What is EMF- EMR? How Does It Affect Us, and How Can We Protect Ourselves?

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Sources of EMF/EMR Exposure

- 1-EMR – ELF (extremely low frequencies) **Electrical fields**
- 2-EMR - **Magnetic fields**
- 3-EMR - RF (radiofrequencies/microwave-wireless)
- 4- EMR - **Dirty Electricity**
Signs and Symptoms of EMF/EMR Sensitivity

- **Insomnia***
- **Short-term memory loss** *Concent*
- **Headaches/Dizzy***
- **Anxiety/Depression***
- **Irritability***
- **Fatigue***
- **Vertigo/ Tinnitus***

- **Skin Changes**
- **Brain Fog**
- **Visual Changes**
- **Cardiovascular changes: angina,**
  **tachycardia/**
- **Arrhythmias**
- **Digestive problems***
"The Root Cause in the Dramatic Rise of Chronic Disease", R. Lear 2016

<table>
<thead>
<tr>
<th>Disorders</th>
<th>1990 – 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autism</td>
<td>+ 2094%</td>
</tr>
<tr>
<td>Alzheimer’s</td>
<td>+ 299%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>+ 104%</td>
</tr>
<tr>
<td>Psychosocial: Attentional Problems</td>
<td>+ 221%</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>+ 430%</td>
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<tr>
<td>ADHD</td>
<td>+ 819%</td>
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<tr>
<td>Bipolar Disorder (children)</td>
<td>+10833%</td>
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<tr>
<td>Panic Disorder</td>
<td>+ 263%</td>
</tr>
<tr>
<td>Multiple Sclerosis</td>
<td>+ 449%</td>
</tr>
<tr>
<td>Psychosocial: Emotional Problems</td>
<td>+ 2500%</td>
</tr>
<tr>
<td>Depression</td>
<td>+ 280%</td>
</tr>
<tr>
<td>Erectile Dysfunction</td>
<td>+ 150%</td>
</tr>
</tbody>
</table>

“Root Cause in the Dramatic Rise of Chronic Disease,” Lear, RA 2016
Chronic and Cumulative Exposures to All Kinds of RF/MW Must be Considered in Evaluating Risk of Any Additional Source of Radiation

www.wigle.net
Biological effects of EMF

- genetic effects
- Cancer - 9 strongly assoc.
- cellular/molecular
- behavioral changes
- nervous system
- blood-brain barrier permeability
- hormonal disturbance
- immune system
- metabolic effects
- autoimmunity
- fertility impairment
- impaired learning
Electrical Fields

![Diagram showing electric field lines around power lines and a transmitted line tower with a grounded metal roof and ground rod to shield the area from electric fields.](image-url)
Electrical Fields

Whenever there is a AC voltage difference such as between two objects, such as in this example of this ungrounded lamp and the earth, there is an AC Electric Field between the two. The Field Lines are a visualization of the Electric Field. The closer the Field Lines are together, the more intense the Electric Fields.

Any other object in the vicinity will have electric field lines going to it on their way to ground. The voltage on the ungrounded metal lamp frame is caused by its close proximity to the hot wire. The closer the person is to the lamp and cord, which has 120 Volts on it, the higher the volt meter will read. This measurement technique, as depicted here, is called the Body Voltage Measurement (BVM). This measurement technique is used to detect the presence of AC Electric Fields, identify sources and guide the mitigation of exposure by monitoring the readings as one makes electrical changes (such as unplugging the lamp).
**Magnetic Fields**

**CLASS ONE:** Devices that use electricity such as lamps and TV's. These have the characteristic that the user can know by observation that they are a source and has control over them, for example avoiding them or shutting them off.

**CLASS TWO:** Sources external to the building, mainly powerlines. These are not user controllable except by distancing one from them, but this is not always possible as some are underground and thus one doesn't know where they are.
**ELECTRICAL DISTRIBUTION CURRENT PATHS TO URBAN HOUSES**

**DESIGN INTENTION:**
All current enters the building on the electrical supply lines. All return current leaves the building on the electrical supply lines.

**ACTUAL SITUATION:**
**GROUNDING SYSTEM CURRENT PATHS**
The neutral wire is connected to the building grounding system (including the metallic water pipes) at the main electric panel and various other points in each house. The metallic Water Service Supply Pipes connect the all neutral return systems of all the buildings allowing the neutral return current of every building to flow on the building neutral return and grounding system paths of all the buildings. The arrows show current paths. This results in erratic (due to load changes in any building) current flow on the building neutral wire and grounding conductor of all the other buildings. See accompanying representative graphs which shows its erratic nature.
Bonding and Grounding

• If connected to Utility Multi-Grounded Neutral System:
  – the Ground system (including metal piping) and Neutral Wiring may carry a small current:

  Use AC/DC Clamp Meter to measure
  For magnetic field from electric current.
  (wiring errors can be detected when the current in the hot lead does not equal the current in the neutral
  Or if there is current running on the ground wire)
Measuring EMF-ELF

Tri-field meters: www.trifieldmeters.com
Limits for Magnetic Fields in Homes

• Measured in Tesla (converted to Gauss on meters)

• **Safe indoor limit:** <1mg(milligauss). Most homes grounded to same water meter (supply) newer neighborhoods: >1mg, often >3mg

• **Breast Cancer associated with 2-3mg and studies verify link with >= 10mg**
Lowering Magnetic Fields

• Electrical Wiring of Switches:
  – Half Switch Outlets
  – 3-way Switch
  – No neutral to neutral interties:
  – Keep multiple circuits and neutrals in same panel from being tied together
  – Socket Checker:
The impact of any form of radiation depends on signal properties:

- Frequency (pace)
- Amplitude (power)
- Pulse (beats)
- Intensity (power density)
- Polarity
- Information content

Courtesy of Margaritis et al
Dosimetry - 6 Hours in New York City

View 7 — Scale 0.2 mW/m²

Measurement from 3/1/2016 (Peak)
Identcode: 301493121035

0.1 mW/m² BioInitiative Safe Exposure Guideline
(2007 Indoor)

0.003 to 0.006 mW/m² BioInitiative Safe Exposure Guideline
(2012 Outdoor; Indoor level one-tenth of this)
Radiofrequency Research: Does Funding Matter?

Non-industry studies:
- HARMFUL EFFECT: 70% (n=96)
- NO EFFECT: 30% (n=41)

Industry studies:
- HARMFUL EFFECT: 32% (n=27)
- NO EFFECT: 68% (n=57)

Data Compiled by Dr. Henry Lai, University of Washington
Current Wireless Safety Limits

FCC RF limits are from 1996 based on a 220lb man holding cell phone 20 cm from body for 6 minutes

• Based on Thermal effects

Do not take into account:

• The total amount of EMR present in a person’s environment
• Non-thermal effects
• Long-term exposure to such radiation,
• Synergistic effects of multiple sources of EMR exposure
Current recommended RF limits
Bioinitiative Report

• For Pulsed RF exposure:
  • Outside = 0.1 uW/cm² (0.614 V/m-*new standard for cell phone towers in Europe)
  • Inside= 0.01 uW/cm² (Sage report recommend 0.0001 uW/cm²) = 10uW/m²

• Cell towers emit up to 1000uW/cm²
• Within ½ mile of Broadcasts sites= 10 to 100 of uW/cm²= 100,000 to 1000000 uW/m²
• Since Salzburg’00 reports of increased illness at levels < 0.01 uW/cm² (100uW/m²)
Mechanism – Voltage Gated Calcium Channel

- VGCC activation in cells from low-intensity EMFs can now explain long-reported association between EMFs and a wide range of biological changes and health effects.
- The unique structural properties of the VGCC protein can explain why the force on a cell’s voltage sensor from low intensity EMFs are millions of times stronger than are the forces elsewhere in the cell.

**EMF Activation of VGCCs Increases Free Radical Production**

**Source:** Presentation Materials of Dr. Paul Dart, July 23, 2013, before a special session of the Eugene Water and Electric Board.
Measuring EMF-RF

Cornet ED88T EMF meter
www.radmeters.com

TES 593 RF meter

Gigahertx HF 35C RF meter
Sources of EMF Products/Science

• Less EMF (New York) [www.lessemf.com](http://www.lessemf.com) 1-888-537-7363

• Safer Living Technologies [www.slt.co](http://www.slt.co) 519-240-8735

• Combination meters (magnetic and rf) - [www.radmeters.com](http://www.radmeters.com)
Growth in Exposure to Microwave Radiation 2000-2011

- VALEUR AUGMENTATION CONSTATÉE EN MILIEU URBAIN DE L'IRRADIATION ARTIFICIELLE HF MICRO-ONDES 900 MHZ - 2.5 GHz
- AVERAGE INCREASE OBSERVED IN URBAN AREA OF ARTIFICIAL HF MICROWAVE RADIATION FROM 900 MHZ - 2.5 GHz

Next-Up Organisation
SMART METERS -not so “smart”:
No surge protection, no grounding,
Create dirty electricity on wiring in home
Emit digital pulse continuously.
900 MHz and 2.4GHz frequencies
AMI- pulse continuously in one direction
AMR- pulse in two way communication with utility companies
• Risk for security hacking.
• Collector meter home receives data from multiple homes and increased wireless exposure
Collector meter home receives data from multiple homes and increased wireless exposure
Smart Home w/ Smart Appliances
Directed Antenna System DAS
IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), based on an increased risk for glioma, a malignant type of brain cancer\(^1\), associated with wireless phone use.

This classification applies to all RF-emitting devices, including WiFi.

- Robert A. Baan, PhD, IARC

This classification justifies the implementation of the Precautionary Principle.

- Dr. Darius Leszczynski, IARC
Agencies Urging Environmental Moratorium on Wireless Towers /Meters


• **Over 900 submissions to the FCC** for reevaluation of current limits including **the American Pediatric Association** [www.saferemr.com](http://www.saferemr.com)
Agencies Urging Environmental Moratorium on Wireless Towers /Meters

• **2012**: Bioinitiative Report Revised from 2007 (29 international doctors from 10 countries) on Biologically Based Exposure Standards for Low-Intensity Electromagnetic Radiation. (www.bioinitiativereport.org)

• **2011**: Assessment of Radiofrequency Microwave Radiation emissions by Smart Meters by Sage Associates (Jan.) www.sagereports.com/smart-meter-rf
Biological effects of EMF

- Oxidative damage
- Mitochondrial dysfunction
- ↓ Melatonin
- ↑ blood viscosity
- Changes in hypothalamic regulation & cerebral blood flow
- ↑ increased cortisol and adrenaline
- ↑ mobilization of Hg from amalgams
- ↓ neurotransmitters
- ↑ Calcium eflux
Cancer Incidence Increased with Cell Phone Use

1. **Acoustic neuroma**: *(Tumor on acoustic nerve)*: Increase 30% when phone used both sides of head over 10 yrs or more. Increase 240% if used on one side of head.

2. **Glioma**: Increase 20% if used on both sides of head 10 years or more. Increase 200% if used on one side.

3. **Leukemia**

4. **Eye Cancers**

5. **Parotid Gland in cheek tumors**: 4X increased incidence 1970-2006. 34% if use phone 5 yrs., 49% if 266 hours on phone, 58% if > 5500 calls (Sadetzki, S. 2008)
Cancer Incidence Increased with Cell Phone Use

6. Testicular Cancer
7. Meningioma (tumor of the meninges)
8. Thyroid Cancer

Source: Lloyd Morgan References; La Grua Expert Panel 6/16
Cell Phones and Breast Cancer
--Unusual distribution of small cancers
--Only where the phone was held
--No predisposing factors

Credit: Kevin Kunze, MobilizeMovie.com
Lowering EMF-RF Fields

• Metal impregnated materials,
  – e.g. paints, window films, fabrics, metal lath-roofs ( works for some-exacerbates symptoms in others)
• Glass allows more RF to enter
• Faraday cages/canopies/suits /hats ( made of copper and silver/copper )
  – Electrical frequencies are attracted to metal so cages/canopies must be properly grounded or electricity in room turned off.

• Institute of Building and Biology (www.hbelc.org)
• Dr Jay Davidson’s video “How to Digitally Detox”
WIRELESS SHIELDING

Can shield inner space opposite meter with Metal impregnated material,
(e.g. paints, window films, fabrics)
- Nickel/Copper material/mesh on inner wall
- Smart meter kit from www.lessemf.com or www.slt.co
- Smart meter guard available for outside shield of smart meter. (www.smartmeterguard.com)
Shielding Fabrics
Metal Impregnated Canopy
Cancers associated w Cell Phone Use

  - >= 25 year use of cell phone **TRIPLE** risk of glioma than person using phone 1 year
  - 1G phones operated 900 MHz
  - 2G phones operate 900MHz to 1800 MHz
  - 3G phones operate 700 to 3590 MHz (900 to 2170 MHz Europe)
  - Study found 3G phones latency period for cancer **5 to 10 years** vs 25 years.
Cancer Incidence Increased with Cell Phone Use

• **More RECENT studies:**
  
  • Drs. Hardell and Cerenat: 2013/2014:
    > 1640 hours on phone = 3X higher risk of gliomas in brain. Studies 4-8X increase brain tumors under age 20

• **2016 U. S National Toxicology Program: (NTP)**
  
  $25 million STUDY on mice/rats
  
  – 10 minutes on and 10 minutes off for 9 hours/day
  
  – **Increase in Schwannoma, Gliomas, and DNA damage**

  Results contradict the conventional wisdom, advanced by doctors, biologists, physicists, epidemiologists, engineers, journalists and government officials, among other pundits, that such effects are impossible
Impacts on Children from cell phone and wi fi radiation

<table>
<thead>
<tr>
<th>Some of the Impacts....</th>
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</thead>
<tbody>
<tr>
<td>Development in utero</td>
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<tr>
<td>Cognitive function</td>
</tr>
<tr>
<td>Attention</td>
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<tr>
<td>Memory</td>
</tr>
<tr>
<td>Perception</td>
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<td>Learning Capacity</td>
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<tr>
<td>Energy</td>
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<tr>
<td>Emotions</td>
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<tr>
<td>Poor sleep</td>
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<td>DNA mutations</td>
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<tr>
<td>Social skills</td>
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<tr>
<td>Reaction Time</td>
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<tr>
<td>Motor Function</td>
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<tr>
<td>Distraction</td>
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<tr>
<td>Hyperactivity</td>
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<tr>
<td>Inability to focus on long-term tasks</td>
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<tr>
<td>Fatigue</td>
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<tr>
<td>Impaired fertility</td>
</tr>
<tr>
<td>Autism?</td>
</tr>
</tbody>
</table>

“Remarkable Similarities”
in ACS & EMF/RFR

• Oxidative stress & free radical damage
• Cellular stress proteins
• Antioxidant deficiencies, like glutathione
• Elevated intracellular calcium (may be genetics or downstream of inflammation and environmental exposures)
• Malfunctioning membranes
• Mitochondrial dysfunction
• Immune system disturbances


Liam Davis Cellphone Radiation, Wi-fi Internet Cancer, Cell Phones Health, Electromagnetic Radiation- Youtube video on School Exposures
On the rise in children:

- Psychiatric disorders
- Psychotropic medication use
- Chronic medical conditions
- Disability filings
- Gender achievement gaps

...as electronics use increases, at earlier ages

Dramatic Improvements with 3-4 Week Electronic Fasts  
https://youtu.be/YM8LQ-bPEOE
Wireless-free homes help ADD/ADHD, Insomnia and Autism in children

- Tori Jelter MD Pediatrician over 30 years

- Case Studies:

  1. 4 yr old boy: 2 years insomnia-
     2 week wireless-free trial- Sleeping soundly within a week.

  2. 9 yr old boy: Insomnia: smart meter on bedroom wall opposite head of bed: Analog meter re-installed. Able to Sleep immediately.

  3. 10 yr old boy Severe Autism w /aggressive behavior and had never spoke:
     2 week wireless free and spoke within 3 days
Association of Exposure to Radio-Frequency Electromagnetic Field Radiation (RF-EMFR) Generated by Mobile Phone Base Stations with Glycated Hemoglobin (HbA1c) and Risk of Type 2 Diabetes Mellitus

Sultan Ayoub Meo 1,* , Yazeed Alsubaie 1, Zaid Almubarak 1, Hisham Almutawa 1, Yazeed AlQasem 1 and Rana Muhammed Hasanato 2

159 students, 12-17 years; towers 200 m from school building, different power levels, 6 hrs, 5 days a week

“Exposure to high RF-EMFR generated by MPBS is associated with elevated levels of HbA1c and risk of type 2 diabetes mellitus.
Damaged Body Parts from In Utero Exposure

• NATO-supported teams led by Dr. Nesrin Seyhan in Turkey have also found that offspring of rabbits, rats and mice exposed in utero to cell phone radiation have damaged brains, liver, skin and eyes.

Ref: La Grua Presentation, Devra Davis, 2013; Commonwealth Club, Dr. Nesrin Seyhan, June 2015
Cell phone radiation penetration

How mobile phone radiation penetrates the brain

5-year-old
Skull thickness: $\frac{1}{2}$mm

Brain
Skull

Mobile phone

Absorption rate: 4.49W/kg

Degree of penetration

10-year-old
Skull thickness: 1mm

Brain
Skull

Absorption rate: 3.21W/kg

Adult
Skull thickness: 2mm

Brain
Skull

Absorption rate: 2.93W/kg

Source: Institute of Electrical and Electronic Engineers’ journal on Microwave Theory and Techniques
Simulations of Peak Spatial Exposures to Children and Adults from Multiple Devices

**Instantaneous Value of the Electric Field Intensity (V/m) of a Propagating Sinusoidal Wave (900 MHz)**

**Cell Phone Radiation into Adult Male and 6 Year Old Child**

Radiation pattern normalized to 0.0132 W/kg = 0 dB, with a 30 dB color scale,

900 MHz, 250 mW

Fernandez/Environmental Health Trust 2017
Exposure to RF is proportionally greater and deeper in a child’s brain vs. an adult brain.

SAR (2mW, 50dB) in an oblique slice 5 cm from the cell phone’s plane. Exposure is proportionally bigger and deeper in the child and the psSAR is higher in the child's brain.

Fernandez, Personal Communication (2017)
SAR in 6 Year Old from 2.45 GHz Wi-Fi Tablet

Radiation pattern normalized to 0.0132 W/kg = 0 dB, with a 30 dB color scale, and SAR averaged over 1g cube of tissue.

**Specific Absorption Rate (SAR) into the 6 year old head from tablet RF**
38% of Children Under 2 Have Used a Cell Phone (Common Sense Media, San Francisco - 2013)
Mobile Phone in Pocket
Dose to Gonads and Bone Marrow

Fernandez, Personal Communication (2016)
Weston price Study Live Blood Analysis with cell phone radiation Exposure
Carrying condition of same male showing aggregated cells and a few misshapen RBCs
Active use condition of same male subject showing all RBCs are misshapen
Active use condition of female subject. Age 55, fingertip blood showing RBCs in rouleaux
Active use condition of same female subject, toe blood showing RBCs in rouleaux
2.45 GHz (Wi-Fi)
34 Year Old Male
Notebook on Lap

Fernandez 2017
Environmental Health Trust
View of radiation absorption from lap top computers with different antenna locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Typing Position</th>
<th>Non-Typing Position</th>
<th>Typing Position</th>
<th>Non-Typing Position</th>
<th>Typing Position</th>
<th>Non-Typing Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Keyboard</td>
<td>Radiation</td>
<td>44.2 %</td>
<td>83.8 %</td>
<td>77.0 %</td>
<td>87.2 %</td>
<td>90.4 %</td>
</tr>
<tr>
<td>Location 1B</td>
<td>Efficiency</td>
<td>44.2 %</td>
<td>83.8 %</td>
<td>77.0 %</td>
<td>87.2 %</td>
<td>90.4 %</td>
</tr>
<tr>
<td>Back Keyboard</td>
<td>Max (SAR10g)</td>
<td>2.742 W/kg</td>
<td>0.046 W/kg</td>
<td>0.862 W/kg</td>
<td>0.054 W/kg</td>
<td>0.090 W/kg</td>
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<tr>
<td>Location 1A</td>
<td></td>
<td></td>
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<tr>
<td>Middle Top Screen</td>
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<tr>
<td>Location 4A</td>
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</tbody>
</table>

Figure 22. The absorption of electromagnetic energy in human tissue: the resulting antenna radiation efficiencies and SARs in the operator’s body at 2.44 GHz for different inverted-F antenna (IFA) element locations.
MW/RF Linked to Sperm & DNA Damage


• Fertility and Sterility (Vol. 89), 2008, A. Agarwal et al,
• Cleveland Clinic
  • Dose Response: 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
  • 50% of the remaining sperm showed physical abnormalities, did not swim well or were non-viable.
Usfie, Israel

Cancer Clusters Near Towers

Source: Full Signal Documentary
Cancer Clusters & Towers

• H. Eger at al., “The Influence of Being Physically Near to a Cell Phone Transmission Mast on the Incidence of Cancer” (Umwelt·Medizin·Gesellschaft 17,4 2004).

--the proportion of newly developing cancer cases is significantly higher among patients who live within 400 meters of a cell phone transmitter.

--relative risk of getting cancer increased by 200% after 5 years operation of the transmitter.
Belo Horizonte, Brazil (1996-2006)

Cancer deaths in center of city
- within 100m: 4.342/1000 (35% increase)
- >1000m: 3.212/1000

Base Station EMF
- 2003 → 2008
- 3.4 → 12.4 V/m
- 3.06 → 40.78 μW/cm²

Limits
- Switzerland: 4.2 μW/cm²
- Paris: 1 μW/cm²
- Salzburg: 0.1 μW/cm²

Rate of mortality by neoplasia, according to the distance from BS
- Null hypothesis

Slide courtesy of Martin Blank, PhD, Columbia Univ.
On iPhone: GO to SETTINGS, then GENERAL, then ABOUT, then LEGAL:

see warning in phone to keep off of body and away from head
SAR Specific Absorption Rate

- SAR= specific absorption rate
- Limit set at 1.6 W/ Kg
  - 0.6mW/Kg shown to cause DNA damage
  - Standard conversation = 4 to 8 W/Kg
- For comparison of heating effects between phones--NOT a measure of safety or biological effects
- Only one of many possible factors impacting cell phone ‘safety’.
- Does not measure the non-thermal effects
- SAR varies with the source of exposure (ex: rural, train)
- If you use a low SAR value phone for long durations, you will be more exposed than someone who uses a low SAR value phone infrequently.
- Holding the worst SAR phone in a slightly different way can render it better than the best SAR value phone
Lowering EMF-RF Fields

Live away from cell phone towers

Avoid wireless in home or turn off at night
  – Choose hardwired connections for routers/computers/gaming devices/keyboard/mouse whenever possible.
  – Turn off routers/wifi on devices when not in use

DO not use cordless DECT phones in house or SMART devices or bluetooth headsets- GET a Landline phone!!

Use Air tube headset or speaker with cell phones
  – Avoid use in car or train or bus (metal structures)
  – Keep WiFi and Bluetooth “off” when not using and keep off body!!
  – NOT ON OR NEAR BODY WHILE SLEEPING!!
  – Avoid use if signal is low or difficult
    (weaker signal means higher bursts of radiation)

(Dr Devra Davis www.ehtrust.org and Dr. Jeromy Johnson www.emfanalysis.com)
Air Tube Headsets

Available as “RF3 Envi” or “EMF Relief”
Shielding EMF fields
Protect the ones you love.
Lowering EMF-RF Fields

• Avoid children‘s use of wireless devices (esp. tablets- remember safety limits are based on 20cm away from a 220 lb man !)
• Use wired baby monitors not wireless-
  – Smart Nova has safe baby monitor
• Download movies onto devices and watch in airplane mode – turn off routers and have devices hardwired
• Demand Fiber optic shielded cables for wireless in schools and workplace (occur in schools in Switzerland, Finland, Luxemerg, Austria , Israel).
• www.parentsforsafetechnology.org
• www.babysafeproject.org
• Liam Davis youtube video: Cell phone radiation, wifi..
Wireless Repels Honey Bees

After 10 days of 10 minutes of cell phone radiation, worker bees did not return to test colonies.

Exposed 3 hives Controls

Electromagnetic radiation (EMR) damages Honey Bees (Sainudeen, 2011)

Control hives, n=3

All workers return to hives

Test hives, n=3

After few days the workers never return to hives

10 day

Colony Collapse/Disrupting Syndrome

Only queen, eggs & hive bounds immature worker bees

Thriving hives deserted

10 day
Berkeley posted Ordinance regarding warning that wearing cell phone on body exceeds federal safety guidelines for exposure
Dirty Electricity:

- **Non-linear** ("harmonics" = voltage spikes) generated along electrical wires as power switches from AC to DC in transmitters and switches.

- **Examples of sources:**
  - Dimmer switches, LED lights, Halogen lights, Computers, Transmitters, High-efficiency lighting - CFL (Compact-Fluorescent) bulbs *banned in Germany in 2013, Solar power inverters
  - Generated into the air from High Power Stations (e.g. 7200 volts clipped)
<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.</td>
<td>Electrogenerating stations-Brushes and variable magnetic field</td>
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<tr>
<td></td>
<td>communications, split range</td>
</tr>
<tr>
<td>2.</td>
<td>Sub stations</td>
</tr>
<tr>
<td>3.</td>
<td>High tension wires – carrying 7,200 volts</td>
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<tr>
<td>4.</td>
<td>Cell Towers</td>
</tr>
<tr>
<td>5.</td>
<td>Supply lines</td>
</tr>
<tr>
<td>6.</td>
<td>Ground wires</td>
</tr>
<tr>
<td>7.</td>
<td>Telephone lines</td>
</tr>
<tr>
<td>8.</td>
<td>Mobile phone masts – wireless meters</td>
</tr>
<tr>
<td>9.</td>
<td>Power line telecommunications (PLT)</td>
</tr>
<tr>
<td>10.</td>
<td>Radio and TV transmitters</td>
</tr>
<tr>
<td>11.</td>
<td><strong>Smart meters</strong></td>
</tr>
</tbody>
</table>

Each power station is connected to others in U.S.
Dirty Electricity

• Many studies correlate dirty electricity to Cancers (Milham and Morgan 2008),

• Diabetes and Multiple Sclerosis (Havas 2006)

• Behavioral/ health problems in schools (Olstead and Havas 2006) (Milham 2008).

• Cow milk production/ increased adrenal hormones (Hillman, Michigan State University
Shielding Dirty Electricity

• **Turn off circuits where found or fix wiring errors causing issue**

• **Stetzer filters plugged into outlets throughout house can lower dirty electricity. (Some sensitive patients do not tolerate the electrical field that is pulsed from filters into room.)** (www,stetzerelectric.com)
Measuring “dirty electricity”
Earthing sheets and pads from WWW.EARTHING.COM
Earthing Beds (Samina USA)

- **The Lokosana® grounding pad** is used over the natural rubber mattress and beneath the wool mattress topper where it is grounded with a CE certified, energized plug from the AC outlet. The result is a large surface area of your body that’s grounded during sleep without direct contact to the body.

- **The Bio-magnets used in Lokosana®** are also important to stabilize the distorted electromagnetic fields of our modern lifestyle and effectively have you sleeping in a head north – feet south position for optimal grounding and healthy sleep.
Heel Strap

http://www.wassookeagmoccasins.com/
Grounding Pendants/Harmonizing Resonators/Bracelets

Sanctuary Bracelet

Child Sanctuary Bracelet
Avoid blue light frequency from phone and computers

- **Blue light frequency** from screens of cell phones and computers tell pineal gland sun present. Inhibits melatonin production.

- Recent studies show blue light over time affects retina and vision.

- Melatonin potent antioxidant and inhibits cancer
- Blue light filters now available on phone under “Settings”

  Lowbluelights.com or sleepshield.com. Ipad, phone, computer shields. Yellow glasses can be worn to filter out blue light frequency.
Blue Light Filters

F.Lux

Iris-Mini
Hybrid Cars - extremely high magnetic fields from battery - avg 2-3 mg, with acceleration up to 300mg

- **SINTEF** - Design guidelines to reduce the magnetic field in electric vehicles [http://bit.ly/1qw29Tb](http://bit.ly/1qw29Tb)
  - A thin layer of ferromagnetic shield for cables.
- Power cables separated from the passenger seat area by a steel e.g., under a steel metallic chassis, or inside a steel trunk.
- The motor housing should be made of steel, rather than aluminum.
- The cables connecting battery cells should not form a loop.
- If the distance between the battery and passenger seat area is less than 200mm (8in), steel shields should be used to separate the batteries and the seating area. No loop of battery cables, interconnectors have + and- polarity close together.

- **Grounding Strap** : Patients also describe benefits (including less car sickness) to decrease build-up of RF and EMF in car.
Factors that increase EMF sensitivity

- Living/working in high EMF fields
- Exposure to pesticides/heavy metals (silver amalgams and metal implants/mesh)
- Exposure to molds/mycotoxins
- Rate of detoxification/Nutrient status/Colon health (bacteria/yeast overgrowth)
- Imbalance of body’s energy centers (lack of personal boundaries/depletion of inner energy)
EMF Sensitivity Treatment Modalities

- Decrease total body load
- **Avoid exposures to molds, pesticides, high EMF fields** (esp. home environment)
- **Detoxify body of chemicals/ molds/ heavy metals** (check RBC Cell Minerals and Heavy Metals, Hair Mineral Analysis, lymph drainage, sauna)
- **Replace nutrients:**
  - Magnesium
  - **Trace minerals / sea salts** (help w conductivity in body),
  - Healthy fats-acts as insulators, **fish oils**,
  - Melatonin
  - Lecithins (phospholipids: phosphatidylcholine and ph. serine)
- **Heal intestinal tract** (probiotics, organic rotary diet)
2015: International Appeal by over 200 scientists from 41 countries to the United Nations to re evaluate current RF limits
Talk to Your Reps in Congress
FCC - Change Exposure Guidelines
   33 Recommendations for FCC
2. Grass Roots Help: Share
   The Wireless Elephant in the Room
3. Call Senators to vote NO on 5G Mobil Now Act S.19 and Digit Act S.88
Research Needed - Precautionary Principle:

• Standardized metrics for Personal Exposure Evaluation
• Create cross-sectional surveys (in India)
  • Memory
  • Reaction time
  • Reproductive Health

Schools: Promote wired school programs and mobile tablet shared banks

Public Education Programs:
  Sharing Fine Print with Health professionals, Teachers, Parents
Sources of EMR/EMF information and science/updates/products

- www.TakeBackYouPower.net
- www.electromagnetichealth.org
- http://manhattanneighbors.org/about-us/
- “Wireless Elephant in the Room”-National Institute for Science, Law, and Public Policy, 1400 16th St. NW#101, Washington, DC20036
- EMR Policy Institute (www.emrpolicy.org)
- www.saferemr.com Joel Moskowitz Director of Public Health Berkeley
- www.TexansagainstSmartmeters.org
- www.TexasRighttoKnow.org
- ReWireMe eMagazine by Electrosensitive Society (www.rewire.me) and www.es-uk.info (>1800 references)
- Global Union Against Radiation Deployment from Space (GUARDS) www.stopglobalwifi.org