

The Frightening Science and Politics of Cell Phone Safety. Electromagnetic Waves and the Health Impacts of Wireless Devices

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In [an article](#) published in the New York Times last week entitled “At C.D.C., a Debate Behind Recommendations on Cellphone Risk”, author Danny Hakim discusses the controversy surrounding the potential health risks of using cell phones.

Hakim writes that the Centers for Disease Control and Prevention (CDC) issued guidelines recommending “caution in cellphone use”, due to the potentially harmful effects of radiation emitted by the wireless devices on human health. Included in the guidelines was information about reducing exposure among children. Just a few weeks after the CDC’s publication, and amid rising concerns about cell phone safety, the CDC rescinded the advisory completely.

Today, the CDC website takes an ambiguous stance on the issue, stating:

Can using a cell phone cause cancer?

There is no scientific evidence that provides a definite answer to that question. Some organizations recommend caution in cell phone use. More research is needed before we know if using cell phones causes health effects. (1)

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Do cell phones give off (emit) radiation?

Yes – cell phones and cordless phones use radiofrequency radiation (RF) to send signals. RF is different from other types of radiation (like x-rays) that we know can be harmful. We don't know for sure if RF radiation from cell phones can cause health problems years later. The International Agency for Research on Cancer (IARC) has classified RF radiation as a “possible human carcinogen.” (A carcinogen is an agent that causes cancer.)

Should people stop using cell phones?

At this time we do not have the science to link health problems to cell phone use. Scientific studies are underway to determine whether cell phone use may cause health effects. It is also important to consider the benefits of cell phones. Their use can be valuable in an urgent or emergency situation – and even save lives.

If you are worried about cell phone use, follow the tips below.



Screen shot of CDC website

Hakim notes several agencies and individuals that have drawn stronger conclusions on the potential risks of such radiation. Among them is the International Agency for Research of Cancer, a branch of the World Health Organization, which listed the radio frequencies emitted by cell phones as a “possible carcinogen” in 2011.(2) Hakim identifies several countries’ health authorities, including, Finland, the United Kingdom and Israel issuing public warnings about the potential hazards of non-ionizing radiation from cell phones.

As one of the foremost organizations tasked with ensuring the health and safety of Americans, it is troubling that the CDC has failed to warn us of the potential dangers of these devices. We find that even a cursory review of the scientific literature reveals a significant body of research that points to the harmful effects of cell phone radiation. Here is some of the most compelling evidence:

Health Issues in Children

- According to research, radiation from cell phones is more easily absorbed by

children than adults.

Wart J, Hadjem A, Wong MF, Bloch I. 2008. Analysis of RF exposure in the head tissues of children and adults. *Phys Med Biol* 53(13): 3681-95.

Wiedemann PM, Schutz H, Clauberg M. 2008. Influence of information about specific absorption rate (SAR) upon customers' purchase decisions and safety evaluation of mobile phones. *Bioelectromagnetics* 29(2): 133-44.

Wang J, Fujiwara O. 2003. Comparison and Evaluation of Electromagnetic Absorption Characteristics in Realistic Human Head Models of Adult and Children for 900-MHz Mobile Telephones *IEEE Transactions on Microwave Theory and Techniques* 51(3): 966-70.

Gandhi OP, Lazzi G, Furse CM. 1996. Electromagnetic absorption in the human head and neck for mobile telephones at 835 and 1900 MHz. *IEEE Transactions on Microwave Theory and Techniques* 44(10): 1884-97

- A Danish study surveying more than 13,000 children found an 80% increase the likelihood of behavioral problems among children who use cell phones and whose mothers used cell phones during pregnancy.

Divan HA, Kheifets L, Obel C, Olsen J. 2008. Prenatal and postnatal exposure to cell phone use and behavioral problems in children. *Epidemiology* 19(4): 523-9.

Cancer/Tumors

- Research indicates that long-term cell phone users run a significantly elevated risk of developing glioma, a brain tumor that is often cancerous. The research discovers the tumors usually appearing on the side of the head favored during cell phone conversations.

Lahkola A, Auvinen A, Raitanen J, Schoemaker MJ, Christensen HC, Feychting M, et al. 2007. Mobile phone use and risk of glioma in 5 North European countries. *Int J Cancer* 120(8): 1769-75

Hours M, Bernard M, Montestrucq L, Arslan M, Bergeret A, Deltour I, et al. 2007. [Cell Phones and Risk of brain and acoustic nerve tumours: the French INTERPHONE case

-control study]. *Rev Epidemiol Sante Publique* 55(5): 321-32.

- Long-term exposure to cell phone radiation is linked with a 60% higher risk of developing a condition known as acoustic neuroma, a benign brain tumor.

Hardell L, Carlberg M, Hansson Mild K. 2009. Epidemiological evidence for an association between use of wireless phones and tumor diseases. *Pathophysiology*: in press

Kundi M. 2009. The Controversy about a Possible Relationship between Mobile Phone Use and Cancer. *Environ Health Perspec* 117(3): 316-24

- Heavy cell phone use increases the risk of benign salivary gland tumors by 60%.

Sadetzki S, Chetrit A, Jarus-Hakak A, Cardis E, Deutch Y, Duvdevani S, et al. 2008. Cellular phone use and risk of benign and malignant parotid gland tumors –a nationwide case-control study. *Am J Epidemiol* 167(4): 457-67

- Radiation from cell phones produces reactive oxygen species, which may contribute to DNA damage resulting in inflammatory conditions such as cancer and heart disease.

Phillips JL, Singh NP, Lai H. 2009. Electromagnetic fields and DNA damage. *Pathophysiology* 16(2-3): 79-88.

Boutros T, Chevet E, Metrakos P. 2008. Mitogen-activated protein (MAP) kinase/MAP kinase phosphatase regulation: roles in cell growth, death, and cancer. *Pharmacol Rev* 60(3): 261-310.

- Brain cancer risk tripled among individuals who used cell phones for more than 15 hours monthly.

Hardell, L., and M. Carlberg. "Re: Mobile Phone Use and Brain Tumours in the CERENAT Case-control Study." *Occupational and Environmental Medicine* 72, no. 1 (2014): 79.

Infertility

The close proximity of cell phones carried in pant pockets to reproductive organs have led many to suspect a link between cellular radiation and infertility. Several studies point to the damaging effects of cell phone radiation on sperm:

- Lower sperm quality among men who carried their cell phone in their pant pocket when compared to men who carried cell phones:

Kilgallon SJ, Simmons LW. 2005. Image content influences men's semen quality. *Biol Lett* 1(3): 253-5.

- Higher cell phone use linked with lower sperm quality.

Fejes I, Zavaczki Z, Szollosi J, Koloszar S, Daru J, Kovacs L, et al. 2005. Is there a relationship between cell phone use and semen quality? *Arch Androl* 51(5): 385-93.

- Cell phone use associated with decreased sperm motility.

Davoudi M, Brossner C, Kuber W. 2002. The influence of electromagnetic waves on sperm motility. *Journal für Urologie und Urogynäkologie* 19: 19-22.

- Men who used cell phones for more than four hours daily found to have lower sperm quality and 42% lower sperm count compared to those who didn't use cell phones.

Agarwal A, Deepinder F, Sharma RK, Ranga G, Li J. 2008. Effect of cell phone usage on semen analysis in men attending infertility clinic: an observational study. *Fertil Steril* 89(1): 124-8.

Analysis of semen samples exposed to radiation from cell phones show sizeable decreases in sperm count, quality and higher levels of inflammatory markers. Agarwal A, Desai NR, Makker K, Varghese A, Mouradi R, Sabanegh E, et al. 2009. Effects of radiofrequency electromagnetic waves (RF-EMW) from cellular phones on human ejaculated semen: an in vitro pilot study. *Fertil Steril* 92(4): 1318-25.

- Cell phone wave exposure appears to decrease the potential for fertilization in semen samples.

Falzone N, Huyser C, Becker P, Leszczynski D, Franken DR. 2011. The effect of pulsed 900-MHz GSM mobile phone radiation on the acrosome reaction, head morphometry and zona binding of human spermatozoa. *Int J Androl* 34(1): 20-6.

- Cell phone use linked with erectile dysfunction.

Al-Ali, B. M., Patzak, J., Fischereeder, K., Pummer, K., & Shamloul, R. (2013). Cell phone usage and erectile function. *Central European Journal of Urology*, 66(1), 75-77. <http://doi.org/10.5173/cej.2013.01.art23>

Brain/Neurological Health

- Electromagnetic frequencies from cell phones alter brain tissue activity by increasing glucose metabolism.

Volkow ND, Tomasi D, Wang GJ, Vaska P, Fowler JS, Telang F, Alexoff D, Logan J, Wong C. 2011. Effects of cell phone radiofrequency signal exposure on brain glucose metabolism. *Journal of the American Medical Association* 305 (8), in press.

- Yale University researchers show that mice exposed to cell phone radio frequencies in utero exhibited impaired memory and hyperactivity.

Aldad TS, Gan G, Gao XB, Taylor HS. 2012. Fetal radiofrequency radiation exposure from 800-1900 mhz-rated cellular telephones affects neurodevelopment and behavior in mice. *Sci Rep* 2: 312.

- Thirty minutes of cellphone use causes spontaneous low-frequency fluctuations in the brain.

Bin Lv, Zhiye Chen, Tongning Wu, Qing Shao, Duo Yan, Lin Ma, Ke Lu, Yi Xie. *Clin Neurophysiol*. 2013 Sep 4. Epub 2013 Sep 4. PMID: 24012322

- Cellphone use may interfere with brain sleep patterns.

Arne Lowden, Torbjörn Akerstedt, Michael Ingre, Clairiy Wiholm, Lena Hillert, Niels Kuster, Jens P Nilsson, Bengt Arnetz. *Bioelectromagnetics*. 2010 Sep 20. Epub 2010 Sep 20. PMID: [20857453](https://pubmed.ncbi.nlm.nih.gov/20857453/)

- Exposure to electromagnetic cell phone frequencies damages fetal brains in study on rats.

Ji Jing, Zhang Yuhua, Yang Xiao-Qian, Jiang Rongping, Guo Dong-Mei, Cui Xi. *Electromagn*

Why has the CDC- an institution with more than enough resources to thoroughly investigate such issues- failed to take into account the preponderance of evidence suggesting a link between cell phone use and health problems? And how can we explain the CDC's quick retraction of their guidelines urging the public to be cautious with cell phones 18 months ago? Surely they wouldn't have created such guidelines unless there was a scientific basis. Right?

The CDC and FCC: Kowtowing to the Wireless Industry

An investigative report published by the watchdog group Environmental Health Trust (EHT) digs deeper into the circumstances surrounding the CDC's retraction of their guidelines on cell phone radiation exposure. The report, based on 500 pages of internal CDC documents released through a Freedom of Information Act (FOIA), illuminates key information left of out the New York Times article and points to a cover-up by the CDC. Among the most startling revelations detailed is that immediately after publishing the new guidelines in June 2014 the CDC hired Kenneth Foster as a consultant to assist in the creation of future materials related to "non ionizing radiation matters". (3) Foster has an established record of conducting research funded by the private wireless industry and has authored a number of studies with results that contradict the notion that children are more susceptible to cell phone radiation than adults.(4)

One such study published by Foster was recently scrutinized by EHT Senior Medical Advisor Robert Morris, MD PhD, and his peers in the journal IEEE. In the paper, the authors highlight the dubious and unscientific methodology used by Foster and his colleague in drawing their conclusions about children absorbing cell phone waves, pointing out "*what appears to be a deliberate distortion of the science and a boldfaced effort to downplay potential risks to children using mobile devices.*" (5) In addition, the CDC's internal communications reveal that the agency considered including in their guidelines information about the potential hazards of cell phone towers located near schools, but chose to omit that information.(6)

By all indications, CDC officials aren't immune to the influence of the cell phone industry, even when the health of Americans is at stake. The role of special interests in shaping government policy on wireless devices seems to extend beyond the CDC. An exposé by the Environmental Working Group (EWG) released in 2013 documented a disturbingly similar case of federal regulatory agencies buckling under pressure from private industry.

The controversy began after the FCC, presumably in response to research demonstrating the dangers of cell phone radio waves, updated their website in November of 2009 to recommend that people "buy a wireless device with lower SAR", referring to cell phones which emit less radiation.(7) Upon Reviewing FCC documents secured through FOIA, the EWG team discovered that over the next nine months, three meetings were held between FCC staff and wireless companies such as Nokia, AT&T and Motorola as well as Cellular Telecommunications Industry Association (CTIA), which lobbies on behalf of cell phone giants including Verizon, Sprint, TMobile and Cricket. The topic of discussion at the meetings revolved around the issue of Specific Absorption Rate (SAR), a measurement of how much radiation the body absorbs from wireless devices. (8)

In September 2010, less than a year after the cautionary advice was first posted on the FCC website, the agency revised its language and adopted a dramatically different position on the issue. The revised text stated that:

- Accordingly, some parties recommend taking measures to further reduce exposure to [radiofrequency] energy. The FCC does not endorse the need for these practices.
 - Some parties recommend that you consider the reported SAR value of wireless devices. However, comparing the SAR of different devices may be misleading.
- (9)

Once again it appears that our bureaucratic institutions prefer to submit to the whims of corporate lobbyists rather than protect citizens from scientifically-established health hazards. A closer examination of the FCC turns up further evidence of a revolving door between the organization and the telecommunications industry. A prime example of the conflicts of interest within the organization can be found in the current president and CEO of the aforementioned cell phone industry trade group CTIA, Meredith Attwell Baker. Baker served as a commissioner for the FCC from 2009-2011 and before that worked as the CTIA's director of congressional affairs from 1998-2000. Remarkably, while acting as FCC commissioner in January 2011, Baker voted in favor of Comcast acquiring NBCUniversal, and left the agency just five months later to become Comcast-NBCUniversal's senior vice president of government affairs.(10) Baker's long history of hopping the fence between industry insider and government regulator raises serious questions about her loyalties.

Baker isn't an isolated case. The current chairman heading the FCC, Tom Wheeler, previously worked as the president of the influential lobby group known as National Cable & Telecommunications Association (NCTA) and served as the CEO of CTIA for more than a decade. And in a stunning role reversal, former FCC chairman Michael Powell is now President and CEO of NCTA.

A Global Push for Cell Phone Safety

As this alarming lack of US government oversight of wireless devices progresses, we witness governments around the world taking action to reduce wireless radiation exposure in their populations. Currently, the governments of France and Belgium mandate cell phone packages clearly display SAR values. National guidelines in Israel, Austria, and Australia advise reducing exposure to WiFi devices among children. The UK National Health Service recommends keeping phone calls short and keeping the phone away from the body, noting "children are thought to be at higher risk of health implications" (11)

Despite this global rise in awareness about the dangers inherent in our wireless technology, as of January 2016, the FCC website continues to reflect a seemingly dangerous ignorance on the subject, stating that:

Some health and safety interest groups have interpreted certain reports to suggest that wireless device use may be linked to cancer and other illnesses, posing potentially greater risks for children than adults. While these assertions have gained increased public attention, currently no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses. Those evaluating the potential risks of using wireless devices agree that more and longer-term studies should explore whether there is a better basis for RF safety standards than is currently used. (12)

A growing body of independent science shows that the issue of cell phone safety may have massive consequences on the health of our nation, especially our children. If we are to enact measures to protect against this dangerous radiation we must demand full accountability from the CDC and FCC. It is time that Americans stand up to the anti-science corporate profiteers running the show and rein in this invisible danger in our midst.

Notes

1. http://www.cdc.gov/nceh/radiation/cell_phones_faq.html
2. http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf
3. <http://ehtrust.org/information-the-new-york-times-left-out-of-its-expose-on-cdcs-retraction-of-cell-phone-radiation-warnings/>
4. Ibid
5. Ibid
6. Ibid
7. <http://www.ewg.org/fcc-dropped-cell-phone-caution-opposed-industry>
8. Ibid
9. Ibid
10. <http://arstechnica.com/tech-policy/2014/04/washingtons-revolving-door-cellular-lobby-and-fcc-have-traded-leaders/>
11. <http://ehtrust.org/cell-phones-radiation-3/international-policy-actions-on-wireless/>
12. <https://www.fcc.gov/consumers/guides/wireless-devices-and-health-concerns>

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