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Study Links Cellphone Radiation to Heart and Brain Tumors

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STORY AT-A-GLANCE

- In 2011, the International Agency for Research on Cancer, the cancer research arm of the World Health Organization, declared cellphones a Group 2B "possible carcinogen"
- Two government-funded studies brought renewed attention to this link in 2016. The studies, in which 3,000 animals were exposed to the type of radiation emitted by 2G and 3G cellphones, were said to be the most extensive to date
- Male rats were more likely to develop heart tumors, while female rats and newborns exposed to high levels of radiation during pregnancy and lactation were more likely to have low body weight
- DNA damage and damage to heart tissue was also observed in both male and female rats but not mice. Other types of tumors occurred in both types of animals, including brain, prostate, liver and pancreatic tumors
- The primary hazard of cellphone radiation is not brain cancer but, rather, systemic cellular and mitochondrial damage, which threatens health in general and can contribute to any number of health problems and chronic diseases

This article was previously published February 21, 2018, and has been updated with new information.

Mounting evidence suggests electromagnetic field (EMF) radiation from cellphones can trigger abnormal cell growth and cancer[1,2] As early as 2011, the evidence was strong enough for the International Agency for Research on Cancer, the cancer research arm of

the World Health Organization, to declare cellphones a Group 2B "possible carcinogen."[3] Two government-funded studies[4] bring renewed attention to this link.[5,6,7,8]

The $25 million research conducted by the National Toxicology Program (NTP) — an interagency research program started by the U.S. Department of Health and Human Services (HHS) in 1978 and now housed at the National Institute of Environmental Health Sciences (NIEHS) — included two separate studies: one on mice and one on rats.

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Cellphone Radiation Linked to Brain and Heart Tumors

The researchers found male rats were more likely to develop heart tumors, while female rats and newborns exposed to high levels of radiation during pregnancy and lactation were more likely to have low body weight. DNA damage and damage to heart tissue were also observed in both male and female rats, but not mice.

Other types of tumors did occur in both types of animals, though, including brain, prostate, liver and pancreatic tumors. According to the researchers, if these results could be confirmed, then cellphone radiation may indeed be a "weak" carcinogen.

The animals in these studies were exposed to cellphone radiation for nine hours a day for two years (basically the full life span of a rat). According to the researchers, this level of exposure is far greater than what humans are exposed to, making it difficult to extrapolate the impact cellphone radiation might have on humans.

Personally, I disagree with this view, as many people, especially the younger generation, have their cellphones turned on and near their body 24/7. Many are literally sleeping with their phone beneath their pillow. Unless your phone is in a faraday bag, airplane mode or turned off completely, it is still emitting radiation, so you're still exposing yourself to microwave radiation even when you're not talking on the phone. I believe the fact that this reality is completely ignored is a serious oversight.

As noted by The New York Times,[9] the heart tumors (malignant schwannomas) found in the study's male rats are "similar to acoustic neuromas, a benign tumor in people involving the nerve that connects the ear to the brain, which some studies have linked to cellphone use." The scientists also expressed surprise at the finding of DNA damage, as the conventional belief is that nonionizing radiofrequency radiation cannot harm DNA.

"We don't feel like we understand enough about the results to be able to place a huge degree of confidence in the findings," John Bucher, Ph.D.,[10] senior scientist at the National Toxicology Program told reporters at the time. Bucher also noted that "[the] patterns of damage to brain tissues in these animals are not particularly consistent with tumor outcomes."

To me, this statement offers no comfort whatsoever. Brain damage is brain damage, even if it doesn't specifically lead to cancer!

Brain Tumors Are Not the Most Pressing Concern

In fact, the primary hazard of cellphone radiation is not brain cancer per se but rather systemic cellular and mitochondrial damage, which is harmful to health in general and can contribute to any number of health problems and chronic diseases. In 2018, an estimated 80,000 U.S. men, women and children were being diagnosed with a brain tumor each year.[11]

In 2022, experts anticipate that 88,970 will be diagnosed with a brain tumor.[12] Meanwhile, 659,000 people die each year from heart disease,[13] so the relative rarity of brain cancer may lead you to believe that your cellphone is safe.

After all, when 91 percent of the adult population of the U.S. carried a cellphone in 2018[14] and less than 0.02 percent[15] developed a brain tumor, it may appear that using a cellphone is benign. The evidence shows it's not.

Even these NIH studies revealed DNA and cellular damage, even though the researchers insisted there's no explanation as to why. This, despite the fact that a number of other

scientists and EMF specialists have presented evidence for a number of different mechanisms of harm.

For example, research[16] by Allan Frey, Office of Naval Research, revealed that cellphone radiation weakens cell membranes and your blood-brain barrier. Some of his experiments showed that dye injected into animals was able to penetrate into the brain when exposed to pulsed digital signals from microwaves. This research was done in the 1960s, before the introduction of cellphones. At the time, radar and microwaves were the main focus.

Today, these findings are particularly notable since cellphones are held close to the brain. The take-home message is that radiation from your cellphone weakens your blood-brain barrier, allowing toxins in your blood to enter your brain, and into the cells of your entire body. But that's not all. Following, I will summarize evidence produced by a number of other experts in the field, who claim to have identified one or more mechanisms of harm.

Same Data, Different Interpretations

Before I get into the mechanisms, it's worth noting that when partial results from the NTP's animal studies were initially released, the findings were followed by a public health warning. In fact, the preliminary findings were released early because the researchers deemed it too important to wait.

Christopher Portier, Ph.D., retired head of the NTP who was involved in the launch of the study, insisted the findings showed clear causation. "I would call it a causative study, absolutely," he told Scientific American.[17] "They controlled everything in the study. It's [the cancer] because of the exposure."

In November 2016, David McCormick, Ph.D., director of the Illinois Institute of Technology Research Institute where the study was conducted, was equally clear, telling reporters,[18] "What we are saying here is that based on the animal studies, there is a possible risk cellphone RF [radio frequency] is potentially carcinogenic in humans.

These are uncommon lesions in rodents, so it is our conclusion that they are exposure related." Although he admitted he wasn't giving up his own cellphone, he added that it might take decades to "to see any and all damage done" by RF because of the relative newness of cellphones.

As noted by Microwave News,[19] while some of the pathology data was updated after the initial release in 2016, the changes were minor. The interpretation, however, has changed rather dramatically. But, even though the findings didn't changed, the NTP insisted it wasn't "not a high-risk situation" and that the risk to human health is negligible.

Microwave News listed a number of possible political reasons for the sudden turnaround, including different NTP leadership, the current White House administration's disdain for science that threatens big business, and the fact that the major telecommunications players today are Apple, Google and Microsoft — all major Wall Street darlings.

Whatever the reason, with 5G being rolled out in 2021 and 2022, it's clear the NTP is downplaying findings that only a handful of years ago,were considered of significant importance for public health. Not only that, but 5G supporters in 2022 are now being boosted by mainstream media like USA Today, which "debunks" claims that 5G could be harmful.[20]

EMFs Produce Potent Oxidant Stressors

Martin Pall, Ph.D., has identified and published research describing the likely molecular mechanisms of how EMFs from cellphones and wireless technologies damage plants, animals and humans.[21,22,23,24] The process begins when low-frequency microwave radiation activates voltage-gated calcium channels (VGCCs)[25] — channels in the outer membrane of your cells. Once activated, the VGCCs open up, allowing an abnormal influx of calcium ions into the cell.

This increased intracellular calcium and the accompanying increase in calcium signaling appears to be responsible for a majority of the damage that occurs.

The excess calcium activates nitric oxide, and while nitric oxide has many health benefits, massively excessive nitric oxide reacts with superoxide, producing peroxynitrites, extremely potent oxidant stressors believed to be a root cause for many of today's chronic diseases.[26] Nitric oxide is the only molecule in your body produced at high enough concentrations to outcompete other molecules for superoxide and is a precursor for peroxynitrite.[27]

Inside your body, peroxynitrites modify tyrosine molecules in proteins to create a new substance, nitrotyrosine and nitration of structural protein.[28] Changes from nitration are visible in human biopsy of atherosclerosis, myocardial ischemia, inflammatory bowel disease, amyotrophic lateral sclerosis and septic lung disease.[29]

Significant oxidative stress from peroxynitrites may also result in single-strand breaks of DNA.[30] This pathway of oxidative destruction — triggered by low-frequency radiation emitted from mobile devices — may partially explain the unprecedented growth rate of chronic disease since 1990,[31] and is a far greater concern than brain tumors.

Neurological, Heart, Fertility Problems More Likely With EMFs

According to Pall's theory, the physical locations where VGCCs are the densest are indicative of the diseases you might expect from chronic excessive exposure to EMFs. As it turns out, the highest density of VGCCs are found in your nervous system, the pacemaker in your heart and in male testes. As a result, EMFs are likely to contribute to neurological and neuropsychiatric problems, heart and reproductive problems.

Indeed, studies dating back to the 1950s and '60s show the nervous system is the organ most sensitive to EMFs. Some of these studies show massive changes in the structure of neurons, including cell death and synaptic dysfunction. When the VGCCs are activated in the brain they release neurotransmitters and neuroendocrine hormones.

In animals exposed to EMFs there are massive, cumulative effects in the brain. Genetic polymorphism studies also show that elevated VGCC activity in certain parts of the brain produces a variety of neuropsychiatric effects.

Hence, consequences of chronic EMF exposure to the brain include anxiety, depression, autism and Alzheimer's disease, which Pall detailed in a 2016 paper.[32] Research also suggests excessive EMF exposure is contributing to reproductive problems in both sexes.

In 2017, researchers showed prenatal exposure to power-frequency fields can nearly triple a pregnant woman's risk of miscarriage.[33]

According to lead author and senior research scientist at Kaiser Permanente's research division, Dr. De-Kun Li,[34] "This study provides fresh evidence, directly from a human population, that magnetic field exposure in daily life could have adverse health impacts," adding his findings "should bring attention to this potentially important environmental hazard to pregnant women."

According to Li, at the time there were at least six other studies, in addition to two of his own, showing this link[35,36,37,38,39] In February 2022, a systematic review published in the journal Heliyon[40] found that “unmanaged, the absorption of EMF radiation by the maternal abdomen during pregnancy is associated with serious birth and infant outcomes.” Study authors urged further research to validate their findings, while concluding:

> *The current review found EMF radiation exposure to be linked to hormonal, thermal, and cardiovascular changes in adults. EMF radiation exposure has also been linked with miscarriages and alternations in fetal temperature, HRV, and infant anthropometric measurements.*

EMF exposure may also play a significant role in testicular cancer and male infertility. Studies have linked low-level electromagnetic radiation exposure from cellphones to an 8% reduction in sperm motility and a 9% reduction in sperm viability[41,42] Wi-Fi-equipped

laptop computers have also been linked to decreased sperm motility and an increase in sperm DNA fragmentation after just four hours of use.[43]

Excessive Charges Alter Cellular Function

Alasdair Philips, founder of Powerwatch[44] — a British organization committed to uncovering EMFs' effects on health — believes there's even more to it than what Pall has discovered. He references Gerald Pollack's work on the fourth phase of water, so-called exclusion zone (EZ) water, which is the kind of water you have in your body.

> *"It's a completely different model of how the cell functions,"* Philips says. *"The cell functions as a gel, if you like, held together by electric charge. The calcium-gated channel is part of that, but actually, it isn't a membrane with a few things sticking through it.*
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> *It's actually … electric charges on molecules. Yes, Pall's [hypothesis] is very important and it's probably one of the key mechanisms, but there's a whole lot of things … [T]he cell is just malfunctioning because it's got so much charge… [I]t's an enormous incoming stream of electrons, and that changes completely what the cells are doing."*

EMFs Impair Proton Flow and ATP Production

Several years ago, Paul Héroux, Ph.D., professor of toxicology and health effects of electromagnetism at the faculty of medicine at McGill University in Montreal, also stressed the impact EMFs have on the water in your body. The mechanism of action proposed by Héroux involves the enzyme ATP synthase, which passes currents of protons through a water channel (similar to current passing through a wire).

The protons have to go through about 20 molecules of water to get through this channel. ATP synthase is extremely ancient and common to all living systems. It basically generates energy in the form ATP from ADP, using this flow of protons.

Magnetic fields can change the transparency of the water channel to protons, thereby reducing the current. As a result, you get less ATP, which can have system wide consequences, from promoting chronic disease and infertility to lowering intelligence. Héroux explained:

> *"When you impair the flow of protons to ATP synthase, you increase mitochondrial membrane polarization … If you increase the polarization of the mitochondria by 14 percent, you will have a 70 percent increase in the reactive oxygen species coming out of complex one, which is the leading edge of the oxidative phosphorylation chain.*
>
> *Essentially, my explanation is that by physical action on water, you can change the transparency of the most critical enzyme in the human body, modulate the amount of ATP, increase the escape of electrons from complex one; thereby explaining practically all of the observations related to EMF.*
>
> *Of course, the moment ATP is perturbed in a cell, there are calcium signals being emitted all over the place, because calcium is possibly the most critical intracellular messenger."*

While Pall's work focuses on EMFs' effects on calcium ions, Héroux focuses on its impact on electrons and protons, which are far more sensitive to magnetic fields. But although the mechanisms of action are slightly different, the end result is more or less identical and hinges on the fact that EMFs increase oxidative stress and decrease ATP.

In a nutshell, what we're talking about here is the creation of excess oxidative stress, which in turn can damage cell membranes and proteins, and break DNA bonds. Interviews with Philips and Héroux should be released shortly, so keep your eyes open for them to learn more.

France Banned Cellphones in Schools

As you can see, a number of different mechanisms of harm have already been proposed, so the claim that there's "no evidence" of harm, and that scientists have "no idea" of how

harmful effects such as those found by the NIH and other research might occur, simply isn't true.

There's even evidence suggesting that since EMF radiation affects your skin microbiome, it may also affect your gut microbiome,[45,46] turning what might otherwise be beneficial microbes pathogenic. This too can have far-ranging health effects, since we now know your microbiome plays an important role in health.

In 2018, France banned cellphone use by students during school hours.[47,48] The ban, which affects primary and secondary schools. Students are not permitted to use their phones even at breaks, lunch or between classes. The year before, in 2017, California also issued consumer guidance on how to lower cellphone radiation exposure (after initially trying to cover up the hazards)[49,50]

What About 5G?

There was no doubt in my mind back then that EMF exposure was a significant health hazard that needs to be addressed if you're concerned about your health and now, with 5G towers going up all over, I haven't changed my mind. I'm not alone in my concerns: In a follow-up study in October 2019,[51,52] the NTP found that:

> *RFR exposure was associated with an increase in DNA damage. Specifically, they found RFR exposure was linked with significant increases in DNA damage in:*
>
> - *the frontal cortex of the brain in male mice,*
> - *the blood cells of female mice, and*
> - *the hippocampus of male rats.*

Two years later, in August 2021, The BMJ[53] published a commentary asking for a stop to the 5G rollout until its safety could be absolutely confirmed:

> *"It follows that, for the current 5G roll-out, there is a sound basis for invoking 'the precautionary principle'. This is the environmental and occupation health principle by which significant doubt about the safety of a new and potentially widespread human exposure should be a reason to call a moratorium on that exposure, pending adequate scientific investigation of its suspected adverse health effects.*
>
> *In short, one should 'err on the side of caution'. In the case of 5G transmission systems, there is no compelling public health or safety rationale for their rapid deployment.*
>
> *The main gains being promised are either economic (for some parties only, not necessarily with widely distributed financial benefits across the population) or related to increased consumer convenience. Until we know more about what we are getting into, from a health and ecological point of view, those putative gains need to wait."*

These are just two examples, but you can see why I'm concerned.

Contact Your Legislators to Express Your Concerns

Remember that you have power and can make a difference. You have done it in the past and can do it again. Let's rise up en masse and express the massive whitewashing that is being catalyzed by the telecommunications industry to suppress the truth and expose you and your family to dangerous levels of EMF so they can increase their profits.

Begin by contacting your local commissioners and zoning departments to tell them you don't want 5G towers in your neighborhood. Then write or call your state and federal legislators to ask them to take a step back until safety issues have been resolved. I am confident that with your support we can start to make a difference.

Protecting Yourself From Excessive EMF Is Important

In the meantime, here are several suggestions that will help reduce your EMF exposure:

Connect your desktop computer to the internet via a wired Ethernet connection and be sure to put your desktop in airplane mode. Also avoid wireless keyboards, trackballs, mice, game systems, printers and portable house phones. Opt for the wired versions.

If you must use Wi-Fi, shut it off when not in use, especially at night when you are sleeping. Ideally, work toward hard-wiring your house so you can eliminate Wi-Fi altogether. If you have a notebook without any Ethernet ports, a USB Ethernet adapter will allow you to connect to the internet with a wired connection.

Shut off the electricity to your bedroom at night. This typically works to reduce electrical fields from the wires in your wall unless there is an adjoining room next to your bedroom. If that is the case you will need to use a meter to determine if you also need to turn off power in the adjacent room.

Use a battery-powered alarm clock, ideally one without any light. I use a talking clock for the visually impaired.[54]

If you still use a microwave oven, consider replacing it with a steam convection oven, which will heat your food as quickly and far more safely.

Avoid using "smart" appliances and thermostats that depend on wireless signaling. This would include all new "smart" TVs. They are called smart because they emit a Wi-Fi signal, and unlike your computer, you cannot shut the Wi-Fi signal off. Consider using a large computer monitor as your TV instead, as they don't emit Wi-Fi.

Refuse smart meters as long as you can, or add a shield to an existing smart meter, some of which have been shown to reduce radiation by 98 to 99%.[55]

Consider moving your baby's bed into your room instead of using a wireless baby monitor. Alternatively, use a hard-wired monitor.

Replace CFL bulbs with incandescent bulbs. Ideally remove all fluorescent lights from your house. Not only do they emit unhealthy light, but more importantly, they will actually transfer current to your body just being close to the bulbs.

Avoid carrying your cellphone on your body unless in airplane mode and never sleep with it in your bedroom unless it is in airplane mode. Even in airplane mode it can emit signals, which is why I put my phone in a Faraday bag.[56]

When using your cellphone, use the speaker phone and hold the phone at least 3 feet away from you. Seek to radically decrease your time on the cellphone. I typically use my cellphone less than 30 minutes a month, and mostly when traveling. Instead, use VoIP software phones that you can use while connected to the internet via a wired connection.

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