

# 10 Recommendations on Electromagnetic Fields and Other Health Risks You Can't Afford To Ignore

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## RECOMMENDATION #1: Stop your cell phone from chatting when you aren't.

Unlike traditional calling plans, various internet data services result in continual wireless exposure, even when you are not using your cell phone. To reduce your risks, the following application settings can be changed.



### HTC Android: Steps to Turn off Auto-Sync:

Home page >  
Menu >  
Settings >  
Accounts & Sync



### Steps to Create a "Sync All" Shortcut to Manually Sync:

Home page >  
[+] >  
Widget >  
Sync All



### Apple iPhone: Steps to Turn off Wi-Fi and only use phone service

Settings menu >  
Wi-Fi: Off

### Steps to Turn off Cell Phone Service (use at night)

Settings menu >  
Airplane mode: On

**When cell reception is low**, turn off your phone service, because cell phones reportedly increase output when reception is low. This may result in the paradox of brain tumors for rural cell phone users.

## WHY YOU SHOULD CARE:

- The [Volkow study](#) published recently in the prestigious JAMA journal found impacts to brain glucose metabolism with only 50 minutes of cell phone use.
- According to reports on the Interphone study, approximately **30 minutes a day** of cell phone use increases brain cancer risk over 10 years. 30 minutes a day was considered "heavy usage" by that study!

## OTHER INTERESTING FACTS:

- **CANCER LATENCIES:** The average latency between smoking and lung cancer is approximately 20 years. Most cell phone studies that look at **10 years or longer** find increased cancer risks from cell phone use, with exception of an industry-funded Danish study excluding heavy business users and youths. Studies of shorter length are deceptive, because typical cancer latencies are over a decade.
- **YOUTHS ARE AT GREATER RISK:** Swedish researcher Leonnart Hardell found that children **under age 20** have a much higher odds ratio for certain brain tumors compared with adults older than 20. Ronald Herberman also found that **brain cancer is increasing among the young adult population**. The recent Russian report [RNCNIRP 2011](#) focuses on special risks to youths. Many countries recommend that youths do NOT use cell phones at all.

## RECOMMENDATION #2: Keep your cell away from your ear and your pocket!

Next to time, distance is your other best friend. Holding the cell phone against the ear should be avoided. Certain cell phone manuals now call for holding the cell phone at small distances from your body, to avoid exceeding current safety guidelines for radio frequency radiation, and presumably to reduce industry's liability.

### Radio Frequency Radiation



391 mW/m<sup>2</sup>



Approximately 36 mW/m<sup>2</sup> at 22 cm (~10x reduction) but still RED

The illustration (above right) shows a warning light even at 22 centimeters. Speaker mode, air tube headsets, and texting can reduce radiation tremendously. Cell phones should still be used sparingly, since the threshold for biological effects is very low.

In addition to wireless radiation, smart phones also have intermediate frequencies in the kHz range from the LCD screens, so even if you have the wireless mode off, you may still have exposure to these kHz frequencies, especially when the LCD screen is lit up. A few inches of distance can provide a significant reduction.

### Intermediate Frequency Radiation



45 dBµ at 520 kHz



15 dBµ at 520 kHz with a few inches, a 1000-fold reduction!

### WHY YOU SHOULD CARE:

- See a [list of 25 references of effects lower than our safety standard of 1.6 W/kg](#). Even at 0.0004 W/kg, the blood-brain barrier, which protects the brain from the entry of harmful toxins, can be compromised.
- If you do the [inverse square law calculations](#), and compare the results with the list of known effects by radiation level, potential biological effects are present *even after drastic reductions at 1 meter*.
- It's not only brain cancer of which experts worry. Cell phones may increase the risk for [salivary gland tumors](#), [tinnitus](#), [infertility](#), memory problems, and many other [biological effects](#) besides brain cancer.

### OTHER INTERESTING FACTS:

- **DECEPTIVE SAR:** The [SAR](#) model uses an outdated standard that only considers thermal effects, despite scientific evidence showing otherwise. It assumes a head size bigger than ours and may include time and spatial averaging that ignores hot spots and pulsed radiation. SAR ratings can be measured by industry at different distances, resulting in great variance and making comparisons by SAR futile.
- **Not all carrier signals are alike**, according to citations of research contrasting UMTS/WCDMA, GSM, and CDMA. Independent toxicology research is needed to examine the impacts of different frequencies and modulation, and to study newer 4G technology.

### RECOMMENDATION #3: Disable Wireless Internet, using Ethernet cables instead.



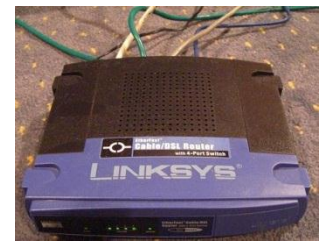
Several countries' [government health agencies](#) have warned about wireless internet's potential health effects (See Appendix). Keep a distance from Wi-Fi routers and access points, which have significant radiation at 1 meter of distance and transmit non-stop, even when you are not on a computer.

If you have no alternatives, check out the appropriate [distances](#) and turn it off at night. Instead of using your laptop's internal Wi-Fi, a Wi-Fi USB key on a USB extension cable may provide some additional distance.

When you are not using Wi-Fi, you can disable Wi-Fi on your laptop as follows:

- **Microsoft Windows 7 instructions:** Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings > Right-click Wireless Network Connection > Disable
- **Shortcuts:** Some laptops have shortcut keys such as Fn-F2 (eeepc) and some laptops have external switches for Wi-Fi. Check to find out what your laptop offers.

It is recommended to substitute wireless internet with wired internet, using a wired router and Ethernet cables, but note that even wired internet devices, like other electronic appliances, may have voltages and intermediate frequencies in the kHz range, which may get injected onto the Ethernet cables. Grounding the switch or router, and observing some distance from the wired router and Ethernet cables can reduce this. .



#### RELATED PRECAUTIONS:

- Disable Wi-Fi also on your **iPads, iPods, and Kindles** using the provided software option.
- Remove wireless modules from wireless printers and projectors, some of which transmit continuously from the moment of plugging them in.

### RECOMMENDATION #4: Unplug digital cordless phones and use corded instead.

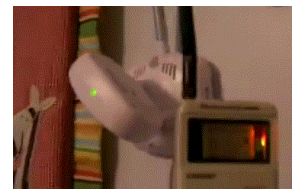


Several countries' government health agencies have also warned about cordless phones (See Appendix). Keep a distance from digital cordless phone base stations, since the base transmits continuously. The actual radiation level is high, although the radiation is low when averaged over time due to bursts of radiation separated by time gaps. Corded speakerphones can be obtained online at [amazon.com](#).

If you have no alternatives, check out the appropriate [distances](#) and turn it off at night. Older analog cordless phones may have base stations that do not transmit continually. Make sure the handset also does not transmit continually. In some models, the battery has to be removed to stop this.

#### RELATED PRECAUTIONS:

- Digital wireless baby monitors can pose significant risks to the baby's health, since the radiation is continuous, like a digital cordless phone. If you must use a wireless baby monitor, the older analog wireless monitors are reportedly safer.



#### WHY YOU SHOULD CARE:

- Leonnart Hardell's studies show similar risks for cordless phones as cell phones.
- Within the home, the exposure to a cordless phone can be more dominant than that of a cell tower.

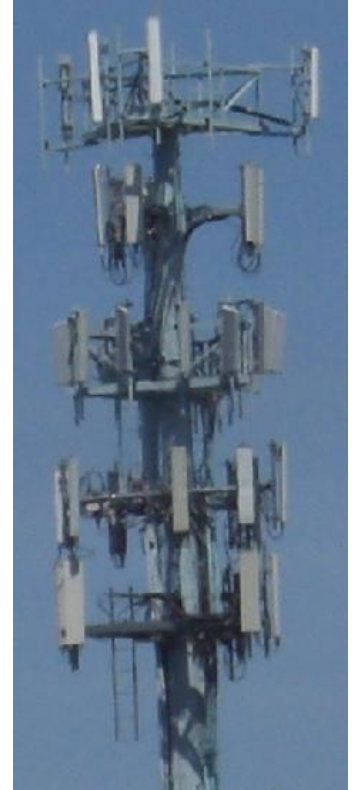
## RECOMMENDATION #5: Be aware of external sources of radiation and keep a setback distance of at least 400 meters from a mobile phone mast.



Cancer increases and other health symptoms have been noted in close proximity around **electricity towers, radio towers, TV towers, and cell towers/masts**. Some of the many structures that have been studied for cancer risk include the Vatican radio

tower and the San Francisco Sutro TV tower.

While the number of radio and TV towers may be tightly regulated, cell tower proliferation has grown tremendously since 1996 with the growing demand for cell phone service. It is important stay at least 400 meters away from a mobile phone mast. Look up hidden masts at <http://www.antennasearch.com> and check the [BRAG antenna ranking report](#).



### WHY YOU SHOULD CARE:

- Several [studies](#) have shown increased risk for cancer & other health symptoms within 300-400 meters of cell towers. (Santini, Wolf and Wolf, Eger, etc.)
- Although at a distance, the radiation is lower than that of a cell phone, it is radiating continually and still above that known to cause health effects, as can be seen by an article by Levitt/Lai in [Envrionmental Reviews](#).

### RELATED PRECAUTIONS:

- Smart electricity meters are a new wireless technology on the horizon to also keep a watch out for. Moratoriums have been imposed in California due to health, privacy, billing issues, and fire risk. Over 47 California cities and counties have demanded a halt to the installations. Some models are said to transmit signals that are stronger even than cell phones, throughout the day. Beware especially of greater radiation if you are near a relay/collector unit.
- Wireless meters may also be installed for other utilities such as water or gas, for drive-by measurements. The drive-by type may be of lower intensity and frequency than the smart meters.
- Electricity towers and power lines can result in high magnetic fields, and a minimum setback of 150 meters is recommended. However, they are not the only source of magnetic fields. **Wiring errors** are a typical cause of high magnetic fields in homes far from power lines, as noted by Karl Riley in the California EMF program. Sometimes these wiring errors, such as ganged neutrals, or improper neutral-to-ground connections outside of the main service panel, can be fixed. Regular appliances like alarm clocks also have magnetic fields, but as point sources, a setback of only 1 meter should be sufficient to reduce the magnetic fields for chronic exposures. Electric fields, rather than magnetic fields, however are another concern for electrical appliances, as will be mentioned later.



## RECOMMENDATION #6: Choose LCD TV's over Plasma TV's

Plasma TV's emit very high levels of intermediate frequencies in the kHz or MHz range that may be up to a thousand times higher than an LCD TV. This can be measured with the Grundig G8 Traveler radio from Radio Shack. For example, it might take ~12 meters to reach levels for which a regular LCD TV would only require ~2 meters. Wiring in the walls may carry the intermediate frequencies, and metal structures may also re-radiate the frequencies. The Plasma TV's radiation is strong enough to pollute an entire home, when the plasma TV is turned on. If you have no alternatives, limit your TV time and turn it off afterwards.

### WHY YOU SHOULD CARE:

- Unlike a radio station, which only occupies a small band of the kHz frequencies, a plasma TV occupies a wide soup of kHz / MHz frequencies, including frequencies not covered by radio stations. One ham radio (amateur radio) operator called the plasma TV the "mother of all RFI producers".

### RELATED PRECAUTIONS:

- Avoid dimmer switches, which also have kHz frequencies that pollute an entire home. A regular on-off dipole switch does not. Several books covering EMF remediation bring up this precautionary measure, including *Prescriptions for a Healthy House*, *Radiation Rescue* under "Experts' Action Plans", *The Powerwatch Handbook*, and *Zapped*.
- A projector can also generate very high intermediate frequencies, once plugged in to power.



## RECOMMENDATION #7: Use a regular incandescent light bulb instead of a fluorescent energy-efficient light bulb or halogen lights.

Fluorescent lighting, including CFL light bulbs (right), results in greater intermediate frequency exposure. CFL light bulbs, in particular, may result in greater exposure to UV radiation, and if broken, the mercury exposure can be dangerous if not properly ventilated.

Halogen lighting, on the other hand, is often associated with high AC magnetic fields. If you have no alternatives, keep a distance from both halogen and fluorescent lighting.

The incandescent light bulb seems to be the healthiest lighting choice.

Even with incandescent lighting, it must be noted that the lamp's wiring is typically energized all the time once the lamp is plugged in. It may be helpful therefore to [ground the lamp](#) with a shielded, grounded cord

Additionally, dimmers are also not recommended for any of these types of lighting due to the intermediate kHz radio-frequencies they add. If dimmers are a requirement, however, the "full-on bypass" dimmer may be a good choice, so that the dimmer unit is at least bypassed when the light is turned completely on.



## **RECOMMENDATION #8: Skip the power cable and run your computer off of battery with a USB wired keyboard & mouse. Keep a distance from computers & monitors!**

A computer could still be your Achilles' heel, if you use it day and night without the appropriate distances. Based on Intermediate frequency fields, a minimal 2 foot distance is recommended from your monitor and computer, and a 1 foot distance from your USB keyboard and mouse. Double those distances if you use a computer excessively, and increase the font size by using a lower screen resolution or a [computer/TV magnifier](#). If you are hypersensitive to these frequencies, you may need even more distance.

If you have a 2-prong plug without the 3rd grounding plug, you may be exposed to high AC voltages from your laptop, when it is plugged in. A grounding cord can be used to [ground your computer](#) from the USB port. However, due to intermediate frequencies on the AC/DC inverter adapter, the best solution may be to run a laptop off of a long-life battery and unplug the AC power cable. Keep a distance from the transformer on the AC power cable, and unplug it when unnecessary.

### **WHY YOU SHOULD CARE:**

- While working at a laptop with a 2-pin plug, you may exceed [SBM 2008 guidelines](#) for body voltage without properly grounding it. Avoid long hours at your laptop. Use a USB keyboard and mouse for distance.
- AC Magnetic fields, another IARC class 2B carcinogen, are also present at the computer, although magnetic fields usually diminish rapidly with distance, the exception being with building [wiring errors](#).
- Intermediate frequency sources tend to occupy large ranges of kHz frequencies, subjecting us to a soup of frequencies, of unknown biological consequences. Although there seems to be little research in this area, it is recommended to exercise the precautionary principle.

## **RECOMMENDATION #9: Be aware of energized cables in the floors and walls and voltages from ungrounded appliances.**

Power cables hidden in walls and floors are typically energized up to the outlet or light switch. While commercial buildings usually use shielded metal clad cable, which greatly reduces the exposure to electrical fields, newer residential homes typically use plastic [Romex cable](#), which does not shield the electric fields. Fortunately, most modern homes contain grounded outlets, reducing some of the risk, but not all.

As a precautionary measure, it is recommended to place the bed on a [non-metallic frame](#) in an area with lower electrical voltage exposures, or to turn off key circuit breakers at night. An even more advanced option is to install a [remote control demand switch](#) to shut off a circuit's hot and neutral wires by a remote control.

Lamps and alarm clocks are usually ungrounded, since they lack the 3<sup>rd</sup> grounding pin. Furthermore, their cables are also energized once they are plugged in. In fact, a lamp's wire remains energized even when it is plugged in but turned off. To remediate this, a battery-powered alarm clock is a good alternative. Lamps that are metallic can often be grounded with the help of a licensed electrician.

### **WHY YOU SHOULD CARE:**

- Electric fields can affect the body's repair processes, which may involve minute voltage gradients (See Robert Becker, *The Body Electric*).
- Neurons communicating by weak electric fields (Dr Anastassiou et al), which may also be impacted.
- A recent [double-blind study](#) on electromagnetic hypersensitivity found that the on-off field transitions of electric fields could have adverse effects on health.

## RECOMMENDATION #10: Be holistic and consider chemical hazards and nutrition

Proper nutrition can help reduce many of the health risks of electromagnetic radiation. Some studies find that antioxidants like vitamin C and E can combat the free radicals generated upon exposure to wireless radiation through the Fenton cycle. Over 20 papers have shown the free radical effects of wireless radiation. Because melatonin, produced by the pineal gland, can be reduced through electromagnetic exposures, it is also advised to sleep in a pitch dark room with low electromagnetic fields. Melatonin is an important cancer fighter.

Since wireless radiation can open the blood-brain barrier and possibly other tight-junction barriers as well, it is important not only to minimize electromagnetic exposures but also to minimize chemical hazards. The combined effect of EMF's and chemicals may be worse than the parts. The study of **building biology** (bau-biologie) originates from Germany, where it was noticed that both electromagnetic and chemical irritants were causing indoor health problems in sick homes. Here are some guidelines for reducing your exposure to chemicals, poor indoor air quality, and artificial foods:

- Avoid flame retardants like [PBDE's](#) in mattresses, which can outgas hazardous chemicals long periods of time. This is the result of relatively new [mattress flammability standards](#).
- Prefer plastics #1,2,4,5 to [PVC's the poison plastic #3](#), and check plastics you buy for off-gassing and that they are BPA free.
- Prefer low-VOC or no-VOC paint for less off-gassing. VOC's are volatile organic compounds.
- Avoid products with synthetic fragrances that contain hormone-disrupting [phthalates](#), which can be absorbed through the skin, and may damage the liver, lung, and reproductive systems. Items that may contain phthalates include perfume, cosmetics, air fresheners, laundry supplies, and even children's toys.
- Avoid frequent dry-cleaning, as dry-cleaned clothes increase exposure to perc, a potential carcinogen.
- Look for cosmetics products that do not contain estrogen imitating chemicals.
- Choose formaldehyde-free wood, adhesives, and carpets.
- Avoid wood finishing that outgasses harmful chemicals.
- Choose safer cleaning products. See <http://www.goodguide.com> for example or use simple solutions like vinegar, baking soda, and the like. There are many books on green cleaning.
- Be aware of metals used in dentistry, which may magnify EMF's, or be released by EMF's. Replacing metal fillings has reportedly helped some people improve in health, but the removal process itself can result in dangerous exposures, if not done properly.
- A dehumidifier can help control mold issues.
- Choose organic produce for fruits and vegetables most likely to contain high levels of pesticide residues. Organic foods may contain [one-third the level of pesticides](#) compared to conventionally grown produce.
- Investigate [organic pest control](#) as a safer alternative to pesticides and herbicides in your garden.
- Avoid genetically modified foods, with the [starting number of 8](#) on the 5-digit PLU number.
- Avoid aspartame in food and other artificial sweeteners.
- Avoid food coloring dyes when possible.
- If you use a vacuum, use one with a HEPA filter.
- Try a filter to reduce chlorine vaporization in the shower or chlorine taste in water.
- Regularly change the furnace air filters in your home with high enough rating.
- For more suggestions, see <http://www.ewg.org/health-tips> and National Geographic's *Green Guide*.

**WHY YOU SHOULD CARE:** As use of chemicals grows, chemicals are approved far more quickly than they can be banned, and even after they are deemed unsafe, they are often allowed to remain on store shelves until the existing supply is finished. Furthermore, the chemicals that are not listed as active ingredients are sometimes the toxic ones. (*Prescriptions for a Healthy House*). Devra Davis, in *The Secret History on the War on Cancer*, explains that many hazards have been known for a long time, but they often remain trade secrets of the companies that conduct the health studies. Occupational health hazards are often withheld from the workers who are most at risk.

## APPENDIX. HELPFUL REFERENCES

### Government and Health agencies:

1. **World Health Organization (May 2011)** just added radio frequency radiation to the classification of IARC class 2B carcinogen (possibly carcinogenic), similar to lead.  
<http://well.blogs.nytimes.com/2011/05/31/cellphone-radiation-may-cause-cancer-advisory-panel-says/>
2. **European council (May 2011)** warns on mobile phones, wireless networks, cordless phones, and cordless baby monitors, and suggests for a ban in schools for health reasons.  
<http://www.telegraph.co.uk/technology/mobile-phones/8514380/Ban-mobile-phones-and-wireless-networks-in-schools-say-European-leaders.html>
3. **Russian report 2011: Electromagnetic Fields from Mobile Phones: Health Effect on Children and Teenagers, RNCNIRP 2011** – See [http://iemfa.org/images/pdf/RNCNIRP\\_Resolution\\_2011.pdf](http://iemfa.org/images/pdf/RNCNIRP_Resolution_2011.pdf) and commentary at <http://electromagnetichealth.org/electromagnetic-health-blog/russian-report/>
4. **Israel's Health Ministry - July 2010** "Israel's Ministry of Health issued a warning today against extensive use of cordless telephones, similar to the warning it has issued about cell phones."  
<http://www.globes.co.il/serveen/globes/docview.asp?did=1000576383&fid=1380>
5. **European Parliament – February 2009:** "The European Parliament adopted by 559 votes to 22, with 8 abstentions, a resolution on health concerns associated with electromagnetic fields (EMFs). The resolution recalls that wireless technology (mobile phones, Wi-Fi/WiMAX, Bluetooth, DECT landline telephones) emits EMFs that may have adverse effects on human health."  
<http://www.europarl.europa.eu/oeil/FindByProcnum.do?lang=en&procnum=INI/2008/2211> "
6. **German government's health protection agency - January 2006:** "The German government's health protection agency recommends the public reduce their exposure to high frequency radiation to minimise health risks. It recommends: • remove cordless DECT phones, • use cabled connections rather than wifi and Bluetooth, • site wi-fi access points away from people, including at work?"  
<http://www.wiredchild.org/government-alias.html>

### Recent articles:

- **CNN:** A neurosurgeon reveals the dangers raised in an overlooked appendix of a cell phone study that has been used to claim that cell phones are safe, and recommends wired headsets.  
<http://thechart.blogs.cnn.com/2011/05/20/gupta-cell-phones-brain-tumors-and-a-wired-earpiece/>
- **MSNBC:** Some individuals in Sweden can no longer cope with electricity, possibly due to overexposure to wi-fi and other radiation. [http://today.msnbc.msn.com/id/43172844/ns/today-today\\_health/](http://today.msnbc.msn.com/id/43172844/ns/today-today_health/) This news article mentions the industry-funded Essex study that claims people cannot detect EMF's but the study was manipulated, and a reanalysis showed that people actually could guess better than chance. Recently, the WHO has been examining the possibility of adding 2 new health conditions: Multiple Chemical Sensitivity (MCS) and Electromagnetic Hypersensitivity (EHS). One day, these currently controversial and obscure categories may be as well-known as "autism" and "ADHD".
- **Devra Davis: A Leading Scientist Answers Your Questions (and Doubts) About Cell Phone Hazards":** [http://www.environmentalhealthtrust.org/sites/test1\\_nbcomp.com/files/GAM82\\_2011-Jan-FebThemeOnly.pdf](http://www.environmentalhealthtrust.org/sites/test1_nbcomp.com/files/GAM82_2011-Jan-FebThemeOnly.pdf)

### For More Information, see:

1. <http://www.emfwise.com/precautions.php> for further precautions
2. <http://electromagnetichealth.org/category/electromagnetic-health-blog/> for the latest news
3. <http://www.environmentalhealthtrust.org/> for cell phone news