

## Cell Towers Harm Human Health

It is a catch 22 to oppose potential claimed health concerns from cell towers because they cannot be measured until the tower is built, because it is clear the tower would not be taken down if exposure limits were exceeded. So opposition to cell towers based on the fact that their signals can't be measured until they are installed is not logically valid.

Thousands of published research studies have demonstrated harm, often significant, often lethal, from RF radiation typical of the signals that are typically transmitted from this type of tower. A significant body of studies shows harm specifically from cell towers.

Public policy development depends on evaluation of currently existing facilities, and extrapolating or universalizing what would take place if identical or very similar technologies were installed.

The following website, referenced by the World Health Organization, lists 32,604 published studies on non-ionizing radiation, not yet classified for harm and effect:

<https://www.emf-portal.org/en>

This is the body of research from which evaluations and estimations of harm and potential harm can be made, and in turn, from which public policy can be formed.

- A. Studies Specifically on Cell Tower Radiation Harm to Human Health
- B. Larger Collections of Published Studies Showing RF Radiation Harm
- C. The Science Lag (Old Science, New Science)
- D. Additional Links for Scientific Research Showing Potential Harm from Non-Ionizing Radiation
- E. General sites on RF Radiation Harm
- F. World Health Organization
- G. Anecdotal Evidence
- H. Summary & Conclusion

### [A. Studies Specifically on Cell Tower Radiation Harm to Human Health](#)

**Safer EMR Dr. Joel Moskowitz: Cell Tower Effects (Several Research Reviews):**

<https://www.saferemr.com/2015/04/cell-tower-health-effects.html>

**Scientists for Wired Technology: Studies Establish that 4g/5g Causes Adverse Effects in Humans, Animals, and Insects:**

<https://scientists4wiredtech.com/2020/04/studies-establish-that-4g-5g-causes-adverse-effects-in-humans-animals-and-insects/>

<https://ehtrust.org/cell-towers-and-cell-antennae/compilation-of-research-studies-on-cell-tower-radiation-and-health/>

**Physicians for Safe Technology: Cell Tower Health Effects:**

<https://midsafetech.org/?s=tower+studies>

**American Academy of Environmental Medicine**

<https://tinyurl.com/AAEM-Cell-Tower-Articles>

**Magda Havas, M.D.**

<https://magdahavas.com/5g-and-mm-waves/iarc-declares-rf-from-cell-phones-and-cell-towers-dangerous/>

**“Irradiated” (Comprehensive Analysis of Scientific Literature on RF Fields and Their Negative Biological Impact) Cell Towers: pp. 236-8**

**Although the following article from “Irradiated” below is written by a layperson and published in a non-scientific magazine, it is provided because its focus is on cell towers, and, to highlight the importance of what I refer to as the “science lag” between older, lower quality research showing no harm from RF radiation, and newer, higher quality research showing significant harm from RF radiation. In addition, scientific references are given throughout the article.**

**“Dangers of living near cell phone towers raised”**

[https://www.eastcountymagazine.org/cell\\_phone\\_towers\\_238](https://www.eastcountymagazine.org/cell_phone_towers_238)

“... I expected to find reassuring facts to allay...concerns. Instead, I found deeply disturbing data that makes me wonder why the public is not being informed about health risks—and why our government seems intent on covering up troubling truths. Cell phone companies and the U.S. Food and Drug Administration assert that cell phone towers don’t pose health risks to the public. Some studies support this assertion, but other studies suggest just the opposite. [this difference is explained below in the Section C., ‘Science Lag’]

“Harvard-trained Dr. Andrew Weil at the University of Arizona’s medical center recently observed, “In January 2008, the National Research Council (NRC), an arm of the National Academy of Sciences and the National Academy of Engineering, issued a report saying that we simply don’t know enough about the potential health risks of long-term exposure to RF energy from cell phones themselves, cell towers, television towers, and other components of our communications system. The scientists who prepared the report emphasized, in particular, the unknown risks to the health of children, pregnant women, and fetuses as well as of workers whose jobs entail high exposure to RF (radiofrequency) energy,.Because so much of cell phone technology is new and evolving, we don’t have data on the consequences of 10, 20 or 30 years’ worth of exposure to the RF energy they emit,”

“Weil concluded. The report called for long-term safety studies on all wireless devices including cell phones, computers, and cell phone towers. A 2006 report issued by the World Health Organization (WHO) offered some reassurance and found no scientific evidence that radiofrequency signals from cell towers cause adverse health effects. The report noted that up to five times more of the RF signals from FM radio and television (than from cell towers) are absorbed by the body with no known adverse effects on health in the more than 50 years that radio and TV broadcast stations have been operating.

“But an Australian study found that children living near TV and FM broadcast towers, which emit similar radiation to cell towers, developed leukemia at three times the rate of children living over seven miles away. If you live within a quarter mile of a cell phone antenna or tower, you may be at risk of serious harm to your health, according to a German study cited at [www.EMF-Health.com](http://www.EMF-Health.com), [may not come up now] a site devoted to exposing hazards associated with electromagnetic frequencies from cell phone towers and other sources. Cancer rates more than tripled among people living within 400 meters of cell phone towers or antennas, a German study found. Those within 100 meters were exposed to radiation at 100 times normal levels. An Israeli study found risk of cancer quadrupled among people living within 350 meters (1,148 feet) of a cell phone transmitter—and seven out of eight cancer victims were women. Both studies focused only on people who had lived at the same address for many years. “Other studies have found that levels of radiation emitted from cell phone towers can damage cell tissues and DNA, causing miscarriage, suppressing immune function, and causing other health problems.

“Astoundingly, the federal government does not allow rejection of a cell phone tower based on health risks, according to a 2005 article. A Google search found no evidence that this situation has

changed. Yet over 1.9 million cell phone towers and antennae have been approved nationwide without federal studies to assure safety of those living nearby. How many cell phone towers and antennas are in your neighborhood? Find out at [www.antennasearch.com](http://www.antennasearch.com). I plugged in my address on Mt. Helix, hardly an urban stronghold, and was astounded to discover that there are 96 cell phone towers, 286 antennas and 2 proposals for new towers within four miles of my home!...Churches, schools, fire stations, and other buildings are increasingly erecting cell phone towers or antennas because cell phone companies are willing to pay rental fees of hundreds or even thousands of dollars a month—welcome infusions for cash-strapped budgets.

“But at what cost to the public’s health?...In Sweden, the government requires interventions to protect the public from electromagnetic frequencies. Why isn’t the U.S. government paying attention to this potential risk to public safety. New evidence indicates that cell phones are damaging more than just our social lives. Indeed, cell towers may actually be altering the function of your brain by inhibiting your thought process, decreasing your appetite and your ability to sleep and causing irritability. A study recently published by the British Medical Journal and led by professor Enrique A. Navarro concluded that the severity of these types of symptoms was directly correlated with cell tower exposure. The closer a person lives to a cell tower, the more pronounced the symptoms will be – regardless of the demographic.

“Cell towers rely on electromagnetic switching signals in order to broadcast and receive data. The human body, most especially the brain, also uses electromagnetic impulses to send and transmit messages along different pathways. This is essential for normal function across the body system. Scientists have long suspected that being subject to even low levels of EMF pollution, or electropollution, could have ill effects on the brain and body. This new study supports past suspicions and adds to the current body of proof that cell towers can be harmful.

“Electromagnetic hypersensitivity is an increasingly frequent phenomenon that is being dismissed by many doctors and scientists as a made-up condition. A 2010 meta-analysis found that 80 percent of the reviewed studies indicated that cell phone tower proximity correlated with a higher prevalence of adverse symptoms and cancer, yet many conventional doctors and industry-fed scientists refuse to admit that these effects are real. What is most shocking is that these symptoms have all been reported by people living near towers that currently meet the required safety guidelines. Navarro suggests that this means our current guidelines on cell phone tower safety are not sufficient enough to protect the public. People who live less than 500 meters from a cell phone tower are at an exceptionally high risk, due to the nature of electromagnetic fields. Electropollution severity is calculated by the inverse square of distance. This means that someone who lives twice as close to the cell tower will be subject to four times the amount of radiation. Living within 21 miles of a cell tower means you are exposed to a reasonably significant level of electropollution. There are presently 190,000 cell towers within the U.S., and that number is continuing to grow. It is suspected that at least people are affected by cell phone towers, if not more.

<http://www.emf.news/2016-06-23-scientific-evidence-shows-that-americans-brains-are-being-fried-by-cell-towers.html>

**The abstract below is from “Irradiated” p. 276, provided in text because its focus is on cell towers:**

**“Impacts of radio-frequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem – a review”**

**Abstract:** This paper summarizes the effect of radio-frequency electromagnetic field (RF-EMF) from cell towers and wireless devices on the biosphere. Based on current available literature, it is justified to conclude that RF-EMF radiation exposure can change neurotransmitter functions, blood-brain barrier, morphology, electrophysiology, cellular metabolism, calcium efflux, and gene and protein expression in certain types of cells even at lower intensities. The biological consequences of such changes remain unclear. Short-term studies on the impacts of RF-EMF on frogs, honey bees, house sparrows, bats, and even humans are scarce and long-term studies are non-existent in India. Identification of the frequency, intensity, and duration of non-ionizing electromagnetic fields causing

damage to the biosystem and ecosystem would evolve strategies for mitigation and would enable the proper use of wireless technologies to enjoy its immense benefits, while ensuring one's health and that of the environment. Conclusion: The Department of Telecommunication (DoT) in India has set new norms for cell phone towers with effect from September 1, 2012 (*The Hindu*, 2012). Exposure standards for RF-EMF radiation has been reduced to one-tenth of the existing level and SAR from 2 to 1.6 W/kg. This came after the Ministry of Environment and Forests (MOEF) set up an Inter-Ministerial Committee (IMC) to study the effects of RF-EMF radiations on wildlife (Figure 2) and concluded that **out of the 919 research papers** collected on birds, bees, plants, other animals, and humans, **593 showed impacts**, 180 showed no impacts, and 196 were inconclusive studies. They conclude that there are no long-term data available on the environmental impacts of RF-EMF radiations in India. The population of India is increasing as well as the cell phone subscribers and the cell towers as supporting infrastructure. Hence, there is an urgent need to fill the gaps and do further research in this field with emphasis on the effects of early life and prenatal RF-EMF radiation exposure in animals, dosimetry studies, cellular studies using more sensitive methods, and human epidemiological studies, especially on children and young adults on behavioral and neurological disorders and cancer. Meanwhile, **one can take the precautionary principle approach and reduce RF-EMF radiation effects of cell phone towers by relocating towers away from densely populated areas**, increasing height of towers or changing the direction of the antenna.

[http://www.biomedonline.com/Articles/Vol4\\_4\\_2012/Vol4\\_4\\_202-216\\_BM-8.pdf](http://www.biomedonline.com/Articles/Vol4_4_2012/Vol4_4_202-216_BM-8.pdf)

<https://wirelessaction.files.wordpress.com/2017/04/irradiated.pdf>

### **New Hampshire State Report on Health and Environmental Effects of 5G and Wireless Radiation:**

<https://ehtrust.org/new-hampshire-state-report-on-health-and-environmental-effects-of-5g-and-wireless-radiation/> **(Nov. 1, 2020)**

<http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>

#### **Recommendations 3, 5, 6, 7 (pp. 12-13) Cell Towers pp. 99**

**The following text is provided because a) it is specifically on cell towers, and b) it is from a particularly high credibility source, the official report of the New Hampshire State Commission on 5G and wireless radiation, published less than three months ago (Nov. 1):**

#### **Cell Tower Siting Restrictions Appendix K pp. 97-105**

##### **Appendix K Siting restrictions for wireless antennae**

The siting restrictions for cell phone towers already in force in the world were intended to ensure the safety of vulnerable populations, like children and those with illnesses. India already prohibits placement of cell phone towers near schools or hospitals, and Canada (Standing Committee on Health), as well as many European countries, are looking into similar restrictions.

**CALIFORNIA FIREMEN** California firemen are exempted from the forced placement of towers on or adjacent to their stations, because of radiation health concerns. "The International Association of Fire Fighters' position on locating cell towers commercial wireless infrastructure on fire department facilities, as adopted by its membership in August 2004, is that the IAFF oppose the use of fire stations as base stations for towers and/or antennas for the conduction of cell phone transmissions until a study with the highest scientific merit and integrity on health effects of exposure to low-intensity RF/MW radiation is conducted and it is proven that such sitings are not hazardous to the health of our members."

<https://ecfsapi.fcc.gov/file/109281319517547/20-Attachment%2020-%20Firefighters%20Inter%20Resolution%20Against%20Cell%20Towers.pdf> <https://vimeo.com/122670207> <https://web.archive.org/web/20150403040308/http://www.stopcellphonetowers.com/index.html%20> [https://www.youtube.com/watch?v=61h\\_vuBujw0](https://www.youtube.com/watch?v=61h_vuBujw0) <http://cbsloc.al/2DNAYA5> <https://sanfrancisco.cbslocal.com/2018/01/25/consumerwatch-5g-cellphonetowers-signal-renewed-concerns-over-impacts-on-health>)

[https://ehtrust.org/wp-content/uploads/HARDELL-14-October-2014\\_1-1.pdf](https://ehtrust.org/wp-content/uploads/HARDELL-14-October-2014_1-1.pdf)

This was codified in Government, section 65964.1. (f) as enacted by California's legislation AB 57 in 2015: "Due to the unique duties and infrastructure requirements for the swift and effective deployment of firefighters, this section does not apply to a collocation or siting application for a wireless telecommunications facility where the project is proposed for placement on fire department facilities."

A similar provision was included in California's SB 649 (2018), "Wireless Telecommunications Facilities" under item 65964.2.: "(a) A small cell shall be a permitted use subject only to a permitting process adopted by a city or county pursuant to subdivision (b) if it satisfies the following requirements: ... (3) The small cell is not located on a fire department facility." On October 15, 2018, Governor Jerry Brown vetoed SB 649, the so-called small cell bill, which would have usurped local authority over the siting of telecom equipment. To the Members of the California State Senate: I am returning Senate Bill 649 without my signature. This bill establishes a uniform permitting process for small cell wireless equipment and fixes the rates local governments may charge for placement of that equipment on city or county owned property, such as streetlights and traffic signal poles. There is something of real value in having a process that results in extending this innovative technology rapidly and efficiently. Nevertheless, I believe that the interest which localities have in managing rights of way requires a more balanced solution than the one achieved in this bill. Sincerely, Edmund G. Brown Jr.

**ESTABLISHING SETBACK** To increase wireless data rates, the 5G industry seeks higher frequencies. These frequencies distribute energy in a smaller fraction of the body and need higher field intensities because of (1) poor penetration into structures, (2) absorption of radiation by oxygen and water, (3) shrinking antenna apertures, as well as (4) noise from an increasing number of extraneous sources. For human users, this means increased power density exposures. In addition, exposures will become more irregular because of beam-forming, as well as originate from multiple sources (Multiple-Input Multiple-Output architecture). Since there is no epidemiological or animal data, and very few laboratory results using 5G, **cautionary setbacks should be established** by the municipalities based upon past 3G and 4G systems. The verdict on animal studies is expressed in reports by (1) the US National Toxicology Program, (2) the Ramazzini Institute, and by older studies by (3) Chou (1992) and (4) Repacholi (1997).

The verdict on epidemiology is expressed in two reports (ELF and RF) from the International Agency for Research on Cancer ("possibly carcinogenic"), which Agency is scheduled to review evidence on RF carcinogenicity between now and 2024.

Senator Blumenthal: <https://www.radiationresearch.org/articles/us-senator-blumenthal-raisesconcerns-on-5g-wireless-technology-health-risks-at-senate-hearing-youtube/>

US National Toxicology Program – Impact of Cell Phones: <https://ntp.niehs.nih.gov/results/areas/cellphones/index.html>

Ramazzini Institute – Impact of Base Stations: <https://www.ncbi.nlm.nih.gov/pubmed/29530389>

International Agency for Research on Cancer – ELF: <https://monographs.iarc.fr/wp-content/uploads/2018/06/mono80.pdf>

[https://www.iarc.fr/wp-content/uploads/2018/07/pr208\\_E.pdf](https://www.iarc.fr/wp-content/uploads/2018/07/pr208_E.pdf) 100

International Agency for Research on Cancer – RF: <https://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Non-ionizing-Radiation-Part2-Radiofrequency-Electromagnetic-Fields-2013> [https://www.iarc.fr/wp-content/uploads/2018/07/pr208\\_E.pdf](https://www.iarc.fr/wp-content/uploads/2018/07/pr208_E.pdf)

Chou, 1992: <https://onlinelibrary.wiley.com/doi/abs/10.1002/bem.2250130605>

Repacholi, 1997: <https://www.ncbi.nlm.nih.gov/pubmed/9146709>

As vulnerable individuals are exposed involuntarily every day in society to RF radiation, **caution should be universally used and set** according to the Largest Observed Adverse Effect Distance (LOAED), using the experience from past and current 2G, 3G, and 4G networks. A conservative LOAED should include all observed health effects. **Best engineering practice would therefore apply a set-back requirement for new cellular towers**, including 5G micro-towers. From the 17 documents referred to in this appendix, shown below in historical order, **this set-back for all new cell towers should be 500 meters which translates to 1,640 feet.**

All of these studies have been given support by a recent animal study from the Ramazzini Institute that links to them, as well as to the US National Toxicology Program result on cell phones.

## REFERENCES

Paola Michelozzi, Alessandra Capon, Ursula Kirchmayer, Francesco Forastiere, Annibale Biggeri, Alessandra Barca, and Carlo A. Perucci. "Adult and Childhood Leukemia near a High-Power Radio Station in Rome," Italy.

American Journal of Epidemiology, Vol. 155, No. 12, (2002) 1096-1103.

Michelozzi et al 2002 describe an increased risk for childhood leukemia at distances up to 6 km from the powerful Vatican Radio transmitters near Cesano, Italy, which led to compensation by decision of Italy's Supreme Court (relative risk of 7 for lymphomas and myeloma, and 5 for non-Hodgkin's lymphoma and leukemia).

<https://pubmed.ncbi.nlm.nih.gov/12048223/> 101 R. Santini, P. Santini, P. Le Ruz, J. M. Danze, and M. Seignel. "Survey Study of People Living in the Vicinity of Cellular Phone Basestations." Electromagnetic Biology and Medicine. Vol. 22, No. 1, pp. 41-49, 2003.

Santini et al 2003 surveyed by questionnaire 530 people living or not in proximity to cellular phone Base Stations (BSs) in France. Eighteen different symptoms (Non-Specific Health Symptoms-NSHS), described as radiofrequency sickness, were studied. Certain complaints are experienced only in the immediate vicinity of BSs (up to 10 m for nausea, loss of appetite, visual disturbances), and others at greater distances from BSs (up to 100 m for irritability, depressive tendencies, lowering of libido, and up to 200 m for headaches, sleep disturbances, feeling of discomfort). In the 200 m to 300 m zone, only the complaint of fatigue is experienced significantly more often when compared with subjects residing at more than 300 m or not exposed (reference group). For seven of the studied symptoms and for the distance up to 300 m, the frequency of reported complaints is significantly higher ( $P < 500$  meters from BSs).

<https://pubmed.ncbi.nlm.nih.gov/20662418/>

Adilza C. Dode, Mônica M.D. Leão, Francisco de A.F. Tejo, Antônio C.R. Gomes, Daiana C. Dode, Michael C. Dode, Cristina W. Moreira, Vânia A. Condessa, Cláudia Albinatti, Waleska T. Caiaffa. "Mortality by neoplasia and cellular telephone base stations in the Belo Horizonte municipality, Minas Gerais state, Brazil." Science of the Total Environment 409 (2011) 3649–3665.

**Dode et al 2011 provides the most detailed information.** Belo Horizonte is the third largest city in Brazil. It was been selected by the Population Crisis Committee of the United Nations (UN, 2007) as the metropolis with the best quality of life in Latin America. Its health system is considered very good, according to the Atlas of Human Development (2000/United Nations Development Program). In 2011, a **10-year study on cell phone antennas** was released by the Municipal Health Department and several local universities. The study was conducted in a broad environmental context, aiming to verify if there is a spatial correlation between the cellular telephony system BS location and the cases of death by neoplasia during the period between 1996 and 2006. Three data banks were used: 1. death by neoplasia documented by the Municipal Health Department; 2. BS documented in ANATEL (Telecommunications National Agency); and 3. census and demographic city population data obtained from official archives provided by IBGE (Brazilian Institute of Geography and Statistics). The results show that approximately 856 BSs were installed through December 2006. Between 1996 and 2006, 7191 deaths by neoplasia occurred and, within an area of

500 m from the BS, the mortality rate was 34.76 per 10,000 inhabitants. Outside of this area, a decrease in the number of deaths by neoplasia occurred. The greatest accumulated incidence was 5.83 per 1000 in the Central-Southern region and the lowest incidence was 2.05 per 1000 in the Barreiro region. During the environmental monitoring, the largest electric field measured was 12.4 V/m and the smallest was 0.4 V/m. The largest power density was 407,800  $\mu\text{W}/\text{m}^2$ , and the smallest was 400  $\mu\text{W}/\text{m}^2$ .

<https://pubmed.ncbi.nlm.nih.gov/21741680/>

Ermanno Affuso, J. Reid Cummings, Huubinh Le. "Wireless Towers and Home Values: An Alternative Valuation Approach Using a Spatial Econometric Analysis." *Journal of Real Estate Finance and Economics* (2018) 56:653–676. DOI 10.1007/s11146-017-9600-9. 103

Affuso et al 2018 examines the economic impact on home values. For properties located within 0.72 kilometers of the closest tower, results reveal significant declines of 2.46% on average, and up to 9.78% for homes within tower visibility range compared to homes outside tower visibility range. <https://link.springer.com/article/10.1007/s11146-017-9600-9>

Falcioni L., L. Bua, E. Tibaldi, M. Lauriola, L. De Angelis, F. Gnudi, D. Mandrioli, M. Manservigi, F. Manservigi, I. Manzoli, I. Menghetti, R. Montella, S. Panzacchi, D. Sgargi, V. Strollo, A. Vornoli, F. Belpoggi. Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission. *Environmental Research* 165 (2018) 496–503.

Falcioni et al 2018 conclude: the Ramazzini Institute findings on far field exposure to RFR are consistent with and reinforce the results of the NTP study on near field exposure, as both reported an increase in the incidence of tumors of the brain and heart in RFR-exposed Sprague-Dawley rats. These tumors are of the same histotype of those observed in some epidemiological studies on cell phone users. These experimental studies provide sufficient evidence to call for the reevaluation of IARC conclusions regarding the carcinogenic potential of RFR in humans.

<https://www.avaate.org/IMG/pdf/belpoggi-heart-and-brain-tumors-base-station2018.pdf>

J.M. Pearce. "Limiting liability with positioning to minimize negative health effects of cellular phone towers." *Environmental Research* 181 (2020) 108845.

**Pearce et al 2020 provides the most recent assessment and promotes a 500 m set-back to limit future liabilities of the cell phone industry, based on correlation with headaches, dizziness, depression and other neurobehavioral symptoms, as well as increased cancer risk. It is almost inevitable that such economic impacts will increase in the future:**

<https://www.sciencedirect.com/science/article/abs/pii/S0013935119306425>

#### Other References

Buchner K et al. (2011): [Modification of clinically important neurotransmitters under the influence of modulated high-frequency fields - A long-term study under true-to-life conditions]. In German. Abstract translation below. 104 This long-term study over one and a half years shows a significant activation of the 60 participants' adrenergic systems after the installation of a regional mobile telephone transmitting station in the village of Rimbach (Bavaria).

The values of the stress hormones adrenaline and noradrenaline grow significantly during the first six months after starting the GSM transmitter; the values of the precursor substance dopamine decreases substantially after the beginning of the radiation (Wilcoxon test, p The initial condition is not restored even after one and a half years. Due to the not regulable chronic difficulties of the stress balance, the phenylethylamine (PEA) values drop until the end of the research period (Wilcoxon test, p <0.0001). The initial condition is not restored even after one and a half years. Due to the not regulable chronic difficulties of the stress balance, the phenylethylamine (PEA) values drop until the end of the research period (Wilcoxon test, p<0.0001). The effects show a dose effect relation and are situated far under the valid limits for technical high-frequency stress. Chronic dysregulations of

the catecholamine system have substantial health relevance and cause health damages in the long run.

Wolf R, Wolf D. "Increased incidence of cancer near a cell-phone transmitter station." *Int J Canc Prev* 2004; 1 (2): 123-128. Publication unavailable online. Conclusion according to the authors: Of the 622 people of area A, 8 cases of different kinds of cancer were diagnosed in a period of one year (from July 1997 - June 1998). The cancer incidence rate was 129 cases per 10,000 persons per year in area A compared to 16/10,000 in area B and 31/10,000 in the town of Netanya. Relative cancer rates for females were 10.5 for area A, 0.6 for area B and 1 for Netanya. The authors conclude that the study indicates an association between increased incidence of cancer and living in proximity to a mobile phone base station.

Eger H, Hagen KU, Lucas B, Vogel P, Voit H. [Influence of proximity to mobile telephony transmitters on cancer incidence]. *Umwelt-Medizin-Gesellschaft* 2004; 17 (4): 326-332. In German. Author's conclusion translated below. 320 of 967 residents of Naila have been living in the inner circle at a distance to the next base station of less than 400 m. The results showed an increased risk for malignant tumors for patients living closer than 400 m to the mobile telephony transmitter compared to patients living further away. 105 In the years 1999 - 2004 the risk for malignant tumors tripled for patients living in the proximity of the mobile telephony transmitter.

## **B. Large Collections of Published Studies Showing RF Radiation Harm:**

**Bioinitiative Report** <http://www.bioinitiative.org/research-summaries/>

**ORSAA (Oceania Radiofrequency Scientific Advisory Association):**

[https://www.orsaa.org/uploads/6/7/7/9/67791943/a\\_novel\\_database\\_of\\_bio-effects\\_from\\_non-ionizing\\_radiation.pdf](https://www.orsaa.org/uploads/6/7/7/9/67791943/a_novel_database_of_bio-effects_from_non-ionizing_radiation.pdf)

**Powerwatch.org appears to have very approximately 500-600 studies showing harm (and far fewer showing no harm)**

<https://www.powerwatch.org.uk/science/studies.asp>

**Christopher Dodge US Naval Observatory 1969 Microwave Research Bibliography**

<https://magdahavas.com/from-zorys-archive/pick-of-the-week-6-clinical-hygienic-aspects-of-exposure-to-electromagnetic-fields/>

**2,300-Study Bibliography of Microwave Bio Effects by Dr. Zorys Glaser, US Medical Naval Medical Institute, 1971/2**

<http://magdahavas.com/introduction-to-from-zorys-archive/>

## **C. The Science Lag (Old Science, New Science)**

1. Dr. David Carpenter states in *Scientific American*, May, 2016, that the current common view that RF radiation is not harmful was due to early research using short term / small sample research designs. And that the National Toxicology Study which had just been released, with its long term / large sample design, had indicated that RF radiation could or did cause harm, creating an 'old-science/new-science' scenario, in which lesser quality earlier research is being replaced by better current research designs, in which harm from RF radiation is beginning to show up.

<https://www.scientificamerican.com/article/major-cell-phone-radiation-study-reignites-cancer-questions/> (paragraph 14 starting, "The findings shocked...")



2. De. De-Kun Li (M.D., PhD, MPH, Kaiser Permanente) states a second reason that earlier studies did not show harm - poor or less accurate techniques of measuring RF radiation, which then created a body of poorly done research showing no harm, since the poor research method used in the first two studies was followed in many subsequent studies:

<https://www.healthandenvironment.org/webinars/96433> (second 15-minute presentation)

In contrast, Dr. Li has published a more recent study showing 250-500% increases in miscarriages, infant ADHD, thyroid problems, and obesity, from exposure of pregnant women to non-ionizing radiation (mentioned in the webinar).

This suggests a substantial RF radiation 'science gap,' in which some earlier science showed no harm due to lesser or lower quality research designs, and more current, better designed studies showing harm.

There is not only a science gap, but a media/info gap about that science. Better research method is utilized and spreads, but it takes much additional time for the media to catch up.

Both those gaps, of scientific research, and scientific and public awareness, will predictably close.

### Electrosmog

It has often been found that there is a synergistic effect from various different sources of RF radiation, such that other sources of RF radiation (cell phones, local and satellite wifi, smart meters, etc.) may begin to cause health problems only after towers have been installed. And visa versa – tower radiation issues may begin when other RF radiation devices are introduced after the towers. This rapidly increasing atmosphere of a variety of radiation sources, and the massively complex constructive and destructive interference patterns of the many and varied sources, is referred to as electrosmog.

### D. Additional Links for Scientific Research Showing Potential Harm from Non-ionizing Radiation (not necessarily specific to cell phone towers)

#### American Academy of Environmental Medicine (AAEM)

[https://www.aaemonline.org/emf\\_rf\\_position.php](https://www.aaemonline.org/emf_rf_position.php)

<http://emfsafetynetwork.org/wp-content/uploads/2009/11/AAEM-Resolution.pdf>

#### Bio-Initiative Report <http://www.bioinitiative.org/>

<http://www.bioinitiative.org/updated-research-summaries-december-2017/> (Updated 2017)

<http://www.bioinitiative.org/cell-phone-radiation-study-confirms-cancer-risk/> (on NTP Study)

California Brain Tumor Association <https://www.facebook.com/CALIBTA/>

Create Healthy Homes: [http://www.createhealthyhomes.com/emf\\_research.php](http://www.createhealthyhomes.com/emf_research.php)

#### Environmental Working Group

<https://www.ewg.org/search/site/electromagnetic>

<https://www.ewg.org/research/cellphone-radiation>

#### European Academy for Environmental Medicine

<https://pubmed.ncbi.nlm.nih.gov/27454111/>

#### Experimental Oncology

<http://www.magdahavas.com/wordpress/wp-content/uploads/2011/07/>

[Yakymenko\\_cancer\\_MW2011.pdf](#)

**IASS Wireless and Health Conference (Israel Institute for Advanced Studies)** <https://www.youtube.com/watch?v=QvPg1AyQ43I>

**Institute of Electrical and Electronics Engineers (IEEE):**

<https://spectrum.ieee.org/the-human-os/biomedical/ethics/cellphone-radiation-causes-cancer-in-rats>

<https://spectrum.ieee.org/energywise/energy/the-smarter-grid/smart-meter-fire-reports>

<https://ieeexplore.ieee.org/document/8425056>

**International Scientists Appeal (Warning from 223 scientists from 41 countries)**

<https://www.emfscientist.org/index.php/emf-scientist-appeal>

**“Irradiated” (Comprehensive Analysis of Scientific Literature on RF Fields and Their Negative Biological Impact)**

<https://wirelessaction.files.wordpress.com/2017/04/irradiated.pdf>

**International Electromagnetic Fields Alliance** <http://www.iemfa.org/>

**International Society of Doctors for the Environment** [http://www.isde.org/5G\\_appeal.pdf](http://www.isde.org/5G_appeal.pdf)

**National Association for Children and Safe Technologies**

<https://www.ehhi.org/cell-phones.php>

**National Cancer Institute**

The following NCI page is revealing:

a) Does not mention cell phones, although cell phone radiation has been heavily studied, so the current primary source of the most potentially harmful RF radiation is omitted.

b) Neglects the ‘science lag,’ saying research results are “inconsistent,” without indicating that older studies tend to show no harm, and newer studies tend to find harm (De-Kun Li, MD, PhD, MPH, Kaiser Permanente, and Dr. David Carpenter, SUNY).

c) Implies repeatedly that since no mechanism is understood for how harm from RF takes place, that it is not really taking place

d) Often shows the ‘no harm’ statements last, after ‘harm’ statements (PR professionals know that final statements are more powerful, as they are what the reader is left with. For example, see the section: “What do expert organizations conclude about the cancer risk from EMFs?”

e) No documents/references are listed which take the position that RF may be significantly harmful, even though published by high credentialed experts.

<https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet>

The NCI page on ‘new’ research has only two 20-year old studies, despite over 5,000 new studies on RF radiation have been published since then:

<https://dceg.cancer.gov/research/public-health-impact/electromagnetic-fields>

**National Toxicology Program RF Study**

<http://www.bioinitiative.org/cell-phone-radiation-study-confirms-cancer-risk/> (on NTP Study)

<https://www.saferemr.com/2016/05/national-toxicology-progam-finds-cell.html>

<https://www.youtube.com/watch?v=TCRF71eMZ1Q&feature=youtu.be>

**New Hampshire State Commission Report on Health and Environmental Effects of 5g:**

For example, Recommendations 3, 5, 6, 7 (pp. 12-13)

<http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>

<https://ehtrust.org/new-hampshire-state-report-on-health-and-environmental-effects-of-5g-and-wireless-radiation/>

**Oceania Radiofrequency Scientific Advisory Association** <http://www.orsaa.org/>

<https://www.orsaa.org/orsaa-research-papers.html>

**Ramazzini Institute RF Study (a major study which replicated the large US NIH study finding of increased cancer from RF radiation):**

<https://pubmed.ncbi.nlm.nih.gov/29530389/>

**Russian National Committee on Non-Ionizing Radiation Protection**

<http://www.emfsa.co.za/news/letter-russian-national-committee-non-ionizing-radiation-protection/>

**Introduction:**

“It has just come to our attention that the WHO RF Working group consists mainly from present and past ICNIRP members. In general, the WG is not balanced and does not represent the point of view of majority scientific community studying effects of RF. In particular, the private self-elected organization ICNIRP, similar as majority of the current WHO RF WG members, does not recognize the non-thermal RF effects, which represent the main concern of widespread exposure to mobile communication and upholding guidelines from 1996, which are based on RF thermal effects only. Thus, the guidelines of ICNIRP are irrelevant to present situation when majority of population over the world is chronically exposed to non-thermal RF from mobile communication.

Based on multiple Russian studies and emerging number of studies coming from other countries, RNCNIRP has consistently warned against possible health effects from mobile communication. The point of view of RNCNIRP is supported by hundreds of new publications including well known recent RF studies in human and animals.

**Balancing of the evaluation group is a key factor to achieve a credible conclusion. We request that this main principle of scientific evaluation would be followed up by the WHO in the evaluation of RF health effects by balancing the WHO RF working group.”**

**E. General sites on RF Radiation with significant content related to scientific research on RF Radiation’s harmful effects:**

**Cell Phone Task Force (Arthur Firstenberg)** <http://www.cellphonetaskforce.org/>

**Citizens for a Radiation Free Community** <http://citizensforaradiationfreecommunity.org/>

**Create Healthy Homes** [http://www.createhealthyhomes.com/cellphone\\_risks.php#top](http://www.createhealthyhomes.com/cellphone_risks.php#top)

**Digital Disconnect** <https://digitaldisconnect.org/2015/11/11/environmental/>

**Electrical Pollution (This site is titled in terms of dirty electricity, but is a general site)** <http://electricalpollution.com/>

**Electromagnetic Health This site has a less professional appearance, but features well-credentialed scientists:** <http://electromagnetichealth.org/>

**Electromagnetic Safe Planet (Paul Doyon)** <http://electromagneticsafeplanet.com/>

**Electronic Silent Spring Katie Singer** <http://www.electronicssilentspring.com/>

**Electrosmog Prevention** <http://www.electrosmogprevention.org/>

**EMFacts** <https://www.emfacts.com/>  
**EMF Community** <https://emfcommunity.com/>  
**EMF and Health** <http://emfandhealth.com/> **Focus on Published EMR Research**  
**EMF-Portal (Large NIR/EMR Research DB in the world)** <https://www.emf-portal.org/en>  
**EMF Research** <http://www.emfresearch.com/>  
**EMFS** <http://www.emfs.info/>  
**EMF Safety Network** <http://emfsafetynetwork.org/>  
**EMF Scientist** <https://www.emfscientist.org/>  
**EM Radiation** <http://www.radiationresearch.org/>  
**Environmental Radiation Steven Magee** <http://www.environmentalradiation.com/>  
**Environmental Working Group** <https://www.ewg.org/>  
**EON3 EMF Blog** <https://eon3emfblog.net/>  
**Grassroots Environmental Education**  
<http://www.grassrootsinfo.org/cellphonesandwireless.php>  
<http://grassrootsinfo.org/emergingscience.php#section9>  
**Maisonsaine** [https://maisonsaine.ca/wp-content/uploads/2013/12/CAVI\\_Society\\_attachment.pdf](https://maisonsaine.ca/wp-content/uploads/2013/12/CAVI_Society_attachment.pdf)  
**Microwave News** The original progenitor website on microwave for the public: <http://microwavenews.com/>  
**National Grid** Good collection of institutional scientific sources showing harm  
[https://www9.nationalgridus.com/non\\_html/shared\\_env\\_emfs.pdf](https://www9.nationalgridus.com/non_html/shared_env_emfs.pdf)  
**Research Gate** <https://www.researchgate.net/topic/EMF>  
**Science20** [http://www.science20.com/pr\\_newswire\\_uk/renowned\\_scientists\\_issue\\_wake\\_up\\_call\\_on\\_emf\\_and\\_rf\\_radiation\\_hazards](http://www.science20.com/pr_newswire_uk/renowned_scientists_issue_wake_up_call_on_emf_and_rf_radiation_hazards)

## **F. World Health Organization**

**World Health Organization (WHO)** <http://www.who.int/peh-emf/research/database/en/>

The above url has been changed to describe emf-portal.org DB.

The following Wikipedia article states that the WHO classifies cell phone use as possibly carcinogenic:

[https://en.wikipedia.org/wiki/Mobile\\_phone\\_radiation\\_and\\_health](https://en.wikipedia.org/wiki/Mobile_phone_radiation_and_health)

The International Agency for Research on Cancer is a division of the WHO. Oddly, the WHO itself states no harm, while its own sub-agency does state harm.

[https://en.wikipedia.org/wiki/Wireless\\_device\\_radiation\\_and\\_health](https://en.wikipedia.org/wiki/Wireless_device_radiation_and_health)

“...the [World Health Organization](#) established the *International EMF Project* in 1996 to assess the scientific evidence of possible health effects of EMF in the frequency range from 0 to 300 GHz. They have stated that although extensive research has been conducted into possible health effects of exposure to many parts of the frequency spectrum, all reviews conducted so far have indicated that, as long as exposures are below the limits recommended in the [ICNIRP \(1998\) EMF guidelines](#), which cover the full frequency range from 0–300 GHz, such exposures do not produce any known adverse health effect.<sup>[2]</sup> In 2011, [International Agency for Research on Cancer \(IARC\)](#), an agency of the [World Health Organization](#), classified

wireless radiation as [Group 2B](#) – possibly carcinogenic. That means that there "could be some risk" of carcinogenicity, so additional research into the long-term, heavy use of wireless devices needs to be conducted.<sup>[3]</sup> The WHO states that "A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use."<sup>[4]</sup> (Wikipedia)

### Precautionary measures and health advisories (from WPedia)

In May 2011, the [World Health Organization's International Agency for Research on Cancer](#) announced it was classifying electromagnetic fields from mobile phones and other sources as "possibly carcinogenic to humans" and advised the public to adopt safety measures to reduce exposure, like use of hands-free devices or texting.<sup>[56]</sup>

Some national radiation advisory authorities, including those of Austria,<sup>[57]</sup> France,<sup>[58]</sup> [Germany](#),<sup>[59]</sup> and Sweden,<sup>[60]</sup> have recommended measures to minimize exposure to their citizens. Examples of the recommendations are:

- Use hands-free to decrease the radiation to the head.
- Keep the mobile phone away from the body.
- Do not use telephone in a car without an external antenna.

The use of "hands-free" was not recommended by the British [Consumers' Association](#) in a statement in November 2000, as they believed that exposure was increased.<sup>[61]</sup> However, measurements for the (then) [UK Department of Trade and Industry](#)<sup>[62]</sup> and others for the French [Agence française de sécurité sanitaire environnementale \[fr\]](#)<sup>[63]</sup> showed substantial reductions. In 2005, Professor Lawrie Challis and others said clipping a [ferrite bead](#) onto hands-free kits stops the radio waves travelling up the wire and into the head.<sup>[64]</sup>

Several nations have advised moderate use of mobile phones for children.<sup>[65]</sup> A journal by Gandhi et al. in 2006 states that children receive higher levels of [Specific Absorption Rate](#) (SAR). When 5- and 10-year olds are compared to adults, they receive about 153% higher SAR levels. Also, with the [permittivity](#) of the brain decreasing as one gets older and the higher relative volume of the exposed growing brain in children, radiation penetrates far beyond the [mid-brain](#).<sup>[66]</sup> “ (Wikipedia)

Please note that the Wikipedia article in at least two places (Cancer section and Male Fertility section) states a summarizing generalizing statement of harmful effects midway in a paragraph, then ends that paragraph with an initial or partial finding of no harm, leaving the reader with the feeling of no harm. Sales and marketing professionals know that the last sentence in a statement is the most powerful and influential. This shows bias in the Wikipedia article above.

A related WP article describes the IARC conclusion of 2002 of no harm, but disregards in that paragraph that the IARC changed its position in 2011 to potential harm (ELF paragraph):

[https://en.wikipedia.org/wiki/Electromagnetic\\_radiation\\_and\\_health](https://en.wikipedia.org/wiki/Electromagnetic_radiation_and_health)

Wikipedia's two articles are written in a way that shows bias in favor of no harm. It states both sides, but usually ends with the statement of harm, implying (inaccurately) that the point of view of harm is what is actually true. "Such and such studies show harm, but such and such studies show no harm" rather than the other way around, and rather than a neutrally worded statement.

## **WHO Biological Effects and Health Hazards of Microwave Radiation (1973 International Symposium)**

[http://mistic.heig-vd.ch/taillard/microwave\\_effects/](http://mistic.heig-vd.ch/taillard/microwave_effects/) [interestingly, this article has been removed]

**“Radiofrequency Electromagnetic Fields: evaluation of cancer hazards”** (url too large) - this article has also been removed

**“Radiofrequency electromagnetic fields are possibly carcinogenic to humans (class 2B)”** (refers to the IARC statement)

The following statement is worded and presented in such a way that WHO accepts the IARC position as its own:

<https://www.who.int/news-room/q-a-detail/what-are-the-health-risks-associated-with-mobile-phones-and-their-base-stations>

**Based on mixed epidemiological evidence on humans regarding an association between exposure to RF radiation from wireless phones and head cancers (glioma and acoustic neuroma), RF fields have been classified by the International Agency for Research on Cancer as possibly carcinogenic to humans (Group 2B)...”**

**WHO International EMF Project** <http://www.who.int/peh-emf/project/en/>

### **Resolutions and Government Actions**

<http://ehtrust.org/wp-content/uploads/International-Policy-Precautionary-Actions-on-Wireless-Radiation.pdf>

## **G. Anecdotal Evidence (Many Personal Accounts of Harm to Health from Smart Meters)**

**Anecdotal evidence are reports by many individuals of adverse health effects and discomfort, including serious, debilitating symptoms from exposure RF Radiation.**

<https://wearetheevidence.org/>

## **H. Summary and Conclusion**

**Development of public policy is partially and importantly founded on published scientific research of high quality.**

**Scientific consensus and the development of public policy is not like a sporting competition to determine which side of an issue has the most studies, or the best studies.**

**Public policy should be based on the precautionary principle, which states that regardless of which side of an issue has more studies, and, regardless of the number of studies showing no harm from a given technology, if the number of high quality of studies showing harm from a given new or old technology is sufficient, appropriate caution should be taken in the implementation of that technology.**

**It is up the best judgement of public policy makers to determine whether or not there are a sufficient number of studies showing harm to warrant cautionary policy, and the degree of that cautionary policy, from slight regulation, or prevention of that technology until sufficient safety is shown (based on development of further safety measures in the technology itself).**

**Thousands of published studies showing harm show that statements that RF radiation and cell towers have not been proven to be safe. It is not established. There is obviously serious and widespread lack of consensus. Cherry-picking of studies showing no harm does not indication of consensus among scientists.**

Cherry-picking of studies showing harm also does not indicate consensus. But for the precautionary principle, consensus is not required. The precautionary principle is not based on consensus, or what is 'established.' It is based only on there being a sufficient number of studies showing harm to hold off or appropriately regulate a given technology.

Besides, those who wish to roll out a technology, and those who wish to help them, can define, and redefine, 'established' and 'consensus' indefinitely, to indicate that scientific consensus is never established, regardless of the number and quality of studies. Many experts with whom I have spoken state that this is precisely what is going on with terms such as "established" and "consensus" used by private industry and their trade associations and supporters.

It is by no means established that there are more studies showing no harm from RF radiation, than studies showing harm, anyway.

References from established governmental or institutionalized bodies regarding scientific research does not carry as much weight as independent, unbiased review of the body of studies and their conclusions. Currently, most of the views and references by US and European governmental bodies and institutional evaluation of RF radiation do not represent an unbiased, balanced review of picture of the available relevant research.

The role of this response is to provide balance to the so-far conventional view, by giving the other side of the issue.

**Summary:** Since there are thousands of published studies of high quality showing significant harm from RF radiation, and from cell towers specifically (typically tripling cancer rates within 1,300-1,500 feet of a tower), and, since the public policy should be based on the precautionary principle, and since thousands of scientific experts hold that the number of studies showing harm from RF radiation is sufficient to employ the precautionary principle and regulate or postpone more deployment of RF radiation technologies,

**Conclusion:** Therefore, statements indicating sufficient safety from RF radiation, and from cell phone towers, lack sufficient validity to be a basis for public policy.