

# EMFs Destroy Sperm Count

Analysis by [Dr. Joseph Mercola](#)

November 15, 2023

## STORY AT-A-GLANCE

- › Mean sperm counts in men around the world have dropped by 51.6% over the past 50 years. Total sperm counts (TSC) are down by 62.3%, and the decline is accelerating
- › An environmental factor that might play a significant role in this trend is electromagnetic field (EMF) exposures from wireless technologies, also referred to as electromagnetic radiation (EMR) or radiofrequency EMF (RF-EMF)
- › Recent research found that men who used their cellphones more than 20 times a day had significantly lower sperm concentrations and total sperm counts (TSC) than those who only used them once a week or less, placing them at a 30% increased risk for having sperm concentration below the reference value for fertile men, and a 21% increased risk for having TSC below the fertile range
- › Previous studies have linked EMR from cellphones to an 8.1% reduction in sperm motility and a 9.1% reduction in sperm viability, as well as significantly higher rates of DNA fragmentation
- › Wi-Fi-equipped laptop computers have been linked to decreased sperm motility and an increase in sperm DNA fragmentation after just four hours of use

According to a scientific review<sup>1</sup> published in November 2022, mean sperm counts in men around the world have dropped by 51.6% over the past 50 years. Total sperm counts (TSC) are down by 62.3%, and the decline is accelerating. Proposed culprits include pollution, alcohol and drug use, stress, poor diet, sedentary lifestyle and chemical exposures.

Another environmental factor that might play a bigger role than people would like to imagine is electromagnetic field (EMF) exposures from wireless technologies, also referred to as electromagnetic radiation (EMR) or radiofrequency EMF (RF-EMF).

**EMFs are such an underappreciated health hazard**, I spent several years researching and writing the book, "**EMF\*D**," which may be one of the most comprehensive reviews of this pernicious environmental influence to date.

## **Cellphone Use Takes a Toll on Sperm**

Several studies have found that EMFs have a deleterious effect on the reproductive systems of both men and women. Most recently, research<sup>2</sup> published online November 1, 2023, found that men who used their cellphones more than 20 times a day had significantly lower sperm counts than those who only used them once a week or less.

**“ Men who used their cellphones more than 20 times a day had a 30% increased risk of having sperm concentration below the reference value for fertile men, and a 21% increased risk for having TSC below the fertile range, compared to men who used their phones once a week or less. ”**

As reported by the authors:<sup>3</sup>

*"A total of 2,759 men answered the question concerning their mobile phone use, and 2,764 gave details on the position of their mobile phone when not in use. In the adjusted linear model, a higher frequency of mobile phone use (>20 times per day) was associated with a lower sperm concentration and a lower TSC [total sperm count].*

*In the adjusted logistic regression model, this translates to a 30% and 21% increased risk for sperm concentration and TSC to be below the World Health*

*Organization reference values for fertile men, respectively ..."*

## **Previous Studies Confirm EMF Hazards to Men**

Previous studies have linked low-level electromagnetic radiation exposure from cellphones to an 8.1% reduction in sperm motility and a 9.1% reduction in sperm viability,<sup>4</sup> as well as significantly higher rates of DNA fragmentation.<sup>5</sup> 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.<sup>6</sup> A mini-review published in 2020 noted:<sup>7</sup>

*"Presently, there is a rise in the use of mobile phones, laptops, and wireless internet technologies such as Wi-Fi and 5G routers/modems across the globe; these devices emit a considerable amount of electromagnetic radiation (EMR) which could interact with the male reproductive system either by thermal or nonthermal mechanisms.*

*The aim of this review was to examine the effects of mobile phone use on male fertility. Related studies that reported on the effects of EMR from mobile phones on male fertility from 2003 to 2020 were evaluated ...*

*Based on the outcomes of both human and animal studies analyzed in this review, animal and human spermatozoa exposed to EMR emitted by mobile phones had reduced motility, structural anomalies, and increased oxidative stress due to overproduction of reactive oxygen species.*

*Scrotal hyperthermia and increased oxidative stress might be the key mechanisms through which EMR affects male fertility. However, these negative effects appear to be associated with the duration of mobile phone use."*

That mini-review also cites studies showing:<sup>8</sup>

- A significant association between exposure to EMR and higher rates of childlessness among military men working for the Royal Norwegian Navy.

- Cellphone EMR increases production of reactive oxygen species (ROS) in the mitochondria of human spermatozoa and causes DNA damage.
- Long-term exposure to EMR, both high and low frequency, can affect male germ cell in humans
- Long-term exposure to mobile phone EMR may reduce serum testosterone levels.
- EMR alters normal reproductive processes in male rats; the same might occur in male humans exposed to RF-EMF over a long period of time.

## **EMF Exposure During Pregnancy Raises Miscarriage Risk**

Women also need to be mindful of their EMF/EMR exposure, especially during pregnancy, as studies have found prenatal exposure to power-frequency fields can nearly triple a pregnant woman's risk of miscarriage.<sup>9</sup> As noted by senior research scientist at Kaiser Permanente's research division, Dr. De-Kun Li:<sup>10</sup>

*"This study provides fresh evidence, directly from a human population, that magnetic field exposure in daily life could have adverse health impacts."*

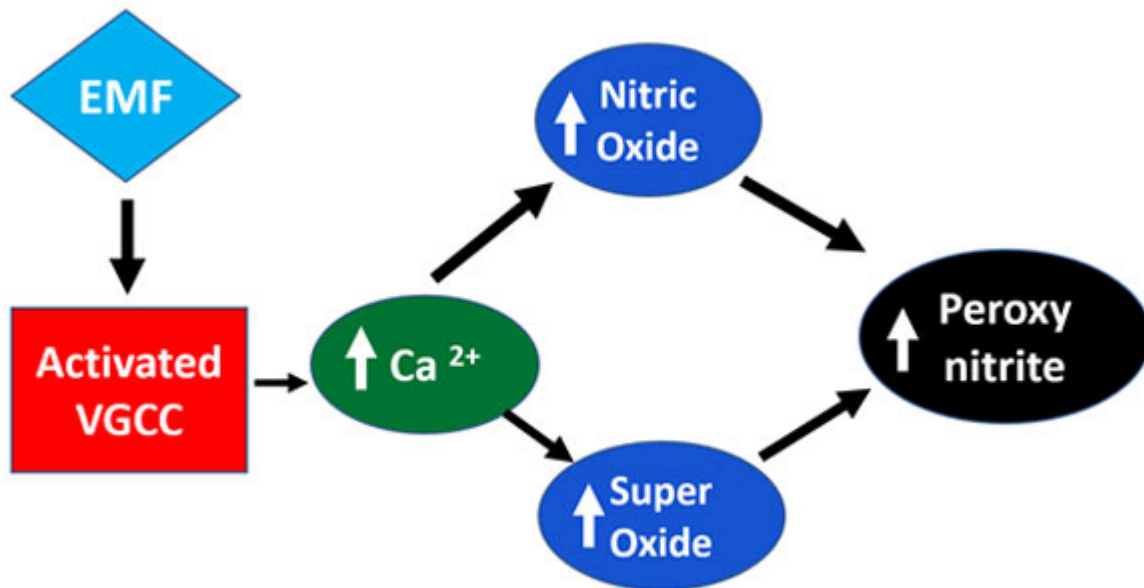
According to Li, there are also at least six other studies, in addition to two of his own, showing this link.<sup>11,12,13,14,15</sup>

## **EMFs Produce Potent Oxidant Stressors**

Martin Pall, Ph.D., a professor emeritus of biochemistry at Washington State University and a specialist in chronic fatigue syndrome, multiple chemical sensitivity and the effects of low-intensity microwave frequency EMFs on the human body, has identified and published several papers<sup>16,17,18,19</sup> describing the likely molecular mechanisms of how EMFs from cellphones and wireless technologies damage plants, animals and humans.

The process begins when low-frequency microwave radiation activates voltage-gated calcium channels (VGCCs)<sup>20</sup> – 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 most of the damage that occurs.



The excess calcium activates nitric oxide that then reacts with superoxide to produce peroxynitrites – extremely potent oxidant stressors believed to be a root cause for many of today’s chronic diseases.<sup>21</sup> 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.<sup>22</sup>

Inside your body, peroxynitrites modify tyrosine molecules in proteins to create a new substance, nitrotyrosine and nitration of structural protein.<sup>23</sup> Changes from nitration are visible in human biopsy of atherosclerosis, myocardial ischemia, inflammatory bowel disease, amyotrophic lateral sclerosis, and septic lung disease.<sup>24</sup>

Significant oxidative stress from peroxynitrites may also result in single-strand breaks of DNA.<sup>25</sup> This pathway of oxidative destruction – triggered by low-frequency radiation emitted from mobile devices – may at least partially explain the unprecedented growth rate of chronic disease since 1990.<sup>26</sup>

Other mechanisms of effect have been compiled and published in the European Journal of Oncology in collaboration with the International Commission for Electromagnetic Safety (ICEMS) and the Ramazzini Institute.<sup>27</sup> Thousands of studies showing biological

effects from low-intensity EMF were also summarized in the 2012 BioInitiative Report, demonstrating immune system effects, neurological effects, cognitive effects and much more.<sup>28</sup>

## **How EMFs Damage Sperm**

As suggested by the studies cited above, EMR-induced oxidative stress may also be part of the explanation for the dramatic rise in infertility among men. Figure 2 in the mini-review<sup>29</sup> quoted from earlier illustrates how EMR from wireless devices increases ROS in Leydig cells, thereby inhibiting testosterone production.

It also increases ROS in Sertoli cells and seminiferous tubules, both of which have crucial roles in the creation of healthy sperm.<sup>30</sup> The seminiferous tubules are the site of germination and maturation of sperm cells in the male testes.

The tubules are made up of Sertoli cells, which help transform germ cells into spermatozoa, in part via direct contact, and in part by controlling the environment within the seminiferous tubules.

Spermatogenesis – the development of sperm from germ cells – is regulated by testosterone’s action on the Sertoli cells. This is why low testosterone alone can adversely impact a man’s fertility. So, in summary, EMR can impair male fertility through three primary mechanisms: By inhibiting production of testosterone, and by damaging the Sertoli cells and seminiferous tubules through oxidative stress. The end result is reduced sperm count, motility and viability.

## **EMFs Also Implicated in Brain and Heart Dysfunction**

That male fertility would be imperiled by EMFs is also predicted by Pall’s theory. He proposed that the physical locations where VGCCs are the densest would be 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 issues and male 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 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, Pall predicted that chronic EMF exposure could result in anxiety, depression, autism, and Alzheimer's disease.<sup>31</sup>

## **Male Fertility in Jeopardy**

Pall also warned that unchecked proliferation of wireless technologies poses a significant threat to fertility. In a 2017 commentary on the health and safety of Wi-Fi, Pall wrote:<sup>32</sup>

*"The FCC guidelines as are many other such guidelines, are based on the assumption that only heating effects of microwave/lower frequency EMFs can have biological effects. However, that assumption has been falsified by thousands of studies published from the 1950's to the present, each showing that non-thermal levels of exposure often produce biological effects.*

*For example, in 1971, the U.S. Office of Naval Medical Research produced a document reporting over 100 different non-thermal effects ... Changes affecting fertility including tubular degeneration in the testis, decreased spermatogenesis, altered sex ratio, altered menstrual activity, altered fetal*

*development, programmed cell death (what is now known as apoptosis) and decreased lactation ...*

*Wi-Fi exposures produce impact on the testis leading to lowered male fertility ... We are, of course, seeing major lowering of sperm counts and sperm quality in many countries around the world; given the major impact of EMF exposures on sperm count and quality in human and in animal studies, the pattern of evidence is very worrying."*

## **Come See Me Speak Live Sunday In Miami**

This Sunday I will be speaking at the [Everything Matters Event in Miami](#). It will be a very small event of only a few hundred people at the Sacred Space in Miami and we will be diving deep into the world of quantum healing and spiritual connection. For the first time ever I will be sharing my spiritual journey and my latest insights on how to optimize your health through bioidentical progesterone therapy that I just learned last week and am using myself to balance my hormones.

It is a rare opportunity to hear me speak as the next time I am scheduled to speak will be at Biohacking in June next year. You will also have an opportunity to have dinner with me on Sunday evening. And one of the biggest surprises is that the tickets for this event are 95% less expensive than Biohacking. The dinner and admission is only \$200 next week and is \$5000 at Biohacking. My guess is that tickets for the event will sell out today.

So come and see me speak live and have dinner with me next Sunday at the [Everything Matters Event in Miami](#). You can enjoy the warm weather and sunshine with temperatures projected to be 82 for a high and 72 for a low in lovely south Florida. It will likely be the last opportunity to hear me speak before the next crisis hits. Hope to see you there.

## **Remedial Strategies to Lower EMF Exposure**



If you are planning to have a baby, or are struggling with infertility, definitely look around and assess your EMF exposures. Chances are you're bathing in wireless radiation 24/7, and if that's the case, you need to do something about that if you want to optimize your odds of having a baby, let alone a healthy one. Below are several suggestions that will help reduce your EMF exposure.

You can also find guidance and solutions for mitigating electric and magnetic fields at the end of "Healthy Wiring Practices,"<sup>33</sup> a document created by building biologist Oram Miller. In this document, he also details specific workarounds for various devices, including cellphones, MacBooks, Roku and Apple TV.

### **Nighttime remediation**

---

Use filters to remove voltage transients from your electricity; use meters to confirm that they are in a safe range.

---

Use a battery-powered alarm clock.

---

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

---

If you must use Wi-Fi, shut it off when not in use, especially at night when you are sleeping. Ideally, work toward hardwiring your house so you can eliminate Wi-Fi altogether. It's important to realize that if you have a Wi-Fi router, you have a cellphone tower inside your home.

If you absolutely must have a router, you can place it inside a shielded bag when not in use. You can find shielded items online, or make your own using Swiss Shield fabric. 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.

---

For more extensive shielding, you can consider painting your bedroom walls and ceiling with special shielding paint, which will block RF from outside sources, such as

cell towers, smart meters and radio/TV towers. Windows can be covered with metal window screen or film. For your bed, consider a shielding bed canopy.

---

### **Daytime strategies to reduce unnecessary EMF exposure**

---

To reduce EMF exposure during the daytime, consider using Stetzer filters to decrease the level of dirty electricity or electromagnetic interference being generated. You can also take these with you to work or when you travel. This may be the single best strategy to reduce the damage from EMF exposure since it appears that most of it is generated by the frequencies that the filters remove.

---

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.

---

Avoid carrying your cellphone on your body 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.<sup>34</sup>

---

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. Instead, use VoIP software phones that you can use while connected to the internet via a wired connection, or better yet, use a landline telephone.

---

### **General household remediation**

---

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.

---

---

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.

---

Dimmer switches are a source of dirty electricity, so consider installing regular on/off switches rather than dimmer switches.

---

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%.<sup>35</sup>

---

## Sources and References

---

- <sup>1</sup> Human Reproduction Update November 15, 2022; 29(2): 157-176
- <sup>2</sup> Fertility and Sterility November 1, 2023 Epub ahead of print
- <sup>3</sup> Fertility and Sterility November 1, 2023 Epub ahead of print, Results
- <sup>4</sup> Environ Int. 2014 Sep; 70C:106-112
- <sup>5</sup> Central European Journal of Urology 2014; 67(1): 65–71
- <sup>6</sup> Fertility and Sterility January 2012; 97(1): 39-45.e2
- <sup>7</sup> Journal of Human Reproductive Sciences July-September 2020; 13(3): 174-183
- <sup>8</sup> Journal of Human Reproductive Sciences July-September 2020; 13(3): 174-183, Introduction, Refs 6 through 15
- <sup>9</sup> Scientific Reports 2017; 7 Article number 17541
- <sup>10</sup> Microwave News December 18, 2017
- <sup>11</sup> American Journal of Epidemiology 1992 Nov 1;136(9):1041-51
- <sup>12</sup> Bioelectromagnetics 1993;14(3):229-36
- <sup>13</sup> PLoS ONE 8(12): e82113
- <sup>14</sup> Journal of Environmental Health Science and Engineering 2015; 13: 34
- <sup>15</sup> Chinese Journal of Integrative Medicine May 2017; 23(5): 345-349
- <sup>16</sup> Rev Environ Health. 2015;30(2):99-116
- <sup>17</sup> International Journal of Innovative Research in Engineering and Management, September 2015; 2(5)
- <sup>18</sup> J Cell Mol Med. 2013 Aug;17(8):958-65
- <sup>19</sup> Current Chemical Biology 2016; 10(1): 74-82
- <sup>20, 25</sup> Journal of Cellular and Molecular Medicine 2013; 17(8):958
- <sup>21, 26</sup> The Root Cause in the Dramatic Rise of Chronic Disease, May 2016
- <sup>22, 23, 24</sup> American Journal of Physiology 1996; 1(5): 1494
- <sup>27</sup> ElectromagneticHealth.org ECEMS Monograph, Parts 1 and 2
- <sup>28</sup> The Bioinitiative Report 2012
- <sup>29</sup> Journal of Human Reproductive Sciences July-September 2020; 13(3): 174-183, Figure 2

- <sup>30</sup> Semin Cell Dev Biol August 1998; 9(4):411-6
- <sup>31</sup> Journal of Chemical Neuroanatomy 2016 Sep;75(Pt B):43-51
- <sup>32</sup> Wi-Fi as a Very Substantial Threat to Human Health
- <sup>33</sup> Createhealthyhomes.com, Healthy Wiring Practices (PDF)
- <sup>34</sup> Amazon.com Mission Darkness Faraday Bag for Phones
- <sup>35</sup> The Global Healing Center November 13, 2014