

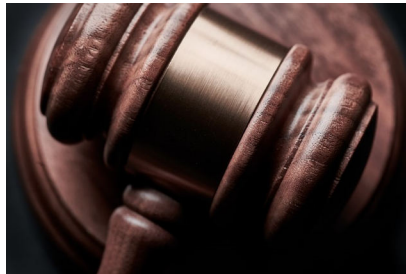
EMR and Health

Report on electromagnetic radiation, health and well-being

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US legal victory

The US public has won a landmark victory against authorities on federal safety standards for wireless radiation



On 13 August, the US Court of Appeals released its judgement on two legal cases in which the Environmental Health Trust (EHT), the Children's Health Defense (CHD) and other petitioners challenged the FCC [Federal Communications Commission] on the adequacy of its standards for wireless radiation protection.

This followed a decision by the FCC in 2019 to retain its 1996 standard for radiation protection, rather than update it. The plaintiffs argued that, in making this decision, the FCC ignored thousands of pages of research and expert testimony showing the harmful effects of wireless radiation for humans, wildlife and the environment.

The FCC radiation standard, like the Australian radiation standard, has been widely criticised for addressing only the short-term, heating effects of radiation and not the harmful, long-term, biological effects *not* caused by heating—such as DNA damage, oxidative stress and effects on calcium ion channels—that could lead to unpleasant symptoms and serious health problems.

One of the legal cases was lodged by the Environmental Health Trust and other petitioners and focused on the evidence for carcinogenic effects of wireless radiation.

'The commission failed to provide a reasoned explanation for its assertion that its guidelines adequately protect against the harmful effects of exposure to radiofrequency radiation,' said Edward B Myers, attorney for the EHT.

The second legal case was lodged by the Children's Health Defense and other petitioners and focused on the non-cancerous, harmful effects of radiation on the body. It was joined by nine individual petitioners, including Professor David Carpenter MD, a public health expert and co-editor of the BioInitiative Report; physicians concerned about the effects of wireless radiation on their patients; parents of children who developed electrosensitivity and a mother whose son died of a mobile phone-related brain tumour. They filed over 11,000 pages of evidence that wireless radiation causes harm.

(Continued on page 7)

In This Issue

Powerlines and childhood cancer	2
Tighter standards needed	3
5G and health	4
Your Electromagnetic-safe Home	5
Bad news for bees	6
5G and health	8



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Powerlines and childhood cancer

Does exposure to the magnetic fields from powerlines and other electrical sources increase the risk of childhood cancer?

The answer is YES, according to a new study from Korea.

The study, by G Seomun and team from Korea University, is the first to systematically review the evidence for this connection.

The authors identified 30 studies on magnetic fields and different types of childhood cancer—including leukemia, lymphoma and brain tumours—that included over 186,000 children from 15 countries. They extracted the data from these studies and analysed it.

‘Statistically significant associations were observed between exposure to ELF-MF [extremely low frequency magnetic fields] and childhood leukemia.’ They found:

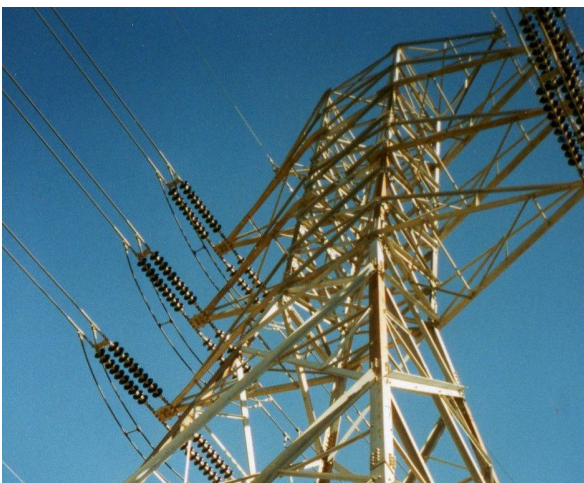
- children exposed to 2 mG had 26% more chance of leukemia
- children exposed to 3 mG had 22% more chance of developing leukemia
- children exposed to 4 mG had 72% more chance of developing leukemia
- children exposed to 4 mG had over double the risk of childhood cancer.

‘we can confirm the risk of childhood leukemia among pediatric cancers followed exposure to ELF-MFs, which is associated with a higher risk than what was previously known’

These levels are much lower than those allowed by the limits of the International Commission on Non-Ionizing Radiation Protection (ICNIRP), to which Australia adheres, which allow the general public to be exposed to magnetic fields of 2000 mG.

The study also found a dose-response effect. In other words, the higher the exposure, the greater the risk of childhood cancer, which strengthens the connection.

The authors say, ‘this study presents the epidemiological evidence of childhood cancer risk on exposure to ELF-MFs, which implies that we can confirm the risk of childhood leukemia among pediatric cancers followed exposure to ELF-MFs, which is associated with a higher risk than what was previously known.’



These findings have important implications for public policy on magnetic fields, the authors believe.

Seomun G, Lee J, Park J (2021) Exposure to extremely low-frequency magnetic fields and childhood cancer: A systematic review and metaanalysis. PLoS ONE 16(5): e0251628. <https://doi.org/10.1371/journal.pone.0251628>

Tighter standards needed

Standards for exposure to wireless radiation need to be updated, say Uloma Igara Uche and Olga Naidenko in the July issue of the journal *Environmental Health*.

'Radiofrequency radiation can elicit carcinogenic, genotoxic, reproductive, developmental, neurological, and cognitive effects,' the authors said. 'Continuously increasing exposure to radiofrequency radiation from wireless communication devices and sources brings urgency to the question of health-protective limits for such exposures.'

In their paper, the authors analysed data from two large, long-term animal experiments—one by the US National Toxicology Program (NTP) and the other by Italy's Ramazzini Institute. The NTP study found that rodents exposed to wireless radiation prenatally and long-term (for two years) had increased rates of cardiac, genetic and cancerous damage. The Ramazzini study found that rats exposed for their entire lifetime (prenatally and to death) had higher rates of schwannomas of the heart.

Using this data, the authors calculated the exposure dose at which these problems developed. They applied the ten-fold safety factor that is usually applied to translate data from animals to humans; another ten-fold safety factor to account for differences in the human population, and a 5-fold safety factor to apply the data to children, who are generally thought to be more sensitive to environmental stresses than adults.

The results showed that current standards are not sufficiently protective.

The limits Uche and Olga V Naidenko derived are very much lower and are given as Specific Absorption Rates (SARs), ie how much radiation is absorbed by tissues.

For adults, they arrived at a limit of 2 to 4 milliWatts per kg (mW/kg), 20 to 40 times lower than the existing US limit and less than international limits of the International Commission on Nonionizing Radiation Protection (ICNIRP), followed by Australia.

For children, they arrived at a limit of 0.2—0.4 mW/kg.

'Both technology changes and behavior changes may be necessary to achieve these lower exposure levels. Simple actions, such as keeping the wireless devices farther away from the body, offer an immediate way to decrease RFR [radiofrequency radiation] exposure for the user.'

Uloma Igara Uche and Olga V. Naidenko, 'Development of health-based exposure limits for radiofrequency radiation from wireless devices using a benchmark dose approach', *Environ Health* (2021) 20:84 <https://doi.org/10.1186/s12940-021-00768-1>; <https://ehjournal.biomedcentral.com/track/pdf/10.1186/s12940-021-00768-1.pdf>

'Radiofrequency radiation can elicit carcinogenic, genotoxic, reproductive, developmental, neurological, and cognitive effects'



5G and health

In July, the European Parliament published a review of scientific research on 5G, to investigate the ‘Current state of knowledge of 5G-related carcinogenic and reproductive/developmental hazards’.

The review was written by Dr Fiorella Belpoggi, Head of Research at the Ramazzini Institute and researcher on environmental carcinogens. She was involved in the large, ten-year animal study that investigated the effects of mobile phone radiation on rats and that found increased rates of heart tumours, rare schwannomas of the heart and brain tumours.²

Dr Belpoggi’s review considered research that has been conducted on the lower 5G frequencies—those that have been used for earlier generations of technology and are being reused for 5G—as well as the higher 5G frequencies that have not previously been used for telecommunications. She pointed out that the International Agency for Research on Cancer has already ‘defined RF-EMF in the frequency range from 30 kHz to 300 GHz as “possibly carcinogenic” to humans.’

In her review, Belpoggi considered a total of over seven thousand studies on the relationship between wireless radiation and cancer or reproduction. From these, she determined how strong the evidence was for effects on humans and animals.

She concluded that, for frequencies between 450 MHz and 6 GHz—that is those being used currently—there is:

- ‘limited evidence’ that wireless radiation is carcinogenic to humans—but pointed out ‘positive associations’ between mobile phone radiation and glioma brain tumours and acoustic neuromas.
- ‘sufficient evidence’ that wireless radiation is carcinogenic to experimental animals.
- ‘sufficient evidence’ that wireless radiation adversely affects male fertility; ‘limited evidence’ it adversely affects female fertility; and ‘limited evidence that it adversely affects the development of children whose mothers who were heavy mobile phone users during pregnancy.
- ‘sufficient evidence’ that it adversely affects fertility in male rodents; ‘limited evidence’ it adversely affects fertility in female rodents; ‘limited evidence of harmful effects on rodents born to female rodents exposed during pregnancy.

‘We can say that RF-EMF at FR1 frequencies [450 MHz to 5 GHz] exposure probably cause cancer, and in particular gliomas and acoustic neuromas in humans.

Dr Belpoggi concluded, ‘we can say that RF-EMF at FR1 frequencies [450 MHz to 5 GHz] exposure probably cause cancer, and in particular gliomas and acoustic neuromas in humans. ‘These frequencies clearly affect male fertility. These frequencies possibly affect female fertility. They possibly have adverse effects on the development of embryos, foetuses and newborns.’

She said that at higher frequencies, there are no adequate studies from which to draw conclusions. ‘Implementing MMW [millimetre wave] 5G technology without further preventive studies would mean conducting an “experiment” on the human population in complete uncertainty as to the consequences,’ the report said.

As a result of her observations, Dr Belpoggi recommend the following policy options:

- developing mobile phone technologies that reduce people’s exposure to wireless radiation
- revising radiation standards to reduce radiation from mobile phone towers
- reducing radiation exposure—for example, by using fibre optic cables and having radiation-free public spaces
- investigating the long-term health effects of 5G
- and educating people about relevant technologies.

‘We could use optic fibre cables to connect schools, libraries, workplaces, houses, public buildings, all new buildings etc,’ she said.

Dr Fiorella Belpoggi, ‘Health Impact of 5G’, European Parliamentary Research Service Scientific Foresight Unit (STOA) PE 690.012 – June 2021, [https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690012/EPRS_STU\(2021\)690012_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690012/EPRS_STU(2021)690012_EN.pdf); 2. L. Falcioni et al, ‘Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission’, *Environ Res* 2018, 165:496-503, doi: 10.1016/j.envres.2018.01.037. Epub 2018 Mar 7; <https://pubmed.ncbi.nlm.nih.gov/29530389/>

Your Electromagnetic-safe Home

Now we can help you turn your home into an electromagnetic-safe haven with our new online training program – Your Electromagnetic-safe Home.

Your Electromagnetic-safe Home is a unique online course that shows you how you can identify and reduce your exposure from the key fields present in your home, school and workplace.

Designed and presented by Lyn McLean (teacher, trainer, author and Director of EMR Australia), this self-paced course will take you on a guided, step-by-step journey of discovery towards electromagnetic-safe living. Along the way, you'll learn simple techniques and strategies that give proven results.

The course is suitable for every householder, everyone concerned about health and wellbeing, and everyone with or planning a family. No prior knowledge, skills or technical background are required.

In a world where there is more electromagnetic pollution than ever and where every new piece of equipment that enters our homes is a potential source of it, there's never been a better time to learn how to deal with this invisible hazard.

What the course offers

The course offers the important knowledge and skills for living in a world of electromagnetic pollution, including:

- how to identify your exposure from your mobile phone, laptop, WiFi, devices, smart meter, baby monitor, household appliances, wiring, mobile phone towers and so on;
- how and where to measure exposure effectively;
- the best solutions for specific problems;
- how and when to use shielding – and when NOT to;
- why and how to reduce exposure to your foetus, your baby and your children;
- how to keep 5G and other generations of technology out of your home;
- how to avoid the common myths and traps;
- and very much more.

The key benefits

There are many benefits of undertaking this course.

- It will help you reduce exposure to fields that are known to affect physical, mental and emotional well-being.
- It will help you save money by buying only products that will benefit you and not those that won't.
- It will allow to you keep on top of the ever-increasing exposures that come from new products on the market-place and new antennas in your environment.
- It will empower you by putting you in control of your exposure rather than your exposure being in control of you.

The course provide videos with clear and simple explanations and demonstrations that can be watched over and over again.

You can see more details [here](#).



Bad news for bees

The reduction in the bee population has serious consequences for society, including the loss of biodiversity and negative impacts on food production.

Two recent studies have shown that electromagnetic pollution can have harmful effects on bees and may be contributing to this alarming phenomenon.

Study 1

Researchers from Italy examined hives located in three different situations for a year. One was exposed to pesticides, another to pesticides plus electromagnetic fields from a high-voltage powerline and the third, the control, to neither of these stresses.

The authors found that 'both stress (chemical and electromagnetic) caused negative impacts on exposed colonies, due to disease appearance (American foulbrood), mortality in the underbaskets and behavioral alterations (queen changes, excess of drone brood deposition and honey storage).'

The worst affected hives were those exposed to both pesticides and electromagnetic fields, with three out of four hives failing to survive. 'The overall results clearly indicate that the multi-stress conditions were able to induce biochemical, physiological and behavioural alterations which severely threatened bee colony survival,' the authors concluded.

Lupi, D. et al, 'Combined Effects of Pesticides and Electromagnetic-Fields on Honeybees: Multi-Stress Exposure,' *Insects* 2021, 12, 716. <https://doi.org/10.3390/insects12080716>; <file:///C:/Users/User/Downloads/insects-12-00716-v2.pdf>

Study 2

In a separate study, researchers from four countries examined the effects of exposing bees to magnetic fields from electrical sources and the toxic chemical clothianidin.

They found that exposure to magnetic fields alone caused an increase in wingbeat frequency and reduced learning the proboscis extension reflex.

They believed that some bees were more vulnerable to the exposure than others.

'If the impacts of ELF EMFs [extra low frequency electromagnetic fields] on important cognitive and locomotory behaviours in pollinators translate to field scenarios, then where the effects of neonicotinoids are reduced, ELF EMFs may become a greater factor as an environmental stressor of pollinators,' the authors concluded.

Shepherd, S et al, 'Sublethal neonicotinoid exposure attenuates the effects of electromagnetic fields on honey bee flight and learning' *Environmental Advances*, Vol. 4, July 2021, 100051; <https://www.sciencedirect.com/science/article/pii/S2666765721000223?via%3Dihub>

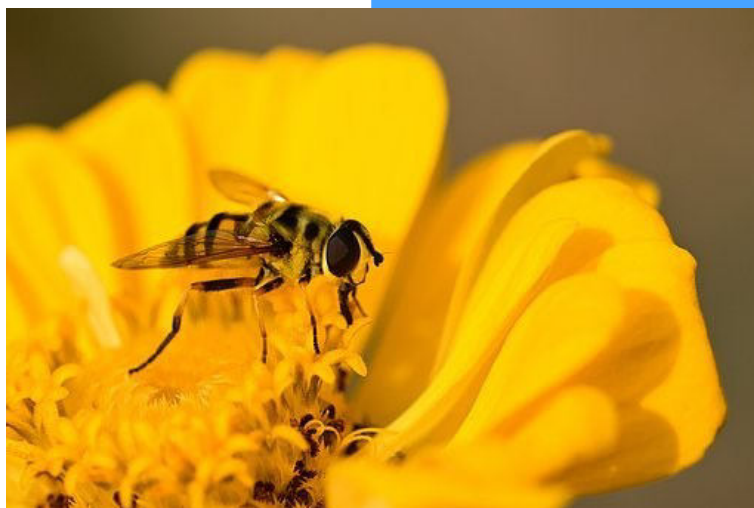
ELF EMFs may become a greater factor as an environmental stressor of pollinators



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'The Children's Health Defense believes that emissions from wireless-based technology, including cell phones, Wi-Fi, cell towers and now 5G, are a major contributing factor in the epidemic of sickness we see now among adults and children. Many thousands of studies and, unfortunately, ample human evidence leave no doubt regarding the harms,' said attorney Dafna Tachover, who led the case for the CHD.

Robert Kennedy Jr, Chairman of the Children's Health Defense and an attorney on this case, said that the telecommunications industry has 'succeeded in turning two federal agencies, the The FDA [Food and Drug Administration] and the FCC into models for agency capture. Those agencies no longer have any interest in protecting public health. They have become sock puppets for the industry that they are supposed to be regulating.'

The two separate cases were consolidated into the same court. To comply with court rules, the organisations shared their work on the case and filed joint briefs. EHT's name appears first due to an arbitrary decision by the court but both organisations contributed to the successful outcome.

The court ruled in the plaintiff's favour. It determined that the FCC's decision that its 1996 standard protects the public's health from 5G and wireless radiation is capricious, arbitrary and not evidence based. It also said that the FCC showed 'a complete failure to respond to comments concerning environmental harm caused by RF radiation.'

The court ordered the FCC to review the evidence in regard to non-thermal harms of non-cancer effects including (1) radiation sickness / electrosensitivity (2) the effects of other elements of harm like pulsation and modulation and long term effects (3) the potential harm of new technologies such as Wi-Fi and 5G (4) pre-natal effects and effects of children (5) and to address the evidence on mechanisms of harm including oxidative stress and leakage of the blood-brain barrier (6) to respond to evidence of non-thermal harm when addressing cell phone testing and (7) evidence of environmental harms.

Professor Devra Davis, founder and President of the EHT, said, 'We are delighted that the court upheld the rule of law and found that the FCC must provide a reasoned record of review for the thousands of pages of scientific evidence submitted by Environmental Health Trust and many other expert authorities in this precedent setting case.'

The CHD's Dafna Tachover said, 'The court's decision has changed the current status quo and has major legal implications. Essentially, what this decision means is that until the FCC provides a review of the evidence regarding non-cancer wireless harms in a way that complies with the requirements of the law, the FCC guidelines can no longer be presented as an assurance of safety for harms, except for cancer harms.'

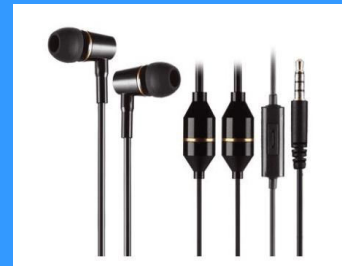
One of the petitioners in CHD's case, Dr Paul Dart, was concerned about the damaging effects of wireless radiation he saw in his practice. He said, 'by 2010 I

(Continued on page 8)

Mobile phone protection



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



Airtube headsets—no wire to conduct radiation into the head

'Those agencies no longer have any interest in protecting public health. They have become sock puppets for the industry that they are supposed to be regulating.'

(Continued from page 7)

was seeing more and more patients coming in who were having problems with microwave sickness. Some of them were completely disabled. Some of them couldn't handle being in the classroom anymore as Wi-Fi came in. I had one patient who committed suicide, because she could not escape from these exposures.'

Dr Toril Jelter, also a petitioner in the CHD's case, has seen dramatic improvements in children whose exposure to wireless radiation was reduced. She said, 'I have seen children in my practice that can't walk because of exposure to wireless radiation, and when you decrease the exposure then they're able to walk again. I had a boy with non-verbal autism that was 10 years old. He had never said a word in his life. And we decreased wireless radiation as a first-line attempt at helping him. He also had extremely aggressive behaviour, and his aggressive behaviour subsided, and within three days he said a full sentence. I have children that have learning difficulties, and by changing the wireless radiation in their home they have improved two grade levels in two months. There are children with ADHD who dramatically improve by modifying their exposure to wireless radiation.'

'This was a groundbreaking, historic win for our children and the environment to have the federal court call out the FCC, FDA and other federal agencies for having NEVER done an assessment of the biological science showing great harm from wireless radiation. Their public radiation limits are thus unfounded and unprotective so we should stop deferring to the FCC and industry for safety assurances,' said Cece Doucette of Massachusetts for Safe Technology.

Should the FCC, as a result of this judgment, consider the non-heating biological effects of radiation in its standards-setting process, this could set a precedent for other standards-setting bodies, including the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

You can see more information about:

- the court judgement [here](#)
- the EHT v. FCC case [here](#):
- the CHD v. FCC case page [here](#)
- the CHD's Press Conference [here](#)

5G and health

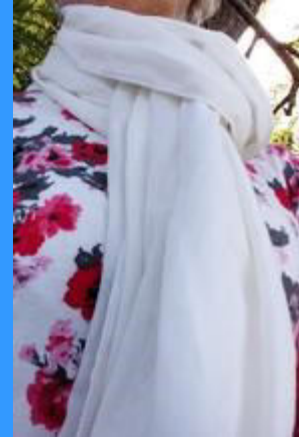
What do experts think about the safety of wireless radiation, including 5G?

You might like to take a look at this short video Take a look at what the experts have to say in this short video by the Oceania Radiofrequency Scientific Advisory Association (ORSAA) [here](#).

Protect the body
from wireless
radiation



Shielding singlets for
kids; head protection;
shielded scarves



*'This was a ground-
breaking, historic win
for our children and
the environment '*
