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Warning: 50 Minutes with This Daily Gadget Can Alter Your Brain and DNA

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By Dr. Mercola

[Health Canada is proposing to adopt a precautionary approach](#) and guidelines for limited cell phone use.

Canadians are being encouraged to limit cell phone call length and to text message or use a hands-free device whenever possible.

Other countries have already adopted this precautionary approach.

Russian officials have issued the recommendation that all children under the age of 18 should avoid using cell phones entirely.

The UK, Israel, Belgium, Germany, India and Finland also urge citizens to err on the side of caution with respect to their children's use of cell phones.

Last year, [France set the following recommendations](#):

- 1) All cell phones must be sold with a device limiting head exposure to EMF.
- 2) Any advertising campaign promoting the use of cell phones by children below 14 years is banned.
- 3) Providing radio equipments designed for children under 6 may be banned by ministerial order.
- 4) In kindergarten, primary school and junior high, the use of cell phones is banned for kids during all teaching activities in locations listed in School rules.
- 5) For all cell phones sold on the French territory the SAR must be indicated clearly and in French.



Possible risks resulting from excessive use must also be mentioned.

Cell Phone Radiation Classified as 'Possibly Carcinogenic to Humans'

As the use of cell phones and other wireless technologies have exponentially exploded over the past couple of decades, concerns about the health effects of such technology has increased as well. Today, we're at a point of no turning back, as cell phone subscriptions are now estimated at 5 billion globally—that's the majority of people on the planet!

A growing body of researchers has spoken out against the technology, warning that it may have serious biological side effects. On May 31 this year, the World Health Organization (WHO)/ International Agency for Research on Cancer (IARC) issued a report admitting cell phones might indeed cause cancer, [classifying radiofrequency electromagnetic fields as "possibly carcinogenic to humans"](#) (Class 2B). The classification came in part in response to research showing wireless telephones increase the risk for brain cancer.

[According to the press release:](#)

"Dr Jonathan Samet (University of Southern California, USA), overall Chairman of the Working Group, indicated that "the evidence, while still accumulating, is strong enough to support a conclusion and the 2B classification. The conclusion means that there could be some risk, and therefore we need to keep a close watch for a link between cell phones and cancer risk."



"Given the potential consequences for public health of this classification and findings," said IARC Director Christopher Wild, "it is important that additional research be conducted into the long-term, heavy use of mobile phones. Pending the availability of such information, it is important to take pragmatic measures to reduce exposure such as hands-free devices or texting."

Many EMF Experts Adamantly Claim Harm is Being Done, and Effects are Provable

Experts in the area of the biological effects of electromagnetic frequencies (EMF) and wireless technologies believe there's virtually *no doubt* that cell phones and related gadgets are capable of causing not only cancer but contributing to a wide variety of other conditions, from depression and diabetes to heart irregularities and impaired fertility. Researchers have now identified numerous mechanisms of harm, which explain how electromagnetic fields impact your cells and damages your DNA.

One such expert is Dr. Martin Blank, PhD, one of the most experienced researchers of the cellular and molecular effects of electromagnetic fields in the U.S. He gave an [informative speech](#) at the November 18, 2010 Commonwealth Club of California program, "The Health Effects of Electromagnetic Fields," co-sponsored by ElectromagneticHealth.org. In it, he explains

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why your DNA, with its 'coil of coils' structure, is *especially vulnerable* to electromagnetic fields of all kinds.

As described in the [International Journal of Radiation Biology, April 2011](#), DNA possesses the two structural characteristics of fractal antennas, electronic conduction and self-symmetry.

These properties contribute to greater reactivity of DNA to electromagnetic fields than other tissues, making the long-term consequences of repeated microwave exposures to our genetic material of great concern. Dr. Blank is adamant when he says that there IS evidence of harm, and that the harm can be significant. He also points out that the science showing harmful effects has been peer-reviewed, published, and that the results have been replicated, evaluated and "judged by scientists capable of judging it."

An analysis of the range of known mechanisms of action, including DNA effects, was published in November of last year in "[Non-Thermal Effects and Mechanisms of Interaction Between Electromagnetic Fields and Living Matter](#)." Furthermore, the mobile industry's *own* research in the 13-country Interphone study showed a [40 percent increased risk of brain cancer from 1,640 or more hours of cell phone use](#), and [independent research has shown a 540 percent increased risk of brain cancer from greater than 2,000 hours of cell phone use](#).



Famous Researcher Establishes Cell Phones Alter Brain Activity

Another study, published in JAMA earlier this year, may also have forever altered the landscape. It was led by leading brain imaging researcher [Nora D. Volkow](#), MD, named one of "[Top 100 People Who Shape Our World](#)" in 2007 by Time Magazine, and the study in question was funded by the US government (the National Institutes of Health, NIH).

Volkow et.al. discovered that after just 50 minutes of cell phone exposure, the emitted radiation increases brain cell activity. The exact health effects of that increased brain activity are as of yet unknown, but the study has effectively debunked the myth, in U.S. government research, that cell phone radiation at non-thermal levels is incapable of causing biological change. (The SAR exposure involved was only .901 W/Kg, which is well under the FCC limit of 1.6 W/Kg for cell phones.)

David Carpenter, MD, Director of the Institute for Health and the Environment, University of Albany, has called the NIH study 'dynamite,' saying it will now be hard to deny that cell phones alter nervous system activity. While the study found proof of increased glucose metabolism in brain cells, which is an established marker of brain activity, the question remains whether or not non-ionizing radiation from cell phones might also impact neurotransmitters and other brain chemistry. Chronically elevated glucose levels in the brain are also of concern, and are being further investigated by Volkow.

According to Dr. Ronald Herberman, former Director of the University of Pittsburgh Cancer Institute:

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"We know that increased glucose also occurs with infections and other inflammatory processes, and leads to the production of potentially damaging reactive oxygen radicals that can alter the ways that cells and genes work.

This important finding should stimulate many biologists to perform in-depth studies to determine the consequences of such changes in nerve cells or other bodily cells in the region of the radiation. We need to develop a better understanding of how radiofrequency radiation might contribute to increased risk for brain tumors as well as other alterations in brain functions."

"Brain Tumor Pandemic" Predicted

Of great concern is the new analysis by Örjan Hallberg in Sweden , with L. Lloyd Morgan in the U.S., just [published in Neurology & Neurophysiology](#), which projects a very large increase in brain cancer incidence resulting from widespread mobile phone use. beginning in approximately 15 years. These projections are based on well-established effects of this radiation on DNA alone:that mobile phone use decreases the efficiency of the repair of mutated DNA and that mobile phone use increases the rate of DNA mutations.

For perspective, in 2002 there were about 200,000 brain cancers per year in the world. If this were to increase 25-fold due to increasing the rate of DNA mutations from cell phone radiation, the total would be 5 million brain tumors per year.

With the average cost of treating a brain tumor today being approximately \$500,000, the cost of this increase in brain tumors might be \$2.5 trillion per year worldwide. And there are other known mechanisms beyond DNA mutations as well, that could drive these numbers even higher. Not unlike lung cancer from smoking, this would continue for decades. But unfortunately, unless medical education is quite dramatically redirected, there certainly won't be an adequate supply of qualified neurosurgeons to begin to address this emerging epidemic.

L. Lloyd Morgan, one of the study's authors, says,

"What this analysis shows is that, unless mobile phone usage behavior patterns significantly change, we can reasonably expect a pandemic of brain tumors, for which we are ill-prepared, beginning approximately 15 years from now. Governments, as well as parents, physicians, schools and all citizens, would be well advised to educate all persons under their care or influence about the need to curtail the use of mobile phones and other radiation-emitting consumer devices."

Camilla Rees, MBA of ElectromagneticHealth.org and Campaign for Radiation Free Schools, reminds us though, that the risk is not only related to brain tumors.

"Microwave radiation from cell phone and wireless devices has been [shown in numerous studies to impair cognitive function](#) and to influence the brain function of



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children in schools, thus impacting the capacity to learn. I certainly hope we don't have to wait 15 years until this brain tumor pandemic begins, projected by the Hallberg and Morgan study, before we take steps to protect our brains and children's brains," she says.

"As Dr. Thomas Rau of the renowned [Paracelsus Clinic in Switzerland](#) has said, it is our choice—choosing to expose our children to wireless radiation will result in 'Dumb Children'."

Who's at Greatest Risk?

It's worth noting that the Federal Communications Commission's (FCC's) safety guidelines for radiofrequency exposure do not differentiate between healthy individuals, children, people of different body sizes or those with brain disorders. According to Volkow, different levels of protection may be advisable, all things considered. In a [February 23 CNN article](#) Volkow is quoted as saying:

"If someone already has brain damage and then stimulates it with electromagnetic exposure from a cell phone, it could trigger something dangerous. We cannot say with certainty that for a person with a vulnerability in the brain that radiation from a cell phone would not make it worse."



This is a very important issue, and research has already shown that [children are FAR more susceptible to damage from cell phone use](#) than adults, due to the fact that their skulls are both thinner and smaller in volume. Hence radiation penetrates far deeper into their brains. Their cells also divide at a faster rate, making the potential impact of cell phone radiation *exponentially* larger.

The common method of assessing the SAR (Specific Absorption Rate) from cell phone use has in fact recently been shown to be vastly inferior to another also FCC approved method using computer simulation. [This method shows](#) children absorb 2x the radiation to the brain as adults, 3x the radiation to the hippocampus and hypothalamus, more radiation in the eyes, and 10x the radiation in the bone marrow.

How to Limit Your Exposure

All the evidence points to the fact that current safety standards are completely inadequate. Our rapidly expanding wireless technologies must be properly evaluated, but on an individual level we simply cannot afford to wait. While some countries are beginning to invoke the precautionary principle, each and every individual needs to take it upon themselves to do the same, rather than wait for an official statement.

While you can't completely avoid radiation in today's wireless world, you can at least minimize your exposure by heeding the following advice:

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Children Should Always Avoid Using Cell Phones: Barring a life-threatening emergency, [children should not use a cell phone](#), or a wireless device of any type. Children are far more vulnerable to cell phone radiation than adults, because of their thinner skull bones.

Reduce Your Cell Phone Use: Turn your cell phone off more often. Reserve it for emergencies or important matters. As long as your cell phone is on, it emits radiation intermittently, even when you are not actually making a call.

Use a Land Line at Home and at Work: Although more and more people are switching to using cell phones as their exclusive phone contact, it is a dangerous trend and you can choose to opt out of the madness.

Reduce or Eliminate Your Use of Other Wireless Devices: You would be wise to cut down your use of ALL wireless devices. Just as with cell phones, it is important to ask yourself whether or not you really need to use them every single time.

If you must use a portable home phone, use the older kind that operates at 900 MHz. They are no safer during calls, but at least many of them do not broadcast constantly even when no call is being made. Note the only way to truly be sure if there is an exposure from your cordless phone is to measure with an electrosmog meter, and it must be one that goes up to the frequency of your portable phone (so old meters won't help much). As many portable phones are 5.8 Gigahertz, we recommend you look for RF meters that go up to 8 Gigahertz, the highest range now available in a meter suitable for consumers.



Alternatively you can be very careful with the base station placement as that causes the bulk of the problem since it transmits signals 24/7, even when you aren't talking. So if you can keep the base station at least three rooms away from where you spend most of your time, and especially your bedroom, they may not be as damaging to your health. Another option is to just simply turn the portable phone off, only using it when you specifically need the convenience of moving about while on a call. Ideally it would be helpful to turn off your base station every night before you go to bed during the time your body needs to rest and repair.

You can find RF meters as well as remediation supplies at www.emfsafetystore.com. But you can pretty much be sure your portable phone is a problem if the technology is DECT, or digitally enhanced cordless technology.

Use Your Cell Phone Only Where Reception is Good: The weaker the reception, the more power your phone must use to transmit, and the more power it uses, the more radiation it emits, and the deeper the dangerous radio waves penetrate into your body. Ideally, you should only use your phone with full bars and good reception.

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Also seek to avoid carrying your phone on your body as that merely maximizes any potential exposure. Ideally put it in your purse or carrying bag. Placing a cell phone in a shirt pocket over the heart is asking for trouble, as is placing it in a man's pocket if he seeks to preserve his fertility. (See ElectromagneticHealth.org's [Letter to Parents on Fertility and Other Risks to Children from Wireless Technologies](#))

Don't Assume One Cell Phone is Safer Than Another. [There's really no such thing as a "safe" cell phone.](#)

Keep Your Cell Phone Away From Your Body When it is On: The most dangerous place to be, in terms of radiation exposure, is within about six inches of the emitting antenna. You do not want any part of your body within that area. But understand that there is research showing paradoxical effects, that is, that weaker exposures can increase certain kinds of biological effects, including neuron death and blood brain barrier permeability. So while you certainly want to minimize higher power exposures right near the body, you also want to be cognizant of the total body load of electromagnetic field exposures, even if they are weak and coming from several rooms away or across the street.

In fact, research shows both symptoms of electrosensitivity and increased risk of cancer within 1,500 feet (about ¼ mile) of a cell tower. We can not at this point be sure there are not risks at a farther distance from towers or antennas, but there are now several studies, from many countries, showing increased risk within this distance.



Respect Others Who are More Sensitive: Some people who have become sensitive can feel the effects of others' cell phones in the same room, even when it is on but not being used.

If you are in a meeting, on public transportation, in a courtroom or other public places, such as a doctor's office, keep your cell phone turned off out of consideration for the 'second hand radiation' effects. Children are also more vulnerable, so please avoid using your cell phone near children.

Use Safer Headset Technology: Wired headsets will certainly allow you to keep the cell phone farther away from your body. However, if a wired headset is not well-shielded -- and most of them are not -- the wire itself acts as an antenna attracting ambient information carrying radio waves and transmitting radiation directly to your brain.

Make sure that the wire used to transmit the signal to your ear is shielded.

The best kind of headset to use is a combination shielded wire and air-tube headset. These operate like a stethoscope, transmitting the information to your head as an

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actual sound wave; although there are wires that still must be shielded, there is no wire that goes all the way up to your head.

I strongly urge you to take the above precautions to reduce your risk and the risk to your children, who are even more vulnerable to long-term damage. I also invite you to help raise awareness by sharing this information with your loved ones.

More Information

For more information, I highly recommend listening to this excellent [Media Teleclass on Cellphones and Brain Tumors](#). Listen for yourself to experts who are independent of the telecom industry and close to the science, as well as to the questions the media posed of them. Moderated by Camilla Rees, MBA of www.ElectromagneticHealth.org, the teleclass features Devra Davis, PhD, MPH, David Carpenter, MD, Lloyd Morgan, BS and Joel Moskowitz, PhD.



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