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Study Finds Evidence for Tumors From Cellphone Radiation

Analysis by Dr. Joseph Mercola ✔ Fact Checked | April 28, 2023

STORY AT-A-GLANCE

- The International Agency for Research on Cancer classified cellphones as a Group 2B "possible carcinogen" in 2011. Since then, evidence of harm has only grown stronger
- Two major studies published in 2018 link cellphone radiation to DNA damage and cancer
- Research by the National Toxicology Program (NTP) found "clear evidence" for heart tumors in male rats. These tumors started developing around week 70, and are similar to human acoustic neuromas that previous studies have linked to cellphone use
- NTP also found "some evidence" of brain tumors and adrenal gland tumors in male rats, as well as "equivocal" or unclear evidence of tumors in female rats and mice of both genders
- Corroborating evidence published by the Ramazzini Institute also shows a clear link between cellphone radiation and Schwann cell tumors, but at a much lower power level than that used by NTP, and below the U.S. safety limits set by the Federal Communications Commission

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Cellphones were classified as a Group 2B "possible carcinogen"[1] in 2011 by the International Agency for Research on Cancer (IARC), an arm of the World Health Organization and the global gold standard for the classification of toxins.

This classification was based on evidence showing that nonionizing electromagnetic field (EMF) radiation from cellphones can trigger abnormal cell growth and tumors.[2,3] In

my view, this is a mistake and, just like smoking, I am confident it will be recategorized in the future to a 1A carcinogen.

Earlier this year, preliminary findings of two government-funded animal studies[4] were published that further support the notion that cellphone radiation has carcinogenic potential.

The finalized report[5] of these two studies — conducted by the National Toxicology Program (NTP), an interagency research program under the auspices of the National Institute of Environmental Health Sciences — was released November 1, 2018. While the preliminary **report released in February 2018 significantly downplayed the findings**, subsequent peer review upgraded the findings of risk.

Cellphone Radiation Linked to Brain and Heart Tumors

The NTP rates cancer risk based on four categories of evidence: "clear evidence" (highest); "some evidence;" "equivocal evidence;" and "no evidence" (lowest). According to the NTP's final report, the two studies, done on mice and rats of both sexes, found:[6]

- Clear evidence for **heart tumors** (malignant schwannomas) in male rats. These types of tumors started developing around week 70, and are very similar to acoustic neuromas found in humans, a benign type of tumor that previous studies have linked to cellphone use
- Some evidence of brain tumors (malignant gliomas) in male rats. Glial cell hyperplasias — indicative of precancerous lesions — began developing around week 58.

  (Incidentally, incidence of glioblastoma multiforme (the deadliest type of brain tumor) more than doubled in the U.K. between 1995 and 2015.[7,8] According to the authors of the analysis, the dramatic increase is likely due to "widespread environmental or lifestyle factors," which would include cellphone usage)

- Some evidence of adrenal gland tumors in male rats, both benign and malignant tumors and/or complex combined pheochromocytoma
- Equivocal or unclear evidence of tumors in female rats and mice of both genders

The studies also found evidence of:

- Low body weight in female rats and newborns exposed to high levels of radiation during pregnancy and lactation
- DNA damage and damage to heart tissue in exposed male and female rats, but not mice
- Prostate, liver and pancreatic tumors in both rats and mice

Are Humans at Risk?

According to The New York Times:[9]

> *"'We believe that the link between radio-frequency radiation and tumors in male rats is real,' John Bucher, a senior scientist at the National Toxicology Program, said in a statement.*
>
> *But he cautioned that the exposure levels and durations were far greater than what people typically encounter, and thus cannot 'be compared directly to the exposure that humans experience' …*
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> *The lowest level of radiation in the federal study was equal to the maximum exposure that federal regulations allow for cellphone users … The highest level was four times higher than the permitted maximum."*

While the NTP insists the exposure — nine hours a day for two years, which is the lifetime of a rodent — is far more extensive than that of heavy cellphone users, I would strongly disagree, seeing how many, 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. What's more, cellphones are not the sole source of radiofrequency (RF) EMFs. Wi-Fi and Bluetooth-enabled tablets, computers, smart TVs, wireless baby monitors, cordless phones, smart appliances, smart meters and nearby cellular phone basestations are sources of similarly harmful radiation, and most of us are exposed 24/7.

So, my guess is that the duration of RF-EMF exposure is actually far greater than the one tested in the study.

Did NTP Minimize Press Coverage of Their Report?

According to Microwave News, the NTP may have purposely minimized press coverage of its final report, which upgraded the risks. "Reporters were given very little notice to join the NTP teleconference on the release of the report. Nor was there much time to prepare a story for publication," Microwave News reports,[10] adding they were not informed of the teleconference via email until 10:45 a.m. October 31.

The conference was held at 2 p.m. that same day. While NTP refused to state how many reporters were on the call, the transcript reveals only eight reporters asked questions, giving the impression that many likely missed the advisory. Editors also had precious little time to assign a reporter to cover the story. Microwave News adds:

> *"The news that the NTP now believes the cancer link is "real" was under embargo until the next day, November 1. That gave the news media less than 24 hours to prepare their stories, an unusually short time for a technically complex subject. The main reason for embargoes is to give reporters time to do their homework and prepare a clear and accurate write-up …*
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> *Even the fact that the report was coming out in less than a day was embargoed by the NTP. It apparently wanted no advance notice of any kind … There was one exception among major media outlets: The New York Times … As it happened, [William] Broad, a long-time member of the science desk, was already working on the story. He was making background calls a week earlier …*

There's a long history of New York Times science reporters — Broad included — downplaying, if not outright dismissing, news of electromagnetic health effects. Anyone wanting to conceal the fact that NTP had found 'clear evidence' that cellphone radiation could lead to cancer would likely leak the story to the Times. And the Times delivered.

Here's the headline from its web site: 'Study of Cellphone Risks Finds 'Some Evidence' of Link to Cancer, at Least in Male Rats' … [T]here is the obvious error in the headline: NTP found more than 'some evidence' — it saw 'clear evidence' … The subhead … 'Many Caveats Apply, and the Results Involve Radio Frequencies Long Out of Routine Use,' offers additional — unjustifiable — reasons to discount the NTP finding."

The New York Times also claims the results are out of date due to the fact they used 2G, which is no longer in widespread use, and that 3G, 4G and 5G are "far less successful at penetrating the bodies of humans" due to the higher frequencies. However, there's no evidence to suggest the newer technologies are safer. Quite the contrary. As noted by Microwave News:

"Two different German labs have exposed mice to 3G. Cancer promotion was found in each case. The lead author of the second study, Alex Lerchl, concluded that 3G signals 'obviously enhance the growth of tumors' … The fact is that we don't know whether the higher G's are any safer than 2G. Believing so is simply wishful thinking."

The NTP also downplayed the risks by stressing that "high exposure" was associated with cancer in male rats, when in fact the results in some instances revealed a greater effect at a lower dose.

Such nonlinear dose response was also found in Lerchl's study, in which a dose 50 times lower than the highest dose resulted in a greater response. "At this point, one can only guess where the threshold for RF effects may be. It could be lower than now commonly believed, possibly much lower," Microwave News notes.

Why Rodent Schwannomas Could Spell Trouble for Human Health

As explained by Louis Slesin, Ph.D., editor and publisher of Microwave News, the increased incidence of schwannomas in rodents exposed to radiofrequencies is of great concern for public health:[11]

> *"Schwann cells play a key role in the functioning of the peripheral nervous system. They make the myelin sheath, which insulates nerve fibers and helps speed the conduction of electrical impulses. There are Schwann cells just about everywhere there are peripheral nerve fibers. They are present in most organs of the body — whether mice, rats or humans.*
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> *Schwann cell tumors are called schwannomas. The NTP found schwannomas in many other organs, in addition to the heart, of rats chronically exposed to cellphone radiation. These included a variety of glands (pituitary, salivary and thymus), the trigeminal nerve and the eye … The NTP also saw schwannomas in the uterus, ovary and vagina of female rats.*
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> *The brain has no Schwann cells — the brain is part of the central nervous system. There, glial cells play a similar function. In fact, Schwann cells are a type of glial cell … Tumors of the glial cells are called gliomas. The NTP also saw an increase in glioma among the male rats exposed to GSM and CDMA radiation …*
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> *While schwannomas and gliomas are commonly noncancerous tumors, they can develop into malignant schwannomas or glioblastomas … The implication is that instead of searching for consistency in radio frequencies' ability to cause cancer in specific organs, the emphasis should now be on specific cell types — beginning with Schwann cells in the periphery and glial cells in the brain."*

Mitochondrial Dysfunction Is a Hazard of Cellphone Radiation

In my view, the primary hazard of cellphone radiation is not brain cancer per se but rather systemic cellular and mitochondrial damage,[12,13,14,15] which can contribute to any number of health problems and chronic diseases. The process begins when low-frequency microwave radiation activates voltage-gated calcium channels (VGCCs)[16] — 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. This is reviewed in more detail in my interview with professor Martin Pall below.

For example, excess calcium activates nitric oxide, and while nitric oxide has many health benefits, massively excessive nitric oxide reacts with superoxide to produce peroxynitrites — extremely potent oxidant stressors.[17] Peroxynitrites in turn:

- Can cause single-strand DNA breaks[18]
- Modify tyrosine molecules in proteins to create nitrotyrosine and nitration of structural protein.[19] Changes from nitration are visible in human biopsy of atherosclerosis, myocardial ischemia, inflammatory bowel disease, amyotrophic lateral sclerosis and septic lung disease[20]

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,[21] and is a far greater concern than brain tumors.

EMF Exposure Can Cause Heart Issues, Neurological Disorders

While an estimated 94,390 U.S. men, women and children will be diagnosed with a brain tumor this year,[22] another 787,000 people die from heart disease.[23] So, while the relative rarity of brain cancer may lead you to believe that cellphone use is safe, that's only because you're looking at a less prevalent outcome.

Cellphone radiation has also been shown to have a significant impact on neurological and mental health,[24] contributing to and/or worsening anxiety, depression and dementia, for example, and all of these conditions are rampant and growing more prevalent. (This also makes sense as brain dysfunction will occur much faster than a tumor, which can take decades.)

Research also suggests excessive EMF exposure is contributing to reproductive problems. For example, researchers have found prenatal exposure to power-frequency fields can nearly triple a pregnant woman's risk of miscarriage.[25]

According to lead author and senior research scientist at Kaiser Permanente's research division, Dr. De-Kun Li,[26] "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, there are at least six other studies, in addition to two of his own, showing this link.[27,28,29,30,31] 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.[32,33] 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.[34]

US FDA Stands Firm on Cellphone Safety

NTP's final report has now been given to the U.S. Food and Drug Administration (FDA) and the Federal Communications Commission (FCC), the two agencies involved in the regulation of cellphones and assessment of health risks. Unfortunately, the FDA appears unwilling to change its stance on cellphone safety.

This is no surprise as the telecommunication industry has far more political lobbying influence than Big Pharma and Big Food combined. To expect anything other than full

support for the telecommunication industry would be irrational.

In a November 1 press statement, Dr. Jeffrey Shuren, director of the FDA's Center for Devices and Radiological Health, reaffirmed the agency's position, saying:[35]

> *"The Food and Drug Administration is charged with ensuring cellphones — and any radiation-emitting electronic product — are safe for the public to use. Our scientific expertise and input, along with other health agencies, are used by the [FCC] to set the standards for exposure limits of radiation from cellphones, called radiofrequency energy …*
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> *We reviewed the recently finalized research conducted by our colleagues at the [NTP] … [W]e disagree, however, with the conclusions of their final report regarding 'clear evidence' of carcinogenic activity in rodents exposed to radiofrequency energy.*
>
> *In the NTP study, researchers looked at the effects of exposing rodents to extremely high levels of radiofrequency throughout the entire body. This is commonly done in these types of hazard identification studies and means that the study tested levels of radiofrequency energy exposures considerably above the current whole body safety limits for cell phones … [T]hese findings should not be applied to human cell phone usage.*
>
> *NTP hosted a three-day peer review of this study in March, as part of their normal process for issuing scientific reports … which included an assessment of the study methods and data by a panel of 15 peer reviewers to determine the basis of evidence for the final report.*
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> *Based on their assessment, the panel voted to upgrade the conclusions from some evidence to clear evidence for malignant heart schwannomas in male rats, and from equivocal (ambiguous) to some evidence for malignant gliomas of the brain and benign tumors of the adrenal gland in male rats. It's important to note that the vote does not mean new data or findings were reported in the final assessment …*

Based on our ongoing evaluation of this issue, the totality of the available scientific evidence continues to not support adverse health effects in humans caused by exposures at or under the current radiofrequency energy exposure limits. We believe the existing safety limits for cellphones remain acceptable for protecting the public health."

NTP Findings Have Already Been Reproduced

While the FDA insists it "must thoroughly evaluate and take into consideration the totality of the data, and do so within the context of the complete body of evidence rather than drawing conclusions from the results of a single study," it fails to address the elephant in the room, which is the corroborating evidence published by the Ramazzini Institute just one month after the NTP released its preliminary report in February 2018.

The Ramazzini study[36] reproduces and clearly supports the NTP's findings, showing a clear link between cellphone radiation and Schwann cell tumors (schwannomas)[37,38,39] — but at a much lower power level than that used by NTP.

While NTP used radiofrequency (RF) levels comparable to what's emitted by 2G and 3G cellphones (near-field exposure), Ramazzini simulated exposure to cellphone towers (far-field exposure). Ramazzini's rats were exposed to 1.8 GHz GSM radiation at electric field strengths of 5, 25 and 50 volts per meter[40] for 19 hours a day, starting at birth until the rats died either from age or illness.

To facilitate comparison, the researchers converted their measurements to watts per kilogram of body weight (W/kg), which is what the NTP used. Overall, the radiation dose administered in the Ramazzini study was up to 1,000 times lower than the NTP's — and below the U.S. limits set by the FCC — yet the results are strikingly similar.

As in the NTP studies, exposed male rats developed statistically higher rates of heart schwannomas than unexposed rats. They also found some evidence, although weaker, that RF exposure increased rates of glial tumors in the brains of female rats.

The fact that the Ramazzini study used a radiation dose well below FCC limits yet still reproduced the NTP's findings of cancer really weakens the FDA's claims of safety.

Tech Founders Don't Want Their Own Kids Using Technology

The good news is that after more than a decade of mounting warnings, many are finally starting to take cellphone exposure seriously — at least as it pertains to their kids. Adults still struggle to curb their own cellphone and computer use, but at least minimizing exposure to children is a step in the right direction, and in my view a really crucial one.

The New York Times recently reported on the trend among Silicon Valley parents to forbid the use of tablets, computers, cellphones and TVs by their young children, and nannies are increasingly having to sign contracts to that end. New York Times contributor Nellie Bowles writes:[41]

> *"Even a little screen time can be so deeply addictive, some parents believe, that it's best if a child neither touches nor sees any of these glittering rectangles. These particular parents, after all, deeply understand their allure … Enter the Silicon Valley nanny, who each day returns to the time before screens.*
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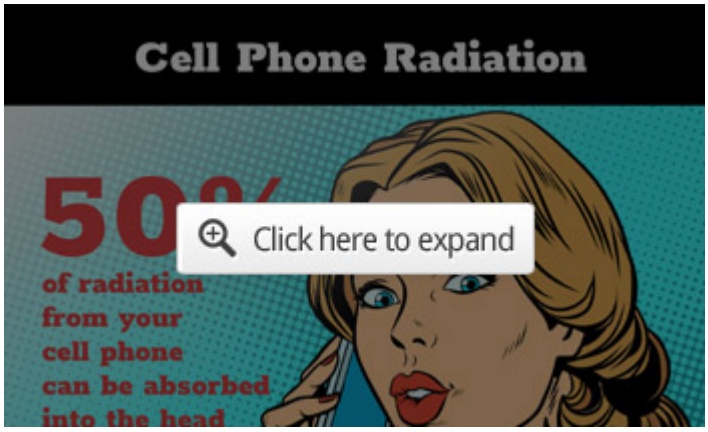
> *'Usually a day consists of me being allowed to take them to the park, introduce them to card games,' said Jordin Altmann, 24, a nanny in San Jose, of her charges. 'Board games are huge. Almost every parent I work for is very strong about the child not having any technical experience at all … In the last two years, it's become a very big deal' …*
>
> *The fear of screens has reached the level of panic in Silicon Valley. Vigilantes now post photos to parenting message boards of possible nannies using cellphones near children. Which is to say, the very people building these glowing hyper-stimulating portals have become increasingly terrified of them …*
>
> *'The people who are closest to tech are the most strict about it at home,' said Lynn Perkins, the CEO of UrbanSitter, which she says has 500,000 sitters in the*

network throughout the United States. 'We see that trend with our nannies very clearly.'"

Take Safety Precautions to Lower Your Family's EMF Exposure



There's no doubt in my mind that **RF-EMF exposure** is a significant health hazard that will damage your DNA and contribute to premature death. It needs to be addressed if you're concerned about your health, and that of your family. To learn more about the special risks RF-EMF pose to your little ones, see "Children's Health Expert Panel on Cellphones and Wi-Fi."

To protect yourself and your family from cellphone radiation and other sources of harmful EMFs, consider taking the following precautions:

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.[42]

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.

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 hardwiring 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.[43]

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%.[44]

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

Replace CFL and LED 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. And, definitely do NOT purchase light bulbs you can control from your cellphone, as they emit RFR just like a Wi-Fi router.

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