

“50+ EMF Safety Tips & Insights”*

Overview of Cell Phone & Wireless Technology Hazards

by Camilla Rees, MBA, Founder www.ElectromagneticHealth.org and Campaign for Radiation Free Schools (Facebook); Co-author with Magda Havas, PhD of “Public Health SOS: The Shadow Side of the Wireless Revolution”

1. We Are Electromagnetic. First, recognize that your body is fundamentally electromagnetic, and thus vulnerable to outside sources of artificial electromagnetic fields. The brain, heart and nervous system are the most obviously electromagnetic, but every single cell has an electrical charge, and the functioning of the components of each cell is based on electricity and electron transfers. Read one of the best early classics on this subject, “*The Body Electric*”, by Robert Becker (<http://tinyurl.com/3ozf3g3>).

2. Natural Rhythms. Appreciate the body’s need to keep all systems working harmoniously for optimal functioning, including by synchronizing with natural cycles and rhythms, within and external to the body.

3. Minimize Disruptive Frequencies. Consciously choose to minimize exposures to disruptive man-made electromagnetic fields of all kinds: electric fields, magnetic fields, dirty power, radiofrequency fields, microwaves and ‘ionizing’ radiation, such as X-rays and nuclear power. There is a rapidly accumulating body of scientific evidence of harm to health and wellbeing from both short-term and prolonged exposures to very low-intensity, non-ionizing (i.e. non-heating) electromagnetic fields (EMF), when they are at biologically active frequencies or frequency combinations.

4. There Are Greater Risks—As Well As Unknown EMF Risks—to Children. Recognize children, toddlers, and fetuses are more vulnerable to disregulation caused by electromagnetic fields and will incur further risks from a longer lifetime of exposures.



5. DNA Is a Fractal Antenna and Responds to EMF Fields of Many Kinds. Recognize that DNA, with its ‘coil of coils’ structure, is exquisitely sensitive to electromagnetic fields, including ELF, RF and ionizing radiation. It possesses the two structural characteristics of fractal antennas, electronic conduction and self-symmetry. These properties contribute to greater reactivity of DNA to electromagnetic fields. (See International Journal of

Radiation Biology, April 2011 -

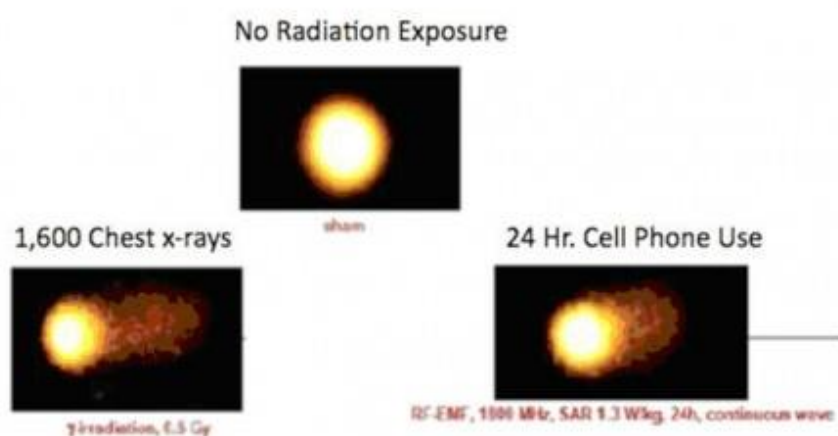
<http://informahealthcare.com/doi/abs/10.3109/09553002.2011.538130>). As a result, risks with potentially grave consequences for future generations are now being taken in continually exposing our bodies to electromagnetic fields.

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(See video of Martin Blank, PhD, Columbia University, at the Commonwealth Club of California - <http://vimeo.com/17266941>)

An important European review of the EMF science, called **The Reflex Report**, prepared by 12 scientific institutes in 7 countries, confirmed long-term genetic damage in the blood and brains of users of mobile phones and other sources of electromagnetic fields. See images from that report (below) showing DNA breaks in two exposure scenarios:

24 hrs of cell phone use (considered a 'non-heating' exposure) and **1,600 chest X-rays** (high intensity exposure from ionizing radiation well-known to break electrons from atoms and to cause cancer):



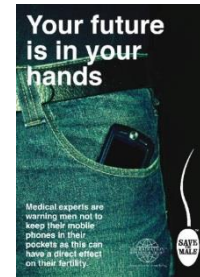
Note the DNA deterioration occurring from cell phone radiation is similar to 1,600 chest x-rays.

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6. Fertility Is Impaired by EMFs. There is a growing body of science showing serious impacts to sperm and fertility from cell phone radiation. For example, in a study published in *Fertility and Sterility* (Vol. 89) in 2008 by A. Agarwal et al of the Cleveland Clinic, laboratory values of sperm count at an infertility clinic decreased as the duration of daily exposure to cell phones increased. In the highest exposure group, 1/3 of sperm count was lost with over 4 hours of male cell phone use, and 50% of the remaining sperm showed physical abnormalities, did not swim well or were non-viable. Documented cell phone impacts on sperm include: decreased sperm count, motility, viability, and normal morphology. (Read [ElectromagneticHealth.org](http://www.ElectromagneticHealth.org)'s "Letter to Parents on Fertility and Other Risks to Children from Wireless Technologies" - <http://tinyurl.com/42basha>). Also see a recent article in *Holistic Primary Care* magazine for health professionals by Alasdair Philips, B.Sc. (Eng), DAgE, "Male Infertility Linked to Cell Phone EMF Exposure" - <http://tinyurl.com/3gycrw3>)

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“Save the Male” Advertising Campaign by U. K.’s Radiation Research Trust. Posters being placed in men’s restrooms in London.



7. Cell Phones Cause Brain Tumors. All industry funded and independent case-controlled studies looking at brain tumor risk from cell phone use show an increased risk (commonly a *doubled risk*) of brain tumors after 10 years of heavy cell phone use. What was considered ‘heavy use’ in these studies would today be considered average or light use. Industry-affiliated parties mislead by focusing on “overall” study results, such as in the Interphone study, instead of on the increased risks of brain tumors found in “heavy” users, who have used a cellphone for 10 years or more. These exposures are comparable with common exposures today. (See “**Cellphones and Brain Tumors: 15 Reasons for Concern, Science, Spin and the Truth Behind Interphone**” - <http://tinyurl.com/3zd6afh>)

8. Lead Authors of the Interphone Study, Post-Publication, Urge Caution. Post-publication of the Interphone study by IARC/WHO, its lead authors, Elizabeth Cardis, and Siegal Sadetzki, who led the Israeli part of the Interphone study, published an overview of the cell phone/brain tumor science in the *Journal of Occupational and Environmental Medicine*.? They said, “While more studies are needed, indications of an increased risk (of gliomas—a particularly dangerous form of brain tumour) in high and long-term users from Interphone and other studies are of concern... **Even a small risk at the individual level could eventually result in a considerable number of tumours and become an important public-health issue.**”

It is noteworthy that though it has been over six years since the Interphone study was completed, approximately 50% of the data has still not been released, including data on the risk of acoustic neuromas and salivary gland tumors, which are closest to where the cell phone is placed against the ear. While global scientists are left wondering what those unpublished Interphone studies actually reveal, following the Cardis/Sadetzki paper, on May 31, 2011, the WHO’s International Agency for Research on Cancer (IARC) classified cell phone radiation as a class 2B “Possible Carcinogen”. This was quite a welcomed surprise as IARC’s own Interphone study downplayed any risk, using overall risk levels found to deflect from the very serious risks found in heavy users, but still does not resolve the question of what the unpublished studies show.

9. NIH Study Showing Brain Metabolism Effects Published in JAMA. Brain metabolism changes from cell phone use were found by Nora Volkow et al of NIH and Brookhaven National Laboratories, published in the Journal of the American Medical Association (JAMA) in March 2011. The finding that cell phone radiation speeds up glucose metabolism, a marker of brain activity, at non-thermal levels of microwave exposure, raises concern that this may be a mechanism involved in cancer development. There is additional concern that if cell phone radiation is impacting glucose levels, is it also impacting neurotransmitters and neurochemical activities? Further studies are needed. While to date much focus has been placed on the possible risk of brain tumors from cell phones, this study, which was statistically significant, confirms important neurological impact.

10. Cell Phones Are Associated With Many Cancers. Recently, in May 2011, the WHO's International Agency for Research on Cancer (IARC) classified wireless radiation from cell phones as a category 2B "Possible Carcinogen"

(<http://electromagnetichealth.org/electromagnetic-health-blog/iarc-rf-carc/>) based on



evidence for association with brain tumors (gliomas) and acoustic neuromas. Scientific studies show increased risk of cancers from long-term use of a cell phone, including: gliomas, acoustic neuromas, meningiomas, salivary gland tumors, eye cancers, testicular cancers and leukemia. Cordless (i.e. portable) phones, as well, have been associated with gliomas, acoustic neuromas, and meningiomas. A recent Chinese study in the International Journal of Oral and

Maxillofacial Surgery (<http://www.microwavenews.com/Duan.Zhang.html>) found risks for parotid gland cancer "as large, perhaps larger, than the risk of lung cancer from smoking", according to brain tumor risk analyst, Lloyd Morgan. For example, the landmark study found use of a cell phone for greater than 2.5 hours a day to have as much as a 3,000% increased risk for parotid gland tumors. (See presentation on EMF & Cancer by L. Lloyd Morgan (<http://vimeo.com/17265162>), Senior Research Fellow of the Environmental Health Trust given at ElectromagneticHealth.org's EMF Forum at the Commonwealth Club of California November 2010.)

11. Use Hard-Wired Telephone Connections. Choose safer hard-wired telecommunications connections, such as a hard-wired landline telephone, instead of a cell phone or a cordless phone, or use a voice-over internet (VOIP) connection (such as SKYPE) via a hard-wired computer, not a computer using a wireless internet connection. Pay attention to efforts to dismantle the land-line network, and get involved to assure this safer communications option is not taken away.



12. Use A Speaker Phone or Headset. In an emergency, when there is no other option, speak for as short a time as possible on the cell phone and always use a speakerphone, headset or handset attachment. The black handset that attaches to a cell phone (see photo) is a favorite, as it is the smallest, lightest weight and least expensive available (www.EMFSafetyStore.com).

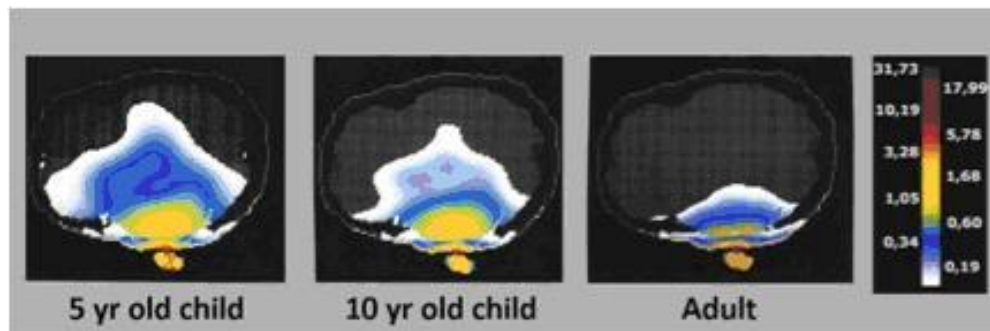
13. Use Hard-Wired Headsets Not Bluetooth Headsets. Do not use Bluetooth headsets or earbuds, which add an unnecessary layer of Wi-Fi radiation exposure. Instead, use hard wired headsets or 'blue tube' headsets, which incorporate a plastic, stethoscope-like tube, through which the sound travels but radiation does not.



14. Cell Phones Should Not Be Near the Body, Daytime or Nighttime. Never place a cell phone or PDA directly against your head or body. Use it only for a pressing reason, not for leisure purposes. Never leave a cell phone 'on' near where one is sleeping at night, as microwaves deplete melatonin and interfere with the body's rest and repair.

15. Children's Brains Absorb More Radiation. Never allow a child, whose immune and nervous systems are still very much in formation; whose brains absorb more radiation than adults; and who are five times more likely to get a brain tumor from cell phone use than an adult, to use a cell phone! People who begin using cell phones as teenagers or younger have a 680% increased risk of glioma. (*Hardell & Carlberg, Mobile phones, cordless phones and the risk for brain tumours. Int J Oncol 35: 5-17, 2009*)

Differences In Absorption of Cell Phone Radiation in the Brain by Age



- Children absorb more energy than adults from the same phone.
- Tumors in mid-brain are more deadly than those in the temporal lobe.
- Children's cells are reproducing more quickly than adults.
- Children's immune system is not as well developed as adults.
- Longer life-time exposure for children than adults.

Source: **"Public Health SOS: The Shadow Side of the Wireless Revolution"** with brain scans from a study by **Om Ghandi et al**, University of Utah, 1996, "Electromagnetic Absorption in the Human Head and Neck for Mobile Telephones at 835 and 1900 MHz. *IEEE Transactions on Microwave Theory and Techniques*". 1996;44(10):1884-1897

De-Kun Li, MD, PhD, MPH of Kaiser Permanente in CA published a study in Scientific Reports/Nature July 2012 showing EMF magnetic field exposures in the womb are linked to an increased risk of childhood obesity. Children of women exposed to magnetic fields of more than 2.5 mG for at least 10% of the day while pregnant had close to TWICE the risk of becoming overweight or obese compared to those exposed to 1.5 mG or less. This is a statistically significant finding and a dose-response relationship was found. EMF magnetic fields are emitted by the battery of cell phones.

16. Psychological Effects on Children from Mobile Devices. In a review of the science (2012 - <http://www.ehhi.org/cellphones/>) by Yale University Professor John Wargo, PhD et al, Professor of Environmental Risk and Policy, Wargo says “Cellular devices can create feelings of psychological dependency. Common effects reported in the literature include distraction, isolation, hyperactivity, inability to focus on complex and long term tasks, and a heightened sense of anxiety.”

The Journal of Pediatric Psychology (May 2012) reported that mobile phone use after lights out associate with poor mental health, suicidal feelings and self injury in early and late adolescents.

17. Foreign Governments Are Calling for Protection of Children and More Vulnerable Persons. Note that governments around the world are taking steps to protect children: Germany, Canada, Russia, Switzerland, United Kingdom and Finland have issued warnings with special emphasis on children, calling for use of headsets to minimize exposure to microwave radiation. France has made it illegal to market cell phones to children, will not allow use of cell phones in public schools and has called on manufacturers to create a cellular device with only texting ability, not audio. Recently, the UK Chief Medical Officer advised that children and young people under 16 be encouraged to use mobile phones for essential purposes only, and to keep calls short. Russia says children under 18 should not use cell phones. The Ministry of Telecommunication in India recommends children, pregnant women and people suffering from heart ailments limit use of mobile phones. South Korea says, “Cellular phones could harm the study atmosphere at schools and could cause health risks for kids. It is desirable to prohibit students from using cell phones at schools.” The European Parliament officially recommends wireless be removed (<http://tinyurl.com/3hfynym>) from schools, daycare, retirement centers and hospitals, and the Council of Europe has recently called for drastic reductions in electromagnetic field exposure to humans from cell phone and wireless technologies. The largest region in India, Rajasthan, now prohibits cell towers near schools, on health grounds, and has prevailed in a wireless industry legal challenge.

No federal government body in the U.S. has taken steps to protect the public's health. Recently, however, three members of the House of Representatives, including House Energy and Commerce ranking member **Henry Waxman**, D-Calif., and Reps. **Edward Markey**, D-Mass., and **Anna Eshoo**, D-Calif., asked the Government Accountability Office to investigate what research is needed. Previous to this, the FDA & FCC have passed the hot potato on this issue, raising the question of where in our government does responsibility for health consequences of telecommunications technologies lie? See ElectromagneticHealth.org's commentary on this extraordinary failure of government (<http://electromagnetichealth.org/electromagnetic-health-blog/fcc-fda-cell-phone-regulatory-roles-questioned-by-activists/>), excerpted below:

Excerpt:

“What has caused this failure of government to protect the public health?”

- One wonders, are there payoffs being made to government officials at the FCC and FDA to assure smooth sailing for the telcom industry at the expense of public health?
- Are there military interests seeking to limit regulation of radiation-emitting technologies so biological effects of their own RF-based military technologies do not come under greater public scrutiny?
- Have the economic benefits to the U.S. government, in the forms of telecom industry corporate income tax, user taxes and fees, employment and social security taxes, jobs and job growth, employee income taxes, income taxes from landlords agreeing to place antennas on their property, spectrum license fees and more, unduly influenced government officials such that they have sacrificed public health to give the appearance of a stronger economy, when in fact the health consequences from cell phones and wireless technologies may ultimately burden the economy more than the short-term economic benefits?

One has to question why a more responsible and diligent approach to the assessment and monitoring of radiation-emitting technologies has not been taken.

The only explanation scientists and health advocates have been able to think of is that until now it may be the case that powerful special interests and economic considerations have been influencing our government officials to turn a blind eye to the health consequences of cellular technologies, and that complete integrity, and interest in public health, has been lost.”

18. Cell Phone Use in Cars, Trains & Elevators Increase Radiation Exposure. Do not use a cell phone in a car, elevator, train, aircraft, skyway or other metal container, as the phone draws much higher power to operate in these circumstances. In a car, connection to the automobile's external antenna by a trained technician can be installed, reducing exposures within the car. In addition to cell phones drawing more power in metal structures, cell phone exposures in a metal structure *can be greatly magnified by reflections.*

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19. The “SAR” Value (“Specific Absorption Rate”) Measures Only One Form of Risk From Cell Phones and Is, On Many Counts, a Misleading Gauge of Safety.

SAR is an approximate gauge of the radiation your head might absorb using a cell phone, estimated through computer simulation using a plexiglass head, assuming a 200 pound, 6 ft. tall man, for 6 minutes of use. It is a very limited measure of risk because it is only comparing the heating effects of one phone to another phone in a controlled situation, and is not in any way measuring a phone’s ‘safety’. Heating effects are only one component of risk. Other aspects of cell phone risk besides the power are the frequencies, amplitude, pulsed modulation of the signals, the battery’s magnetic fields, the network’s technical characteristics (GSM, CDMA etc) and most important, the amount of time one spends on the cell phone. Do not be misled by those contending SAR is a measure of safety, and stay tuned for more information on the implications of the newly understood differences in radiation risk between the carriers. *For more discussion on SAR, see “Top Safe Cell Phones That Aren’t Safe” (<http://tinyurl.com/yf3lfm7>) on Mercola.com. To learn about the emerging GSM vs. CDMA issue, see our initial post (<http://electromagnetichealth.org/electromagnetic-health-blog/gsm-cdma/>.)*

20. Paradoxically, Low SAR Values Can Cause Greater Blood Brain Barrier Permeability In Certain Frequency Windows Than High SAR Values. Leakage in the Blood Brain Barrier and neuron death from cell phone radiation have been found in rats at only 0.012 W/kg (compared to the FCC exposure limit for cell phone radiation of 1.6 W/kg). The blood brain barrier leakage has been shown to continue as long as 50 days after exposure. Some scientists consider blood brain barrier effects at these very low levels of radiation exposure (i.e. 30-45x *lower levels* than what are being touted as the ‘Top 10’ lowest SAR phones in publicized ranking) to be of equal or even greater concern for the population than the increase in brain tumors expected from cell phone use. (*Salford et al, Nerve Cell Damage in Mammalian Brain after Exposure to Microwaves from GSM Mobile Phones. Environmental Health Perspectives, Vol. 111 (7), June 2003; Nittby et al. Cognitive impairment in rats after long-term exposure to GSM-900 mobile phone radiation. Bioelectromagnetics. 2008 Apr;29(3):219-32.*)



21. Use a Hard-Wired Ethernet Cord to Connect to the Internet.

Choose a router for internet access that is hard-wired with an Ethernet cord (not a wireless router or a hybrid wireless/wired router option, which can emit radiation even when using the wired port with the Ethernet cord). Install Ethernet cords in as many locations in your home as needed. If you cannot find a wired-only router and must use a hybrid router, be sure to turn off the router’s wireless signal. Using the wired port on a hybrid router is not enough—you must take this extra step to actually disable the router’s wireless signal otherwise the radiation will be emitted even though you use a cord. Information on how to do this is usually available by contacting the router manufacturer or your internet service provider. It is simple and very quick to disable.

22. Router Exposures. It is not uncommon to find routers emitting 2,000-8,000 microwatts per meter squared ($\mu\text{W}/\text{m}^2$). The Institute for Bau Biology and Ecology guidelines for Radiofrequency radiation in sleeping areas are: **1) No Concern ($<0.1 \mu\text{W}/\text{m}^2$), 2) Slight Concern ($0.1-10 \mu\text{W}/\text{m}^2$), 3) Severe Concern ($10 - 1000 \mu\text{W}/\text{m}^2$), and 4) Extreme Concern ($> 1000 \mu\text{W}/\text{m}^2$).** Routers, as well as portable phone exposures, are easily avoidable high exposures, on top of other daily exposures from the widespread use of cell phones, neighborhood cell towers, etc. over which one has no control. The power of the WiFi has been increasing and generally old routers create far lower exposure than new ones.

23. Ambient RF Exposures Have Gotten Too High. Average increases in high frequency microwaves in one urban area over the last decade grew from less than $30 \mu\text{W}/\text{m}^2$ in the year 2000 to over $6,000 \mu\text{W}/\text{m}^2$ in 2009. The **Seletun Scientific Statement**, issued by international scientists in February 2011, called for global governments to reduce ambient exposures to electromagnetic fields of all kinds in the interest of public health. Watch the Seletun announcement by Olle Johansson, PhD (<http://tinyurl.com/632acfo>) of the Department of Neuroscience at the Karolinska Institute in Sweden.

Seletun Scientific Statement , February 2011 – 10 Key Points:

- 1. The Global Population Is At Risk.**
- 2. Sensitive Populations Are Currently Vulnerable.**
- 3. Government Actions Are Warranted Now Based on Evidence of Serious Disruption to Biological Systems.**
- 4. The Burden of Proof for the Safety of Radiation-Emitting Technologies Should Fall on Producers and Providers Not Consumers.**
- 5. EMF Exposures Should Be Reduced in Advance of Complete Understanding of All Mechanisms of Action.**
- 6. The Current Accepted Measure of Radiation Risk—the Specific Absorption Rate ('SAR')—Is Inadequate, and Misguides on Safety and Risk.**
- 7. An International Disease Registry Is Needed To Track Time Trends of Illnesses to Correlate Illnesses with Exposures.**
- 8. Pre-Market Health Testing and Safety Demonstration Are Needed for All Radiation-Emitting Technologies.**
- 9. Parity Is Needed for Occupational Exposure Standards.**
- 10. Functional Impairment Designation for Persons with Electrohypersensitivity.**

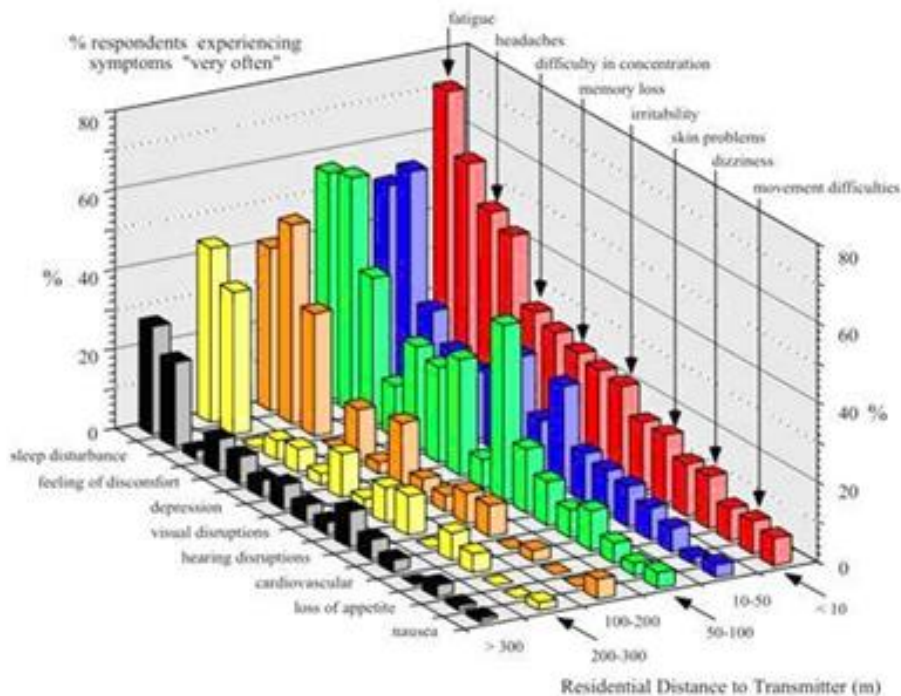
Shielding fabrics, plastic shielding films for windows, as well as shielding Y-Shield indoor/outdoor paints to reduce or block out ambient exposures are available at www.EMFSafetyStore.com.

24. Electrosensitivity. Out of a global population of 6.6 billion people, it is estimated that 2.3 billion (35%) are moderately sensitive and 200 million (3%) are severely impaired.

According to Henry Lai, PhD, Research Professor at the University of Washington, electric and magnetic fields (ELF), radiofrequency (RF) and microwaves (MW) have similar biological effects. These include: cellular and molecular effects, nervous system impacts, blood-brain barrier permeability, cardiovascular changes, immune system effects, hormonal and metabolic effects, changes in calcium metabolism, increased stress response and genetic effects.

The San Francisco Medical Society's website features an article by Cindy Sage, co-editor of the landmark Bioinitiative Report, *"Microwave and Radiofrequency Radiation Exposure: A Growing Environmental Health Crisis"* (<http://tinyurl.com/3mvyqyu>), describing known EMF impacts, such as "changes in cell membrane function, major changes in calcium metabolism and cellular signal communication, cell proliferation, activation of proto-oncogenes, activation of HSP heat shock proteins as if heating has occurred when it has not, and cell death. Resulting effects reported in the scientific literature include DNA breaks and chromosome aberrations, increased free radical production, cell stress and premature aging, changes in brain function including memory loss, learning impairment, headaches and fatigue, sleep disorders, neurodegenerative conditions, reduction in melatonin secretion and cancer.

Frequency of Electromagnetic Sensitivity Symptoms Based on Distance to a Cell Phone Base Station



Source: Santini 2001, La Presse Medical, graphically depicted by Dr. Magda Havas (www.magdahavas.com)

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25. Summary of the Science on Electrosensitivity Available for Physicians.

Produced by Electrosensitivity-U.K. and available at: <http://snurl.com/27rv3m>. With a small donation to this British charity, they will email or mail you the report. It contains an extensive review of symptoms, sources of exposure, pathological markers, treatment approaches, references for other illnesses linked to EMFs, and lists references to numerous resolutions on this topic by organizations of international scientists, medical doctors and psychologists.

26. AntennaSearch.com. Antennasearch.com should be a first stop in a comprehensive investigative process to uncover root sources of imbalance in a patient. You can input any U.S. address and quickly learn where licensed antennas and towers are, or where they have been applied for, in the neighborhood. This will not list antennas that have not been licensed, however.

27. **Disable Wireless Connectivity Software in Your Computer.** When choosing the safer hard-wired connectivity option, make sure to disable your computer's wireless communications software (Bluetooth, Airport etc.), as well. Otherwise, your computer will constantly be sending out a wireless signal looking for a 'handshake'. If you are using a hybrid router and using a hard-wired Ethernet cord, be sure to also turn off the router's wireless signal (see 20. above).

28. **iPads Not Recommended.** Do not use Apple iPads, which presently only offer Wi-Fi or 3G internet connectivity, and do not offer hard-wired connectivity at all. Microwave radiation can be very high in iPads, especially when downloading from the internet (approximately 2,500 $\mu\text{W}/\text{m}^2$, for example, when last checked). iPads can also cause unusually high levels of body voltage in users when they are charging (over 20V, for example, a level the Institute for Bau Biology and Ecology considers of "Extreme Concern").



29. **Use 'Wired Only' Printers.** Choose a 'wired only' printer, and similar wired connections for all computer peripherals, including the keyboard and the mouse. Note, "hybrid" printers that also offer a wireless option can still emit radiation even if using the printer with a corded connection. It is possible with some brands to log on to the vendor website, put in your router's serial number and disable the wireless aspect.



30. **The "Router Wrap™".** If you stay with friends who use a wireless router, request the router be turned off at night so you get a good night's sleep. If the router is connected with a home entertainment system making it more difficult to dismantle, consider ordering a custom Router Wrap™ from ElectromagneticHealth.org to take with you when you travel. You simply cover the router overnight to block out the frequencies. The Router Wrap™ contains very high quality, double- or triple-duty shielding material. The Router Wrap can also be used to cover wireless printer antennas, portable phone base stations, or to shield emissions from 'smart meters'. Comes in two sizes and shielding strengths. (Custom Made. Contact Camilla@electromagnetichealth.org. Proceeds support advocacy.)

31. EMF & Pregnancy Concerns. Women who are pregnant or who are trying to conceive should be urged to not use wireless telecommunications devices of any kind and to avoid 'second-hand radiation'. Bedrooms will want to be measured for potential external sources of microwaves, such as from neighborhood antennas or neighbors' routers, and body voltage should be checked to determine if there are any concerns related to electric fields.

In a pilot study by Deitrich Klinghardt, MD, PhD et al, high ambient microwaves and body voltage levels were associated with increased risk of autistic offspring. (See <http://tinyurl.com/3pujavs>)

In May 2008, the UCLA School of Public Health reported results of a study (<http://tinyurl.com/kt4p78>) finding a possible link between cell phone exposure and behavioral problems in young children, urging additional research. They found "Children who were exposed to cell phones before and/or after birth tended to have higher prevalence of emotional symptoms, behavioral problems, inattention, hyperactivity and problems with peers. When looking at the combined use of cell phones during pregnancy and in childhood, children were 80 percent more likely to have behavioral problems compared to children who do not use a cell phone and whose mothers did not use cell phones during pregnancy. When looking at cell phone use during pregnancy alone and not during childhood, children were 54 percent more likely to have behavioral problems. "

Last year, scientists at Yale University demonstrated that fetal exposure to radiofrequency radiation from cellular telephones does in fact affect adult behavior, in a study where mice exposed in utero to high frequency EMFs (<http://news.yale.edu/2012/03/15/cell-phone-use-pregnancy-may-cause-behavioral-disorders-offspring>) —from cell phones— developed neurological and behavioral problems by the time they became adults. Hugh Taylor, MD, Chairman of the Department of Obstetrics, Gynecology and Reproductive Sciences says, "We have shown that behavioral problems in mice that resemble ADHD are caused by cell phone exposure in the womb...The rise in behavioral disorders in human children may be in part due to fetal cellular telephone irradiation exposure."

In a report in 2012 by Yale affiliate, Environment and Human Health Inc, "Cell Phones-Technology, Exposures, Health Effects", by Professor John Wargo et al, Wargo states: "The scientific evidence is sufficiently robust showing that cellular devices pose significant health risks to children and pregnant women."... "The weight of the evidence supports stronger precautionary regulation by the federal government."... "The cellular industry should take immediate steps to reduce emission of electromagnetic radiation (EMR) from phones and avoid marketing their products to children."

Co-author of the report Dr. Hugh Taylor states, "The human brain is especially susceptible to numerous environmental insults that can produce irreversible damage during critical periods of nervous system development between conception and full maturity. A number of peer-reviewed studies reported changes in the nervous systems of rats, mice and humans following exposure to cell phone radiation. These include diminished learning, diminished reaction time, decreased motor function, reduced memory accuracy, hyperactivity and diminished cognition."

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32. No to Wireless Baby Monitors! According to Larry Gust of Gust Environmental, the original wireless baby monitors with the long antennas were safe when kept 5 or 6 feet away from baby. The new generation digital baby monitors, he says, “generate radiation signature similar to cell phones, cordless phones, Wi-Fi, and some wireless children’s games (e.g. X-Box 360)”. Many scientists are extremely concerned about subjecting babies to this radiation and wonder if there is a connection with Sudden Infant Death (SIDS). Search for the old analog baby monitors with long antennas (not short stubby ones) on EBay or in thrift shops.

33. Create Electromagnetically Clean Bedrooms. Strive to make the bedroom as electromagnetically clean as possible. This means no sources of microwave radiation (cell phones, portable phones, wireless routers or computer equipment). Also check the levels of electric and magnetic fields and dirty electricity. Look not only for wiring errors (with a gauss meter) but also check the metal plumbing coming into the house for magnetic and high frequency fields. EMF fields of all kinds can significantly impact sleep quality and it is a very common cause of insomnia.

Also, unplug electric devices near the bed, such as electric blankets and space heaters; use battery powered LCD alarm clocks (not LED), keeping them several feet away from the body; be conscious of extension cords or power strips in the room, making sure they are not near the bed; and if you want a profoundly relaxing night’s sleep, experiment with turning the fuse box off to the bedroom at night to eliminate all electrical current. Finally, if your home alarm system is a wireless alarm system, use it only when you are away, not at night when you are at home sleeping.

34. Grounding Can Be Beneficial. Grounding replenishes the body with electrons from the earth and stabilizes our electrical systems. Research increasingly shows grounding is a potent anti-inflammatory and regulator of many of the body’s systems and rhythms. There are now grounding sheets; wrist, knee and waste bands; and electrode patches for clinical use that all connect to the earth with either a grounding rod or via the ground port in the electrical socket. See www.EarthingInstitute.net to read the emerging body of science in this exciting area and order Earthing products at www.EarthingSecrets.com. Patients sensitive to RF fields sometimes improve if grounded due to the tremendous support provided by the earth’s electrons. Please read the recent article by Camilla Rees, MBA in Holistic Primary Care magazine “Earthing: Restoring Health from the Ground Up” (<http://holisticprimarycare.net/topics/topics-o-z/psyche-some-a-spirit/1198-earthing-restoring-health-from-the-ground-up>).



35. Shielding Bed Canopies. People especially sensitive to RF may want to sleep under a metal mesh tent, sometimes called a ‘sleep sanctuary’. It shields out the RF from cell towers, wi-fi, etc. and people often sleep significantly better if those are the fields to which they are reacting. Reduces RF radiation exposures by approximately 99%. Needless to say, do not attempt to use an RF-emitting cell phone or laptop under this tent. (www.emfsafetystore.com).

Note, some experts in electric field mitigation suggest that non-continuously conductive and ungrounded tent shielding fabrics could conceivably act as an antenna for 60Hz electric field EMFs, so for people sensitive to those household 60HZ electric fields the RF bed tent shielding may not necessarily be a good option. Though we have been surrounded by electric fields since the beginning of electrification in the early 1900s, there is emerging evidence that 60 HZ electric field electrification may stress the body and promote poor sleep, which in turn may contribute to many illnesses. We advise that the best sleeping/living arrangement is to reduce EMF exposure, or live in a low EMF area. Additional options are to turn off the bedroom's electrical breaker, which significantly reduce EMFs, or consider sleeping on a grounded sheet or mattress.

36. Metals In One's Environment Reflect and Intensify Exposures. Be conscious of the amount of metal in the environment because it reflects radiation, creating unknown hotspots. Metal window frames, chairs, tables, beds, and filing cabinets are all possible contributors. Metal underwire bras are also of concern. People with metal dental fillings or braces are at risk of intensified exposures due to reflections in the mouth. Children in schools with Wi-Fi who have metal braces are of special concern.

37. Drive Defensively. Symptoms of electromagnetic derangement include slowed reflexes and impaired cognitive function, so drive defensively understanding that many other drivers are impaired today by short- and long-term exposures to cell phone and wireless radiation, as well as by distraction from texting. Never use a cell phone in a car while driving, and ideally, hook up the antenna externally.

38. Hotel Strategies. If a hotel uses Wi-Fi, book ahead and ask to be located as far away from the closet containing the wireless router or relay equipment as possible. Sensitive people often seek out small inns and retreat centers without wireless, or where they can sometimes find managers willing to turn off the wireless connection over night.

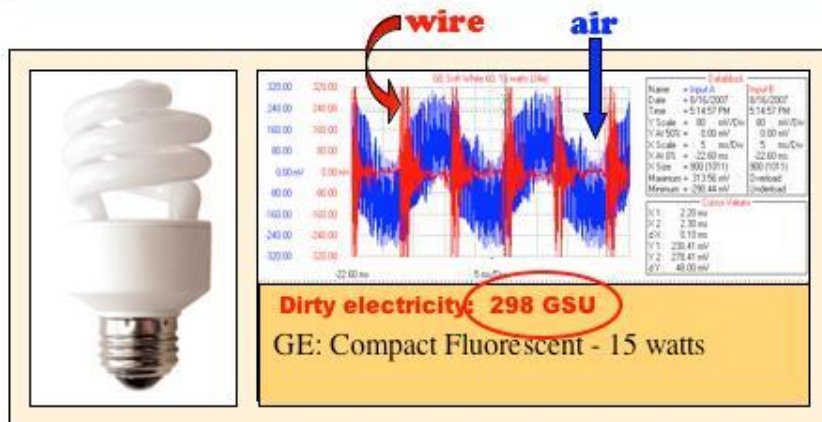
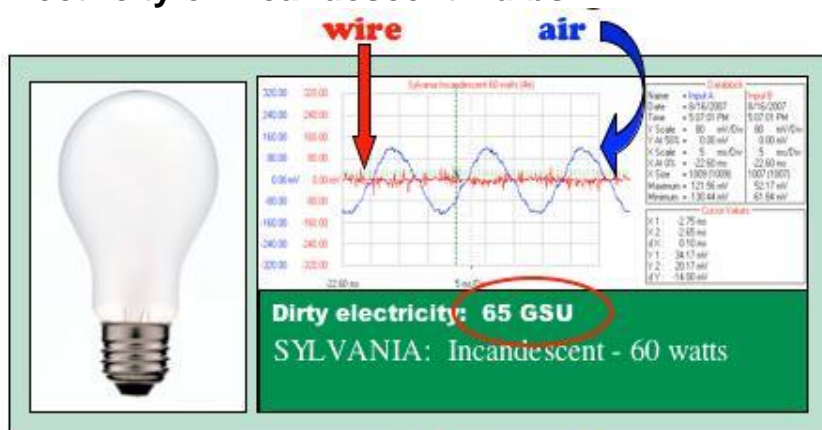
39. Airlines. Avoid airlines with in-flight wireless. As the airplane is in effect a metal cage, other than the small windows, this is an especially high-risk environment for radiation from any source, including cell phones. Ask flight attendants to contact the Association of Flight Attendants regarding this matter.

40. Seek Out Wi-Fi Free Environments. Do not congregate in wireless hotspots, like coffee shops, malls, megastores and fast food chains with wireless. Give your body a break and seek out wi-fi free locations for leisure activities.

41. Reinstall Landline Telephones. If you have disconnected your landline phone, reinstall it. Contact members of Congress and insist the landline system NOT be dismantled, something currently under serious discussion. Learn more here: <http://snurl.com/27wr3x>.

42. Compact Fluorescent and LED Bulbs. CFLs emit radiofrequency radiation, UV radiation and Dirty Electricity. Many people are sensitive to the fields being emitted, and there is evidence the UV fields are linked to skin cancer (http://commcgi.cc.stonybrook.edu/am2/publish/General_University_News_2/SBU_Study_Reveals_Harmful_Effects_of_CFL_Bulbs_to_Skin.shtml). CFLs also contain mercury, and must be disposed as a toxic waste. If you use a CFL, the radiation travels on the wiring into other rooms on the same electrical circuit, impacting people there. We recommend stocking up now on the incandescent light bulbs, and also possibly switching to energy efficient LED bulbs that do not contain the RF or UV radiation. However, most LEDs still have the dirty electricity problem, which can be filtered. Some brands have been recalled due to fire risks. Other LED health and environmental risks are described in Scientific American September 15, 2012 (<http://www.scientificamerican.com/article.cfm?id=led-lightbulb-concerns>). Though incandescent bulbs are the safest bulbs, recently incandescent bulb manufacturing has been terminated by GE in the United States, as new energy efficiency standards for lighting go into effect between 2012-2014. Health practitioners must be prepared to recommend the safest alternatives to patients. We recommend sensitive people and those with any kind of serious health challenge or health risks secure a large supply of incandescent bulbs now.

Compact Fluorescent Bulbs Emit RF, UV and Many Times the Dirty Electricity of Incandescent Bulbs



Source: “Public Health SOS: The Shadow Side of the Wireless Revolution” by Camilla Rees, MBA and Magda Havas, PhD

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43. Smart Meters Increase EMF Exposures. Many communities across America are complaining of acute biological effects from radiofrequency based 'smart meters', the new utility meters being underwritten with federal stimulus money. The radio mesh networks appear to be more problematic than those piggybacking on power lines ('Broadband Over Power'), however there is very serious concern about the long-term effects of BPL, as well. Citizens in many states are fighting smart meters and dozens of towns and counties in Northern California have placed a moratorium on the further roll out of smart meters. California and Maine, under intense pressure from residents, now require a smart meter opt-out option for residents. Ironically, none of these meters allow integration of new renewable energy technologies, such as solar, wind, geothermal etc., which are needed for a true Smart Grid that could enhance the nation's energy sustainability.

Patients should be advised to opt-out of 'smart' electric, gas and water meters when possible, to never allow meters to be placed internally within the home (such as in colder climates), to experiment with RF shielding fabrics behind the meter (www.EMFSafetyStore.com) to see if any symptoms improve, and to not buy home electrical appliances, such as washers, dryers, dishwashers, stereos, etc., which will wirelessly transmit usage information throughout the house.

44. The Crux of the Issue is the Thermal vs. Non-Thermal Debate. Whether one is concerned with radiation from cell phones, portable phones, wireless routers, cell towers, dirty electricity or smart meters, the core issue is that industry and government are conveniently ignoring the large body of science showing biological effects at non-heating levels of exposure. This dam of denial is starting to erode as more research is published and existing research is publicized. A summary of science showing biological effects at non-thermal levels can be found in *Pathophysiology, August 2009*, edited by Martin Blank, PhD of Columbia University, as well as in the industry commissioned **Ecolog Report** (2010 - <http://electromagnetichealth.org/wp-content/uploads/2010/11/ecolog2000.pdf>). The industry's own commissioned **Ecolog Report** states:

"Given the results of the present epidemiological studies, it can be concluded that electromagnetic fields with frequencies in the mobile telecommunications range do play a role in the development of cancer."

"Impairment of cognitive functions was found in animal experiments at power flux densities of 2W/m². In humans, there are indications that brain functions are influenced by fields such as they occur when using a mobile telephone."

"An epidemiological study of children who had been exposed to pulsed high frequency fields, found a decrease in the capability to concentrate and an increase in reaction times."

"Effects of high frequency electromagnetic fields on the central nervous system are proven for intensities well below the current guidelines."

And much more! Please note this report prepared for T-Mobile and Deutsche Telecom MobilNet GmbH was prepared in the *year 2000*. Some believe this industry should be formally held to account, like in the Nuremberg trials, for its egregious disregard for public health and society's genetic material given they perpetuated this industry despite knowing the risks.

45. Deception in Science & Media. Do not believe everything you read. Certain media are clearly touting the industry party line that there is no harm from non-thermal electromagnetic fields, despite there being overwhelming evidence to the contrary. We often see major feature stories or sections designed to minimize risk and confuse. Not only do we see this impaired integrity in media but we see it in science—in study design, interpretation and reporting (abstracts not matching study results); replication studies (intended to discredit original findings); funding bias; journals that never publish findings contrary to industry's interests; scientist intimidation and smear campaigns; commotion about a potential risk (ultimately deciding there is no risk from that concern) to deflect from more important risks; and industry and university control of research publications by scientists. Always determine who funded the science you are reading and the corporate or military affiliations of the study's authors.



46. Become Self-Reliant – Learn to Measure EMFs and to Shield. Read the **EMF-Help Blog™** (<http://tinyurl.com/3q548hj>) and listen to the **EMF Remediation Interviews** (<http://electromagnetichealth.org/emf-remediation-interviews/>) found at Campaign for Radiation Free Schools (Facebook) or at ElectromagneticHealth.org. Learn the risks of *improper shielding* and the benefits.

The best place to start is with meters. You'll need an Electrosmog Meter to measure RF, a Gaussmeter to measure magnetic fields and a Dirty Electricity meter to measure high frequency transients. No meter measures it all and there are other fields to be concerned with, but this is the place to start. Find well-screened meters at www.EMFSafetyStore.com. We are available for physician EMF consultations and patient coaching. Contact Camilla@electromagnetichealth.org

47. Listen to Interviews with Scientists and Doctors at ElectromagneticHealth.org. Learn about what is happening to patients from wireless exposures, and the deceptions in science and politics interfering with a proper response to this emerging public health issue. Alert patients about what they can do to minimize exposures.

48. Download 1-Page EMF Resources Handout for Patients (<http://tinyurl.com/4488I7u>).

49. 15 Videos on EMF & Health from the Commonwealth Club of California November 2010. Videos from a half-day program on EMF & Health at our nations largest and oldest public affairs forum, featuring 15 presentations, can be viewed here: <http://electromagnetichealth.org/electromagnetic-health-blog/cc-video/>.

50. Read EMF Books. Whether it be the classics, such as books by B. Blake Levitt or Robert Becker, or *The Powerwatch Handbook* by Alasdair and Jean Philips in the U.K., or newer books like *Zapped* by Anne Louise Gittleman and *Dirty Electricity* by Sam Milham, MD, read up! Go to www.BestEMFBooks.com to find them.



51. Join Campaign for Radiation Free Schools on Facebook

(<https://www.facebook.com/groups/110896245588878/>). Here you will learn about science, health policy and news related to wireless exposures to children in schools. The Campaign for Radiation Free Schools encourages all parents to read the **BRAG Antenna Ranking of Schools Report** (<http://electromagnetichealth.org/wp-content/uploads/2010/04/BRAG-7page-Report-NEW-TIME.pdf>)

by Magda Havas, PhD and to encourage schools, school districts, municipalities and states to call for an FCC ruling requiring 1,500 foot setbacks for any/all wireless infrastructure near schools. This is the distance within which studies show increased incidence of electrosensitivity symptoms from neighborhood antennas in adults and increased incidence of cancers. The BRAG report offers an excellent compilation of EMF resources toward the end.

52. Consult With Experts. If you need professional help with EMF assessment and mitigation, contact experts who can consult in person or by phone. Larry Gust of Gust Environmental, Board President, Institute for Bau Biologie & Ecology, or Vicky Warren, Past Executive Director, Institute for Bau Biologie and Ecology, are two good options. Magda Havas, PhD of Trent University in Canada offers EMF measurement and remediation weekend trainings for physicians. We suggest you encourage people from your community be trained as a community resource.



53. Sign the “EMF Petition to Congress”. The petition is calling for 1) the Federal Communications Commission (FCC) to lower exposure guidelines for radiofrequency radiation (RF); 2) repeal of Section 704 of the Telecommunications Act of 1996, which took away the rights of state and local governments to stop the erection of cell towers and wireless antennas on health or environmental grounds; 3) a national moratorium on further wireless infrastructure build-out until more research is conducted, 4) and protections for people who are currently sensitive. Sign the petition

at <http://tinyurl.com/2cjq54y>.

54. Another Tobacco. It took decades of anecdotal evidence, scientific studies and lobbying before the health impacts of another consumer good—tobacco—were acknowledged. Be patient. The truth will be known. Please do what you can to educate people in the meantime.

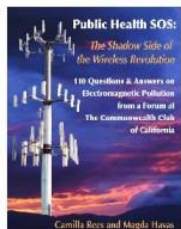
From the Seletun Scientific Statement, February 2011:

“It has become obvious that new, biologically-based public exposure standards, taking into account long-term as well as non-thermal exposures, are urgently needed to protect public health world-wide.

It is not in the public interest to wait. Instead, governments should take decisive action now to protect biological function as well as the health of future generations.”

Olle Johansson, PhD, Department of Neuroscience, Karolinska Institute, Sweden

Camilla Rees is a leading health educator and environmental consultant focused on electromagnetic fields and health. She is co-author of the landmark report, “Cellphones and Brain Tumors: 15 Reasons for Concern, Science, Spin and the Truth Behind Interphone”, and, with Magda Havas, PhD, co-author of the book “Public Health SOS: The Shadow Side of the Wireless Revolution”. She was co-investigator in the recently published landmark study demonstrating heart irregularities from exposure to portable phone radiation and co-founder of the International EMF Alliance, a consortium of over 85 international EMF advocacy groups. In 2010, Camilla organized the largest U.S. gathering of scientists to date on electromagnetic fields and health at the Commonwealth Club of California in San Francisco. Contact: Camilla@electromagnetichealth.org



“Public Health SOS: The Shadow Side of the Wireless Revolution”

Answers 110 key questions on electromagnetic fields and health.

Available on Amazon.com:

<http://www.amazon.com/dp/1441458794/?tag=bescom08-20>

Important Education for Every Citizen
“Public Health SOS: The Shadow Side of the Wireless Revolution”
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