.

https://www.lefigaro.fr/conjoncture/tres-haute-tension-rte-condamne-a-verser-plus-de-450-000-euros-a-des-eleveurs-20220603

5G a flight risk?

5G radiation can have risks for air travel, according to a recent article in the magazine 'Professional Pilot'.

'EMFs can affect us in ways that are especially important in the air. Known effects that appear within the duration of an average flight include fatigue, irritability, an inability to concentrate, and mild cognitive impairment resulting in task saturation, mistaken priorities, complacency, and spatial disorientation. Between 1993 and 2013, US Air Force pilots were involved in 72 severe accidents attributed to spatial disorientation.

'The incidents resulted in 101 deaths and 65 aircraft lost. The possibility that electromagnetic fields were to blame concerned the Defense Advanced Research Projects Agency (DARPA) enough that in October 2020 it initiated a 2-year project called Impact of Cockpit Electro-Magnetics on Aircrew Neurology (ICEMAN).'

'5G and electromagnetic fields', Owen Davies, Professional Pilot Magazine, https://www.propilotmag.com/5g/#

Mobile phone protection

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

Airtube headsets—no wire to conduct radiation into the head

'a French court has awarded a dairy farmer compensation for damage to his herd from a high voltage powerline'

(Continued from page 1)

of a mobile telephone system in this respect,' said the municipality's lawyer, Krahn-Zembol.

The court refused the municipality's request to terminate its contract and said that its liability would last for the full 30-year period of the contract. This means that the property owner is liable for any harmful effects that might occur from existing or future equipment on the property, including radiation from 5G technologies and those that haven't been deployed yet.

The court's decision means that owners of properties with base stations attached would be obliged to pay compensation, even if the equipment on site complied with relevant radiation standards.

The assessment of risk to owners of properties accommodating mobile phone base stations that was identified in this case is likely to apply to other jurisdictions and other countries as well.

Of particular concern is that the longer the contract with the telco, the greater the chance that owners will be called to answer for adverse effects. This is because radiation-related health problems are often thought to be due to cumulative exposure and some health problems, such as cancer, can take decades to develop. It's also possible that new and, potentially future, technologies could cause more problems than earlier generations of technology. For example, a world-first study by Professor Lennart Hardell and Mona Nilsson showed that radiation from a 5G mobile phone antenna caused more symptoms for exposed residents than radiation from 3G and 4G antennas.

Further, courts in some countries have already issued judgements linking radiation from telecommunications equipment with health problems in humans and animals.

Property owners wishing to protect themselves from liability need to be aware that many insurance companies do not provide cover for EMF-related problems.

'Court: property owners partly responsible for health damage to mobile base stations', Swedish Radiation Protection Foundation, 5.7.22 https://www.stralskyddsstiftelsen.se/2022/07/05/domstol-fastighetsagare-delansvariga-for-halsoskador-av-mobilbasstationer/

Warning for municipalities, parishes and private owners, Diagnose:funk, https://www.diagnose-funk.org/aktuelles/artikel-archiv/detail?newsid=1846#_ftnref1

5G radiation – world-first study, https://emraustralia.com.au/blogs/news-1/5g-radiation-world-first-study?_pos=1&_sid=6051423c3&_ss=r

'the longer the contract with the telco, the greater the chance that owners will be called to answer for adverse effects'