

# **Biological Impacts of Electromagnetic Fields (aka EMFs)**

**- Please turn off your cell phone -**

William (Bill) Hoult

Somos Life, Torrance, CA

15 June 2019

# I Am An Engineer, I Am Not A Doctor

- **DISCLAIMER: THIS BRIEFING DOES NOT PROVIDE MEDICAL ADVICE**
- The information, including but not limited to, text, graphics, images and other material contained herein are for informational purposes only.
- The purpose of this briefing is to promote awareness regarding certain environmental phenomena and knowledge of related research, physiologic consequences and potential solutions.
- It is not intended to be a substitute for professional medical advice, diagnosis or treatment. Always seek the advice of your physician or other qualified health care provider with any questions you may have regarding a symptom, medical condition or treatment and before undertaking a new health care regimen, and never disregard professional medical advice or delay in seeking it because of something you have seen in this briefing.
- Reliance on any information appearing in this briefing is solely at your own risk.

**This Information Is For Informational Purposes Only**

## Bio – Bill Hoult

- BS (double major in Engineering and Physics) GPA-4.0, MS Engineering (EMF) GPA-4.0
- Over 35 years of aerospace technology development experience spanning many portions of the EMF spectrum: radio frequency, microwave, millimeter wave, medium/long wave infrared and fiber optics
- Served as Chief Engineer of Space-Based Laser Communications at the Boeing Company, where he led a team of scientists developing advanced technologies to support a satellite-based internet backbone in outer space.
- Received multiple technical excellence awards, published 3 papers, holds 4 patents, held various security clearances including Top Secret, and SSBI.
- Upon retiring and spending much more time at home, he did not feel well, and discovered that all forms of EMF in his house were above safe limits - including microwave radiation (wifi, cell phone, cell towers), electric fields (house wiring), magnetic fields (current on pipes) and dirty electricity (power lines, computers, TVs). After mitigating much of the EMF in his home he began to feel better.
- Currently his research is focused on finding ways to mitigate biological impacts of EMF
- He has begun speaking to raise awareness about EMF safety

# Do Existing EMF Exposure Regulations Protect Us From Harm?

- Electromagnetic fields (aka EMFs) and electromagnetic waves are produced by
  - Power lines and house wiring
  - Cell towers, cell phones, cordless phones, Wi-Fi devices, Bluetooth
- Can these Electromagnetic Fields and Waves adversely impact our health?
  - If so, what are safe levels?
  - Do current safety regulations protect us from harm?
- Some people experience adverse health effects from EMF exposure
  - EMF Sensitivity (EMFS) or Electrohypersensitivity (EHS) or Radio-Wave Sickness or Electrosensitivity

*Are you  
sensitive  
to EMF?*

**Based on Peered Reviewed Research, Many Scientists Believe  
EMF Exposure Regulations Do Not Protect Us From Harm**

# Discussion Topics

- **Isn't EMF Safe?** – EMF health concerns in News - USA and Worldwide) and courts
- **Activism** - Appeal to the UN and FCC; Many non-profits educate the public of risks
- **Electromagnetic (EM) Concepts** – Electric Fields, Magnetic Fields, Dirty Electricity, EM Waves
- **Debate About Safe Levels** – Thermal vs Non-Thermal (or Biologic) effects
- **Measurement Methods** – Techniques and meters to measure 4 types of EMF
- **Case Study: Findings and Mitigations** – Selected data from Bill's house
- **Recovery** – Impact mechanisms and possible mitigations 
- **Beyond Conventional Science** – Protective pendants and highly sensitive persons (HSP) 
- **Closing** – Topics not discussed; EMF 2 class, Acknowledgements; Conclusions

# Isn't EMF Safe?

Activism

Electromagnetic Concepts

Debate About Safe Levels

Measurement Methods

Case Study: Findings and Mitigation

EHS Recovery – Preliminary Findings

Beyond Conventional Science – Preliminary Findings

Closing

# Isn't EMF Safe? USA News and Courts

- **WATCH** “BRA PHONE” Women carrying phone in bra get breast cancer. (KTVUChannel2News)
  - [https://www.youtube.com/watch?time\\_continue=4&v=OAnhxyf6FDs](https://www.youtube.com/watch?time_continue=4&v=OAnhxyf6FDs)
- **WATCH** Smart meter causing involuntary muscle spasms (INFO WARS)
  - Couple twitch at smart meter repetition frequency (every 25 sec) just before falling asleep
  - <https://www.bing.com/videos/search?q=smart+meter+in+news+woman+twitching&&view=detail&mid=0F43AC3360EB053E551C0F43AC3360EB053E551C&&FORM=VRDGAR>
- **WATCH** Firefighters BAN cell towers on LA fire stations
  - Cell towers causing: migraines, extreme fatigue, vertigo, disorientation, vital memory loss, ADD
  - <https://www.bing.com/videos/search?q=fire+fighters+ban+cell+towers&view=detail&mid=1B1D602F9B5231EA5CC01B1D602F9B5231EA5CC0&FORM=VIRE>



Bra Phone  
(0-1:45 min)



Is Your Smart Meter  
(58sec-5min)



PACTS – Firefighters  
(All)

**Do EMF Exposure Regulations Protect Us From Harm?**

# Isn't EMF Safe? News Outside the USA

- Brazil: 10 yrs study shows cancer rates higher within 500 meters (.28 miles) of transmitting cell tower  
<https://www.bing.com/videos/search?q=cell+tower+on+fire+station+cancer&&view=detail&mid=2DD5677AC80F4E98BB912DD5677AC80F4E98BB91&&FORM=VDRVRV>
  - “It should be forbidden to install antennas within 500 Meters of a hospital.”
  - “Antennas should be forbidden in residential areas.”
  - 66 towers removed, 19 more to be removed
- France: Wifi banned in nursery schools. <https://ehtrust.org/france-new-national-law-bans-wifi-nursery-school/>
  - Cell phones labeled with SAR values and ways to lower radiation.
  - WiFi routers turned off in elementary schools except when needed.
  - Cell phone ads must recommend phones be held *away* from the head.
- World Health Organization <http://emfsafetynetwork.org/wireless-devices-potential-cancer-risk-says-world-health-organization/>
  - Has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), based on an increased risk ... of brain cancer, associated with wireless phone use.

**Other Countries Taking Action To Mitigate EMF Exposure**

# Isn't EMF Safe? Liability Posturing is a Concern

- **WATCH** The wireless Industry does not say that cell phones are safe – the Govt says they are safe
  - <https://www.youtube.com/watch?v=Dt7sx2l86nU>
- **WATCH** (1:09 – 3:33) PUC will not say smart meters are safe, but provides an opt out program for those concerned about radiation
  - [https://www.youtube.com/watch?time\\_continue=29&v=8ZTiT9ZSg3Q](https://www.youtube.com/watch?time_continue=29&v=8ZTiT9ZSg3Q)
- Insurance companies do not want to insure wireless devices because it is simply too risky.
  - “It may take two more decades to know if EMF energy is a significant liability issue for telecom companies, so, in the interim, insurers are treating the risk as cautiously as a downed power line after a storm.
  - Insurers often... avoid policyholders in the wireless industry, brokers say.”
  - <https://ehtrust.org/key-issues/reports-white-papers-insurance-industry/>



The Wireless Industry  
(All)



Take Back Your Power  
(1:09 – 3:33)

**No One Taking  
Responsibility  
For EMF Safety**

# Isn't EMF Safe?

## Activism

Electromagnetic Concepts

Debate About Safe Levels

Measurement Methods

Case Study: Findings and Mitigation

EHS Recovery – Preliminary Findings

Beyond Conventional Science – Preliminary Findings

Closing

# Activism – Scientists Appeal to United Nations & Lobby US Government

- **WATCH** International Scientist Appeal on Electromagnetic Fields Martin Blank PhD  
May 11 2015
  - 160 scientists appeal to United Nations to change EMF exposure limits
  - <https://www.youtube.com/watch?v=2ljs5lrebac>
- Scientists For Wired Technology
  - “...lobbies local, state and federal government to support measures that will protect all from the hazards of exposures to pulsed, data-modulated Radiofrequency Microwave Radiation (RF Microwave radiation) — a know human carcinogen. *As duration, not intensity, is the most important factor in exposures to pulsed, data-modulated, Radio-frequency Electromagnetic Microwave Radiation (RF-EMR), the collateral damage of the **misguided and ill advised Wireless revolution** will be us.*”
  - <http://scientists4wiredtech.com/>



International Scientist Appeal  
(All)

160 scientists Appeal To United Nations To Reduce EMF Exposure Limits

Scientists4wiredtech... “Lobbies local, State and Federal Government to Support Measures That will Protect All From The Hazards of...Microwave Radiation ”

# Activism – “CMA support efforts to implement new safety exposure limits for wireless devices to levels that do not cause human or environmental harm based on scientific research”

- California Medical Association (CMA) Resolution 107- 14 PASSED Date Adopted Dec 7, 2014
  - Sited 62 peer reviewed papers
  - “...CMA support efforts to implement new safety exposure limits for wireless devices to levels that do not cause human or environmental harm based on scientific research.”
  - “many scientists, researchers, public health officials and agencies conclude that wireless electromagnetic frequency (EMF) standards established by the Federal Communications Commission are outdated as they are based only on heat effects which damage to the organism and not biological effects of non –ionizing EMF microwave radiation which are scientifically demonstrated at levels hundreds of times less than current safety exposure limits and thus current standards are inadequate to protect public health”
  - “...peer reviewed research has demonstrated adverse biological effects of wireless EMF including single and double stranded DNA breaks, creation of reactive oxygen species, immune dysfunction, cognitive processing effects, stress protein synthesis in the brain, altered brain development, sleep and memory disturbances, ADHD, abnormal behavior, sperm dysfunction, and brain tumors”
  - <https://ehtrust.org/the-california-medical-association-wireless-resolution/>

**California Medical Association: “...standards established by the FCC are outdated...”**

# Activism – “Bioeffects ... clearly established ... with very low Exposure Levels (non-thermal levels)”

## BioInitiative 2012

A Rationale for Biologically-based Exposure Standards  
for Low-Intensity Electromagnetic Radiation



- From 10 countries: 10 MDs, 21 PhDs, and 3 MsC, MA or MPHs.
- “... autism disorders ... minimize ... EMF exposures ...during pregnancy”
- “.. dozen new studies link cell phone radiation to sperm damage...”
- See “Summary for the Public”,  
<https://bioinitiative.org/>

**“Radiation Levels In Nearly Every Country Of The World Look To Be Thousands of Times Too Lenient”**

- (\*) RFR – Radio Frequency Radiation
- (\*) ELF – Extremely Low Frequency

## Bio Initiative - Partial Table of Contents

- 5: EVIDENCE FOR EFFECTS ON **GENE AND PROTEIN EXPRESSION**
- 6: EVIDENCE FOR GENOTOXIC EFFECTS – RFR(\*) AND ELF (\*) DNA DAMAGE
- 7: EVIDENCE FOR STRESS RESPONSE (STRESS PROTEINS)
- 8: EVIDENCE FOR EFFECTS ON **IMMUNE FUNCTION**
- 9: EVIDENCE FOR EFFECTS ON **NEUROLOGY AND BEHAVIOR**
- 10: EFFECTS OF EMF FROM WIRELESS COMMUNICATION UPON THE **BLOOD-BRAIN BARRIER**
- 11: EVIDENCE FOR **BRAIN TUMORS AND ACOUSTIC NEUROMAS**
- 12: EVIDENCE FOR **CHILDHOOD CANCERS (LEUKEMIA)**
- 14: EVIDENCE FOR **BREAST CANCER PROMOTION**
- 15: EVIDENCE FOR DISRUPTION BY THE MODULATING SIGNAL
- 16: PLAUSIBLE **GENETIC AND METABOLIC MECHANISMS** FOR BIOEFFECTS OF VERY WEAK ELF MAGNETIC FIELDS ON LIVING TISSUE
- 17 EVIDENCE BASED ON EMF MEDICAL THERAPEUTICS
- 18: **FERTILITY AND REPRODUCTION** EFFECTS OF EMF
- 19: **FETAL AND NEONATAL** EFFECTS OF EMF
- 20: FINDINGS IN **AUTISM** CONSISTENT WITH EMF AND RFR

# Activism - Opportunities Raise Awareness about EMF Concerns

- Take back your Power <https://takebackyourpower.net/>
  - In Power - informs you of training and leadership opportunities, events near you.. <https://inpowermovement.com/>
- Center for Electro Smog Prevention - La Mesa , CA <http://www.electrosmogprevention.org/>
- Center for Safer Wireless - established in July 2009 in Virginia <https://centerforsaferwireless.us/web/main/>
- Parents for Safe Technology –Take Action of 5G <http://www.parentsforsafetechnology.org/>
- Global Freedom Movement <https://globalfreedommovement.org/fcc-approves-rollout-5g-technology-evades-questioning-wireless-dangers/>
- California Brain Tumor Association <http://www.calibta.org/> Founded 2008
  - <https://www.youtube.com/watch?v=Me1YfVZgHIA>
- We Are the Evidence –Share your story <https://wearetheevidence.org/>
- EMF Wise <http://www.emfwise.com/ehs.php#definition>
- Physicians for Safe Technology <https://mfsafetech.org/>
- My Street My Choice <http://mystreetmychoice.com/>
- What is 5G <https://whatis5g.info/>

*Founder Spoke June 7,  
2019 in Westlake CA*

*Currently, there is a big push  
back against the roll out of 5G*

**Alert Friends, Donate, Volunteer, Meet with Groups, Write your Representative**

**Isn't EMF Safe?**

**Activism**

**Electromagnetic Concepts**

**Debate About Safe Levels**

**Measurement Methods**

**Case Study: Findings and Mitigation**

**EHS Recovery – Preliminary Findings**

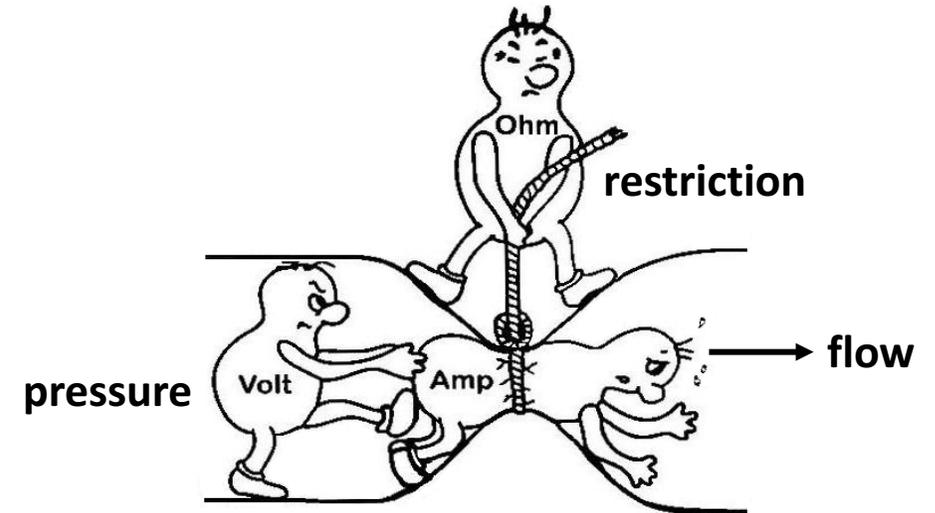
**Beyond Conventional Science – Preliminary Findings**

**Closing**

# Basic Circuit Concepts

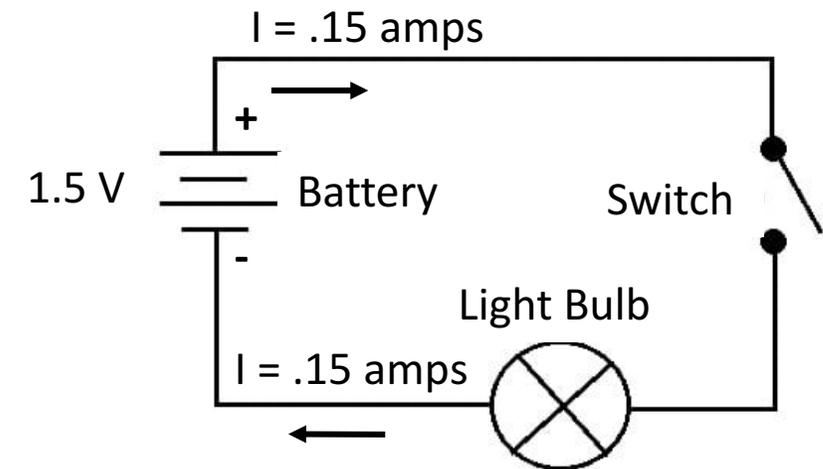
## Voltage, Current, and Resistance

- Voltage – V - [**Volt**] - electromotive force
  - like water pressure at a faucet
- Convectional Current – I – [**Amp**] – flow of electrons
  - like water flow
- Resistance – R – [**Ohm**] – a constriction to the flow of current
  - like a restriction in a water hose



**Cartoon of Ohm's Law**

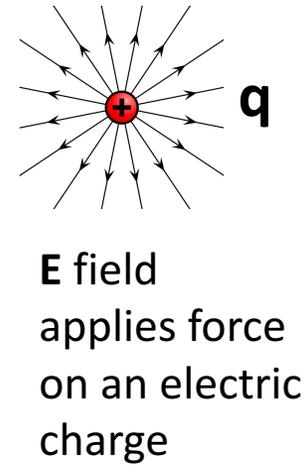
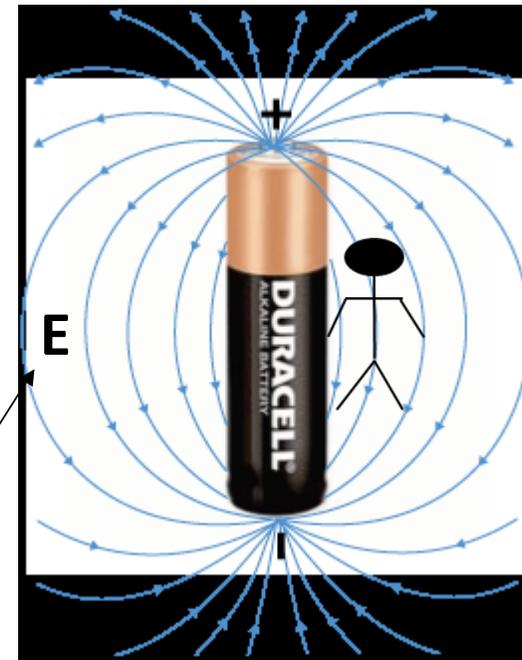
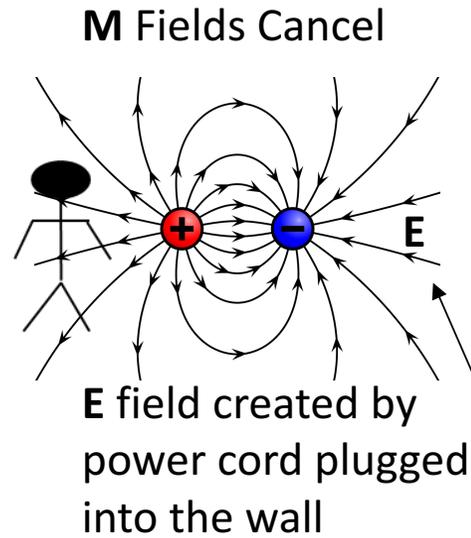
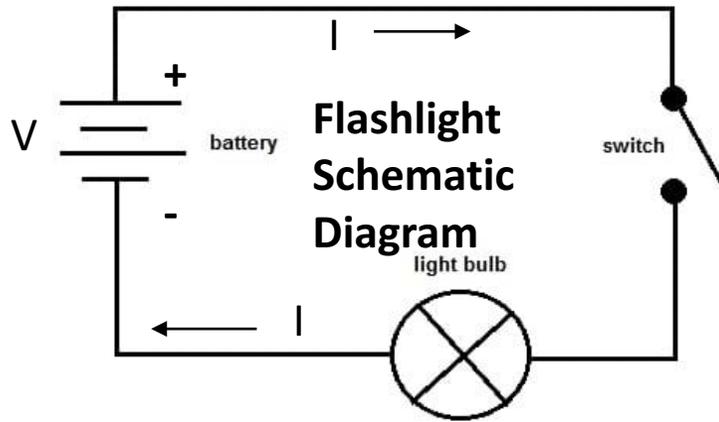
## Power Dissipation $P=V*I$ [**Watts**]



**Flashlight Schematic Diagram**

NOTE: Conventional flows from the positive terminal to the negative terminal. Electrons flow from negative to positive

# Electric and Magnetic Fields

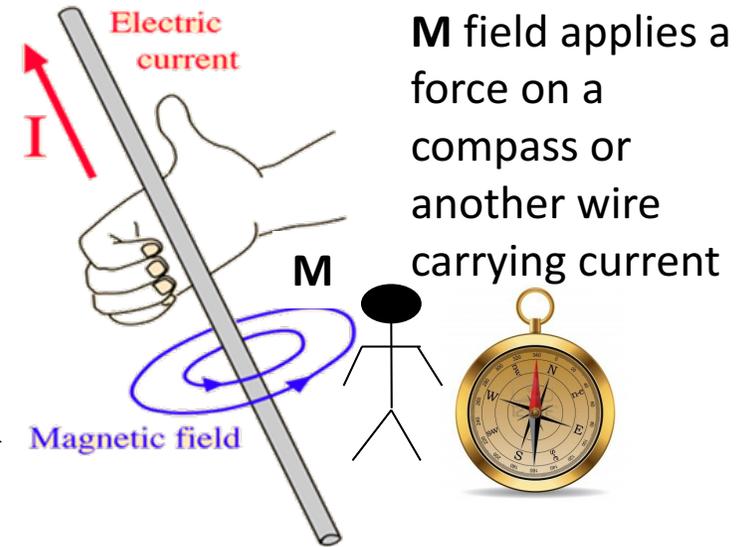


**Electric field (E)** - created by the potential difference between the + and - terminals of a battery or power cord plugged into the wall

- Direction of the **E** Field lines go from + to -
- Magnitude of the **E** Field drops as you move away from the battery
- **E** field is measured in (V/m) – volts per meter

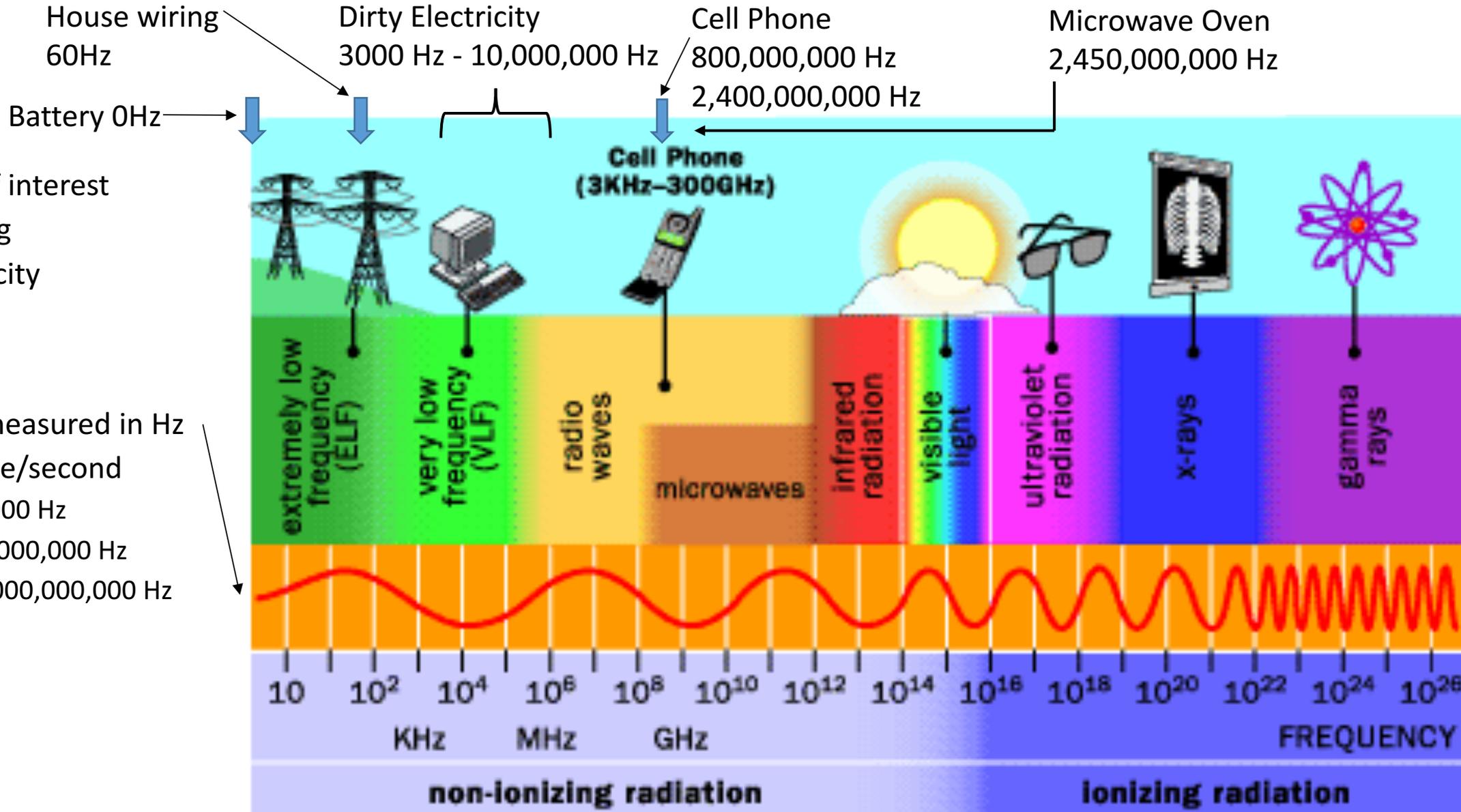
**Magnetic field (M)** - created by current flowing in wire

- Direction of the **M** Field lines follow the right hand rule
- Magnitude of the **M** Field drops as you move away from the wire
- **M** field is measured in (mG) – milli-Gauss



**Voltage on Wires Produce Electric Fields. Current on Wires Produce Magnetic Fields**

# Electromagnetic Frequencies Include House Wiring, Cell Phones And Sunshine



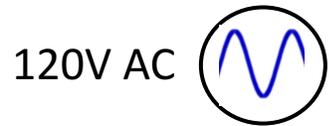
- Frequencies of interest
  - House wiring
  - Dirty electricity
  - Cell phone

- Frequency is measured in Hz
  - 1 Hz = 1 cycle/second
  - 1 KHz – 1,000 Hz
  - 1 MHz – 1,000,000 Hz
  - 1 GHz – 1,000,000,000 Hz

# Alternating Current (AC) and Dirty Electricity (DE)

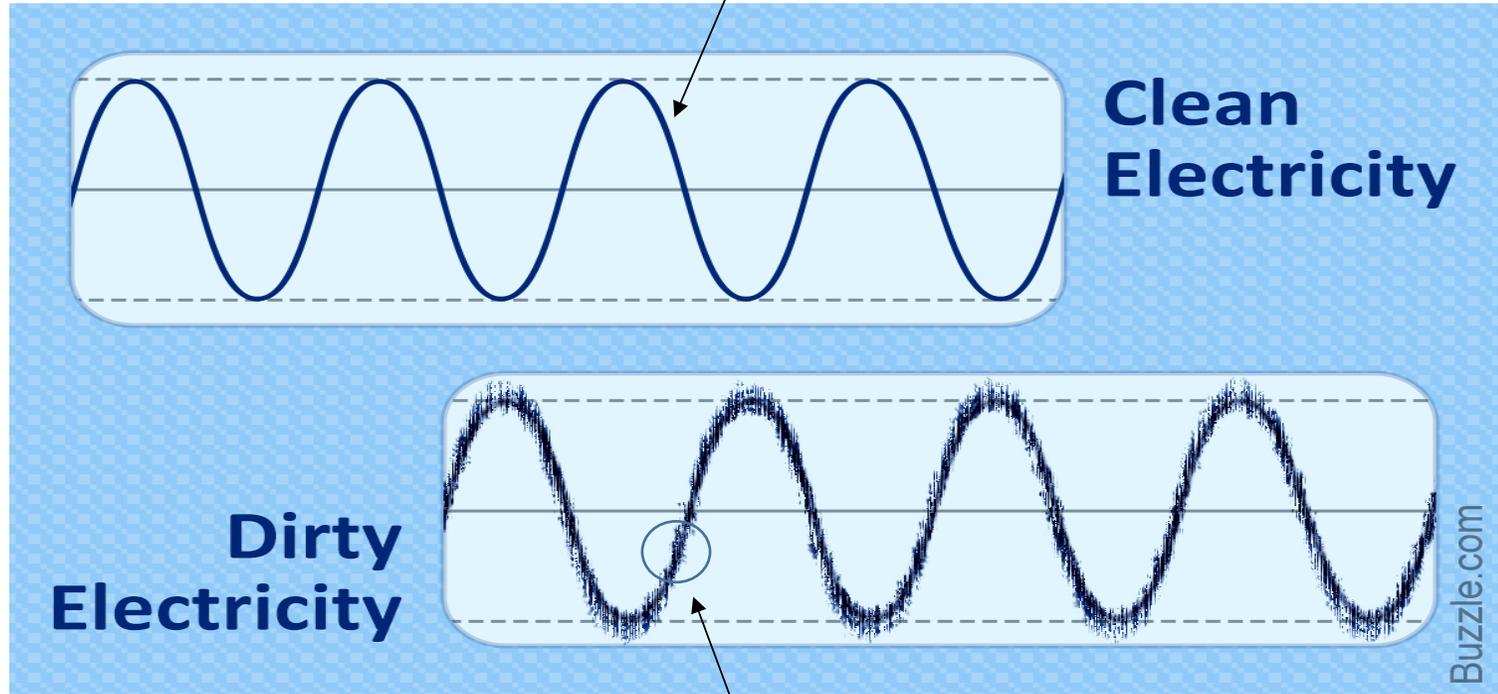
## Wall Outlet

- 120 AC at 60 Hz
- Symbol for AC Voltage source



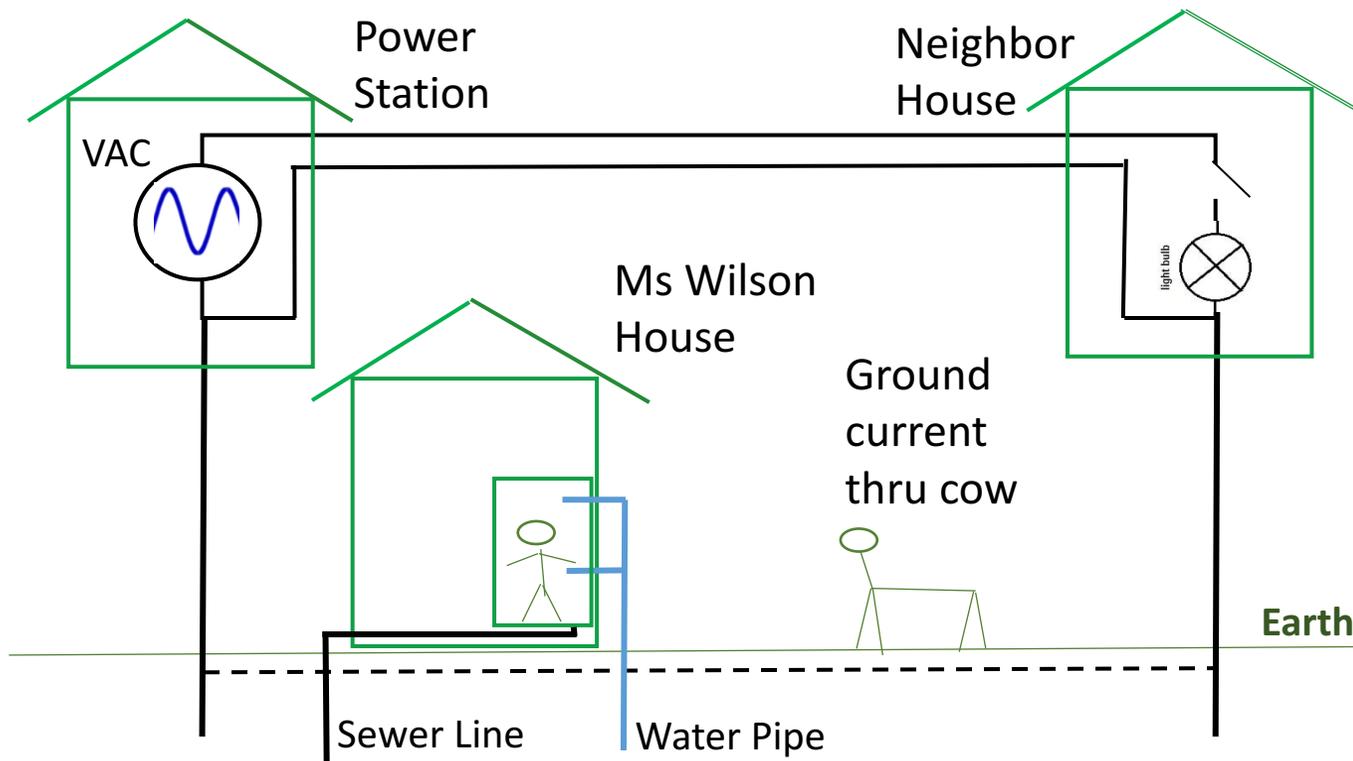
## Dirty Electricity

- 3 kHz to 10,000 kHz
- Electrical Noise that piggybacks onto the 60 Hz wiring in our home
- DE has greater increased over the last 20 years
- No regulations on DE



**Wall Outlet: 120 VAC 60Hz**  
**Dirty Electricity Is Noise On 60 HZ**

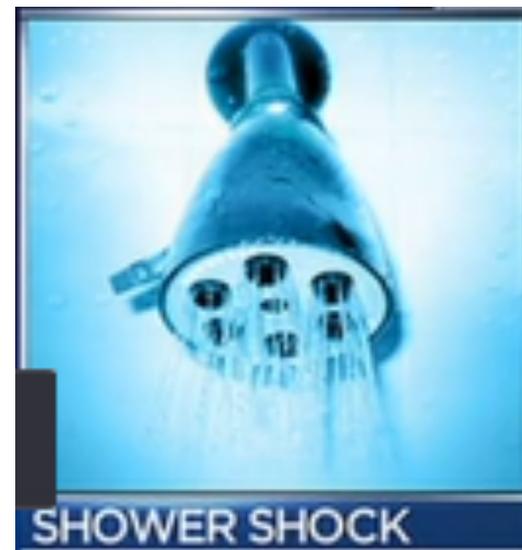
# Ground Currents



- Utility returns a portion of the neutral current through the earth
- Current in the earth hops on pipes if not using a single point ground
- Ground current runs through cows and impacts health
- Ms. Wilson (Redondo Beach) – received shocks to hands and feet in shower after remodel – could not hold utensils, hard to type



Effects of "Stray Voltage" on Livestock  
(Omit 5:40 – 6:50 )



Mom Shock  
(Omit - All)

Ground  
Currents  
Can  
Produce  
Currents  
On Pipes

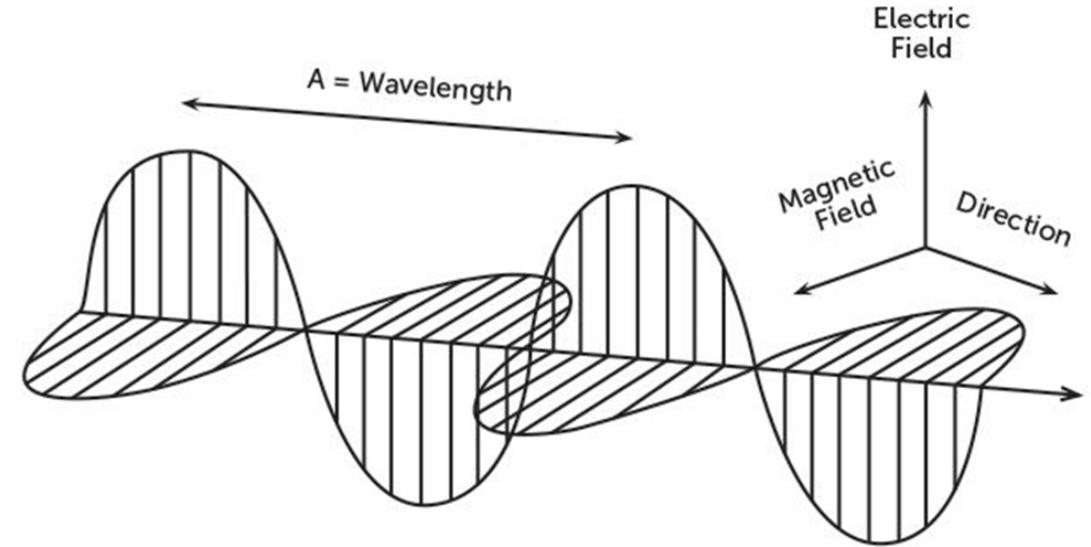
# Electromagnetic Waves

## Electromagnetic (EM) Waves

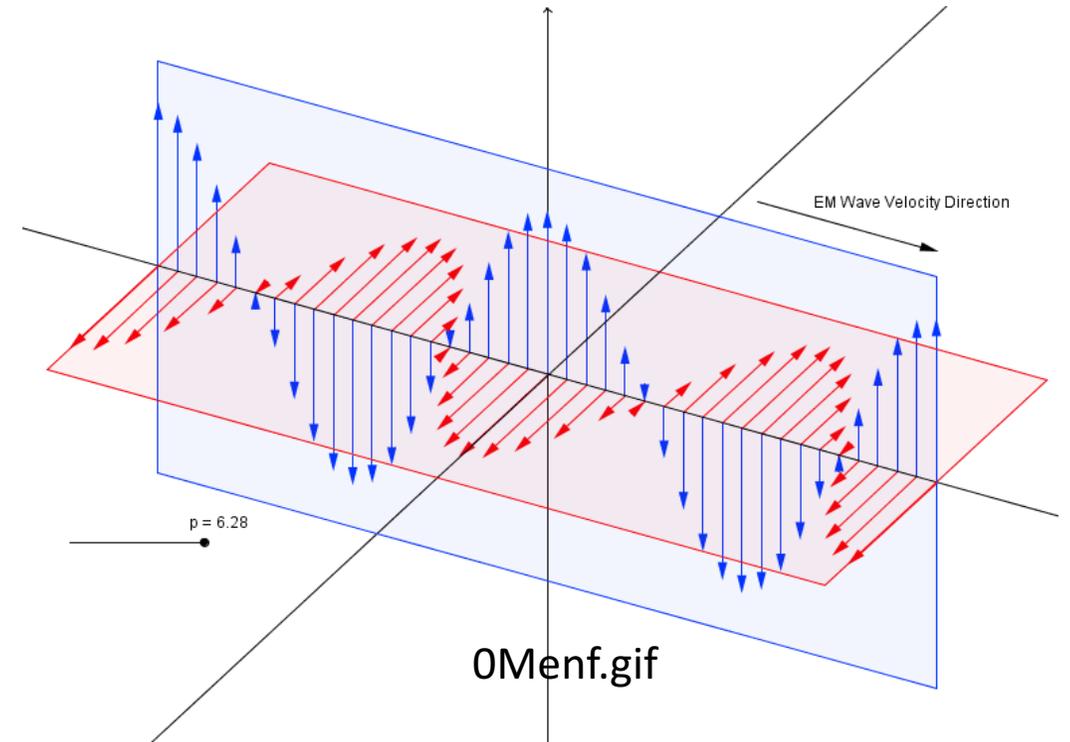
- Includes an **E** field and **B** field component, which are perpendicular to each other
- **E** field and **B** field components are compelled in the far field (2 – 3 wavelengths from the source)
- Propagate through space in time
- Can carry information encoded on the waveform
- Transmits power thru space
- Strength measured in power density (Watt/cm<sup>2</sup>)
- Propagate per the right hand rule

## Wavelength, $\lambda = c / f$

- Wavelength,  $\lambda$  (meters)
- Frequency,  $f$  (Hz) or cycles/ sec
- Speed of light,  $c = 3 \times 10^8$  meters/sec
- Cell phone ( $f = 2\text{GHz}$ ):  $\lambda = .15 \text{ m} = 0.45 \text{ ft}$
- House wiring ( $f = 60 \text{ Hz}$ ):  $\lambda = 5 \times 10^6 \text{ m} = 2840 \text{ miles}$

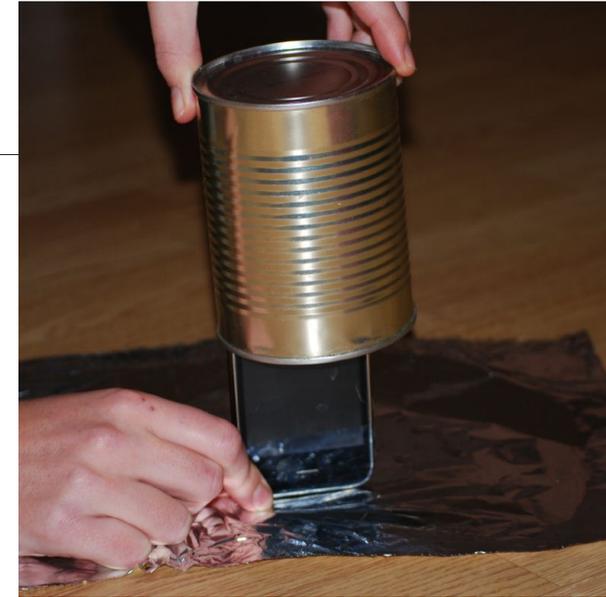


Electric and magnetic fields traveling at right angles form an electromagnetic wave.



# Faraday Cage

- Faraday Cage Examples
  - Place your phone in a metal can and seal with aluminum foil, the signal will be blocked and the phone will not ring
  - A faraday cage (metalized fabric) can be placed around a bed to block cell tower energy
- Faraday Cage Purpose
  - Blocks Electromagnetic (EM) Waves (Ex. cell phone radiation)
  - Blocks Electric Fields (Ex. 60 Hz house wiring) if grounded to the earth
  - Cannot block Magnetic Fields (Ex. 60 Hz house wiring)
- Faraday Cage Construction
  - Full enclosure (360 degrees) made of a conductive material



**Faraday Cage Provides Shielding From E-Fields and EM Waves but not M-Fields**

**Isn't EMF Safe?**

**Activism**

**Electromagnetic Concepts**

**Debate About Safe Levels**

**Measurement Methods**

**Case Study: Findings and Mitigation**

**EHS Recovery – Preliminary Findings**

**Beyond Conventional Science – Preliminary Findings**

**Closing**

# Debate About Safe EMF Levels

- Topic of safe EMF exposure levels for cell phone radiation is a very polarizing
- **FCC maintains only Thermal effects (or heating) need to be considered for safety**
  - Note: The frequency of cell phone similar to microwave ovens
  - Position: If a cell phone only cooks your brain a little, then there is no biological damage
  - Note: I can not find any rationale relating thermal heating to health effects
- **Many scientists maintain Non-Thermal effects or biologic effects occur at exposure levels FAR below thermal effects**
  - Peer reviewed studies show evidence of non-thermal effects, but until recently no mechanisms were identified
  - Martin Pall's work on the VGCC effect identifies a non thermal mechanism

**If FCC Acknowledges Non-Thermal Effects, Then Cell Phones Will Be Deemed Unsafe**

# FCC Cell Phone Safety Test Method (Thermal Effect Only)

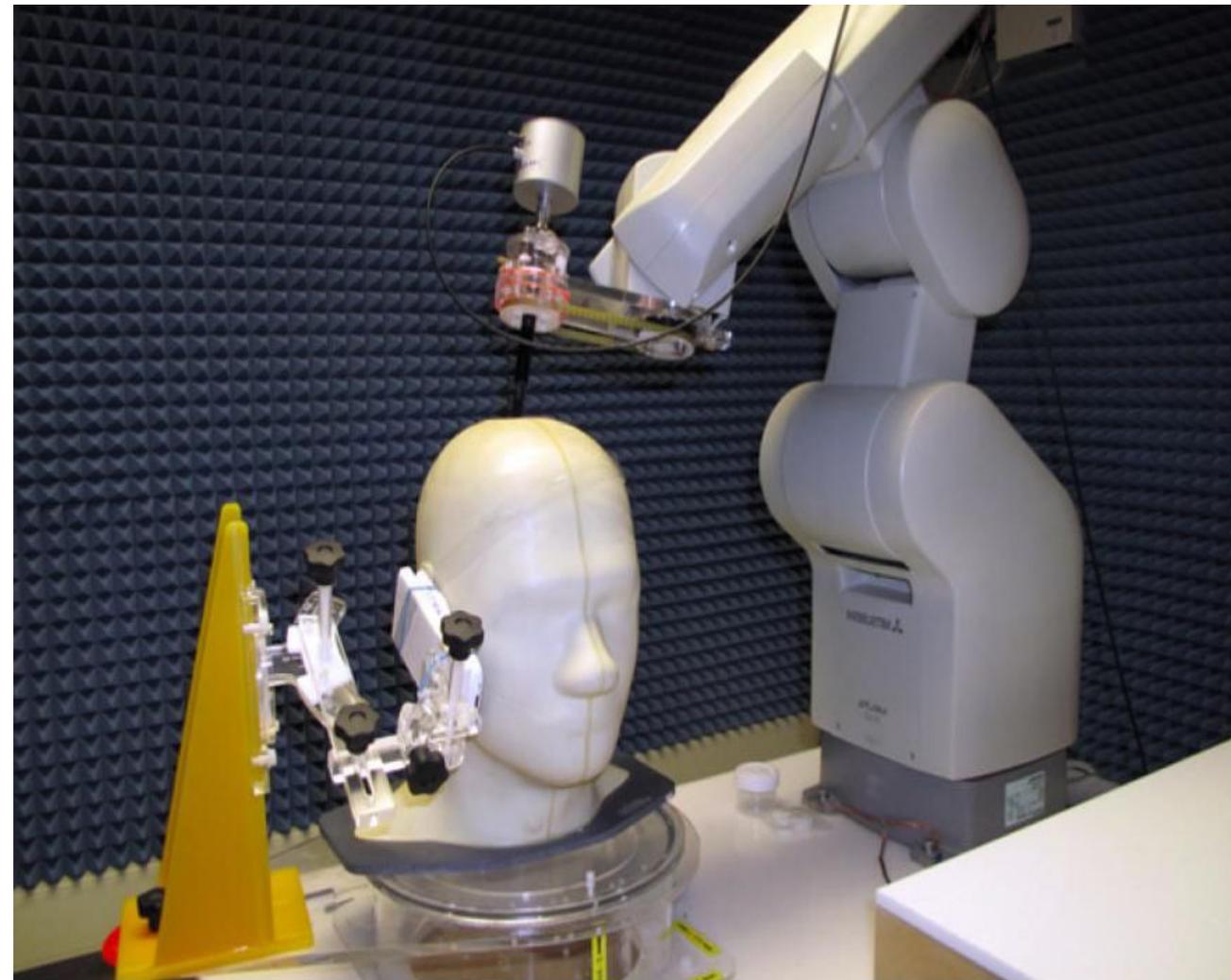
Specific Absorption Rate (SAR) is a measure of how much RF radiation is absorbed into tissue (W/kg)

Dr. Andrew A. Marino, on SAR:

- Developed for microwave ovens and understanding how to cook meat
- Has no application for understanding mobile phones, because health risks have nothing to do with heat.
- <https://www.youtube.com/watch?v=a2PNFEdmYok>

Cell Phone Test Method Assumptions

- SAR for cellphones was set in 1993 ... when [phones] used for a few minutes a month
- Based on military recruit: 6'2" tall and 220 pounds
- iPhone 3GS: at least 15mm [.6 inches] away
- Body (including the head) can be exposed to a SAR of 1.6W/kg (I cannot find basis for this)



<https://ehtrust.org/take-action/educate-yourself/sar-of-cell-phones-specific-absorption-rate/>

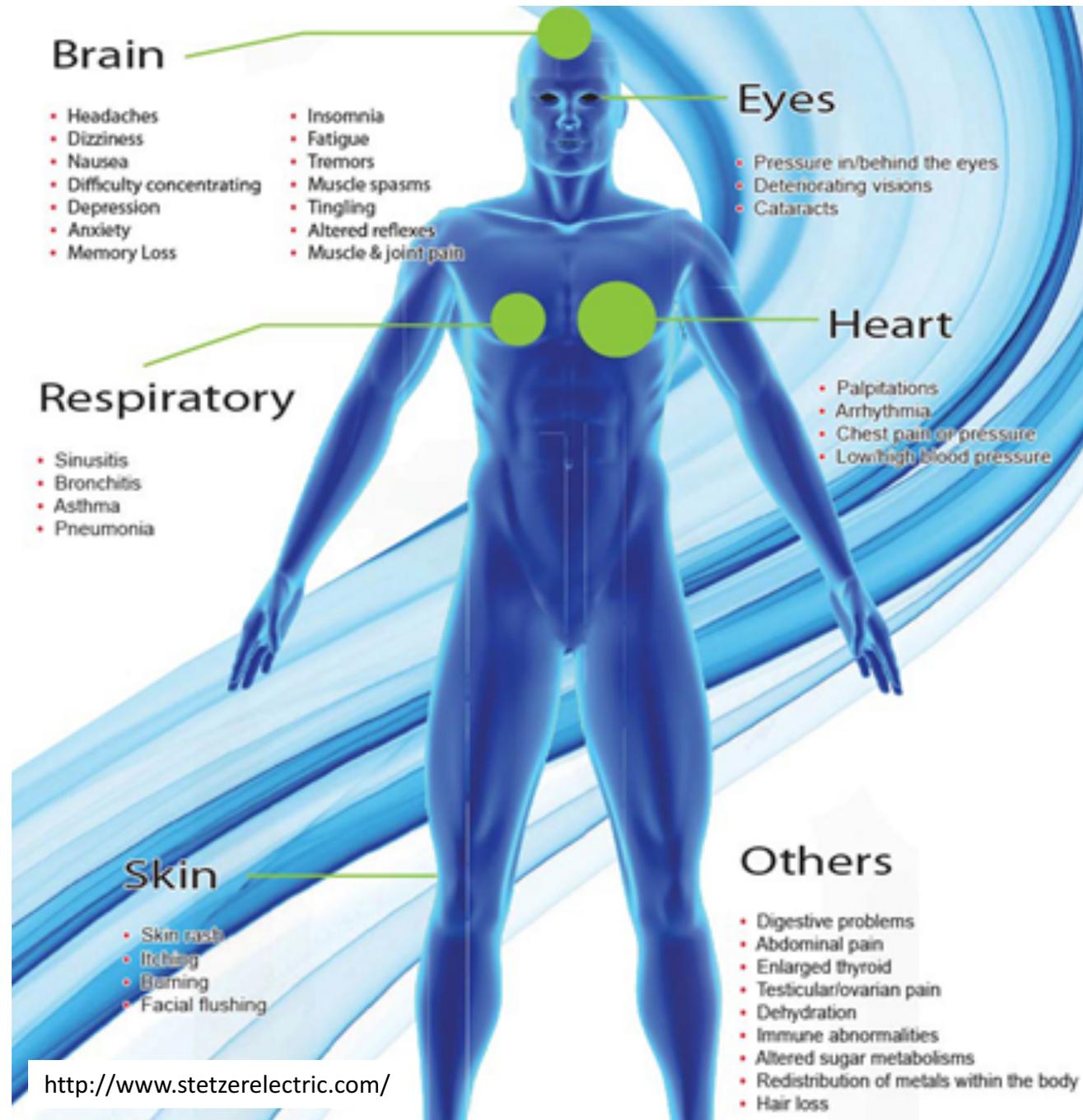
<http://pongcase.com/blog/children-cell-phone-radiation-standards/>

**Non-Thermal Effects Are Not Included in FCC Testing**

# Symptoms Attributed to Microwave Radiation (1 of 2) (Not Included in FCC Testing)

- FCC denies these symptoms due to EMF exposure from wireless devices
- People with these symptoms are referred to as having EMF Sensitivity (EMFS) [aka Electro Hypersensitivity – EHS]
- Many do not realize these symptoms can be due to excessive EMF exposure
- Where did this list come from?

**Symptoms Vary By Person**



# Symptoms Attributed to Microwave Radiation (1 of 2) (Not Included in FCC Testing)

Ref for list of symptoms on previous page

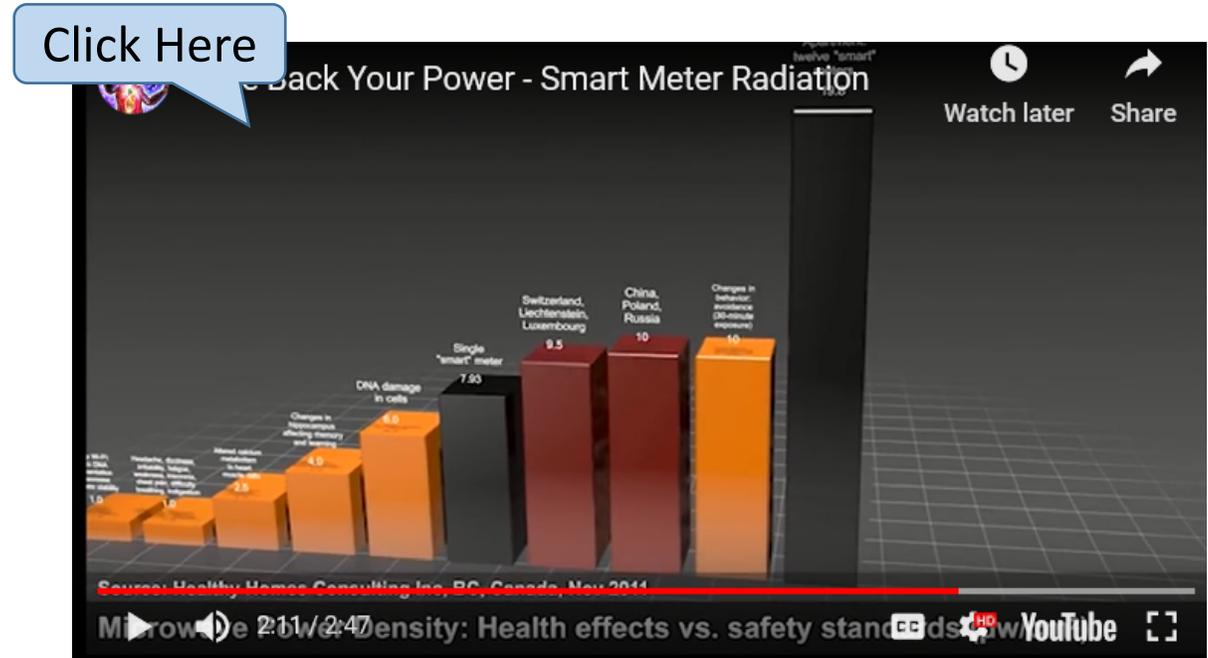
- “Navel Medical Research Institute (NMRI)”
- “Second printing 20 April 1972”
- “BIBLIOGRAPHY OF REPORTED BIOLOGICAL PHENOMENA ('EFFECTS') AND CLINICAL MANIFESTATIONS ATTRIBUTED TO MICROWAVE AND RADIO-FREQUENCY RADIATION”
- “More than 2300 references...”
- “Particular attention has been paid to the effects on man of non-ionizing radiation at these frequencies.”
- [http://www.justproveit.net/sites/default/files/pr ove-it/files/military\\_radiowave.pdf](http://www.justproveit.net/sites/default/files/pr ove-it/files/military_radiowave.pdf)

**Fact of Biological Effects From Non-Ionizing Radiation Has Been Known for Decades**

1. ORIGINATING ACTIVITY (Corporate author) NAVAL MEDICAL RESEARCH INSTITUTE NATIONAL NAVAL MEDICAL CENTER BETHESDA, MARYLAND 20014		2A. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
2. REPORT TITLE  BIBLIOGRAPHY OF REPORTED BIOLOGICAL PHENOMENA ('EFFECTS') AND CLINICAL MANIFESTATIONS ATTRIBUTED TO MICROWAVE AND RADIO-FREQUENCY RADIATION		2B. GROUP	
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Medical research interim report, bibliographic (Current to April 1972)			
3. AUTHOR(S) (First name, middle initial, last name) Zurach R. GLASER, Ph.D. LT, MSC, USN			
5. REPORT DATE Revised 20 April 1972 (4 October 1971, Original)		7A. TOTAL NO. OF PAGES 103 106	7B. NO. OF REFS 2,311
6A. CONTRACT OR GRANT NO.		8A. ORIGINATOR'S REPORT NUMBER(S) MF12.524.015-0004B, Report No. 2, Revised	
6B. PROJECT NO.		8B. OTHER REPORT NUMBER(S) (Any other numbers that may be assigned this report)	
6C.			
6D.			
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11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY BUREAU OF MEDICINE AND SURGERY (NAVY) WASHINGTON, D.C. 20390	
13. ABSTRACT More than 2300 references on the biological responses to radio frequency and microwave radiation, published up to April 1972, are included in this bibliography of the world literature. Particular attention has been paid to the effects on man of non-ionizing radiation at these frequencies. The citations are arranged alphabetically by author, and contain as much information as possible so as to assure effective retrieval of the original documents. Soviet and East European literature is included in detail. An outline of the effects which have been attributed to radio frequency and microwave radiation is included as Chapter 1. The revised report (which supersedes DDC report AD#734391) is updated with the inclusion of three supplementary listings, and has incorporated many corrections and additions to the original 2100 citations.			

# Levels Of Biological Effects VS Safety Limits For Smart Meters

- **WATCH** Take Back Your Power
- Safe levels (based on peer reviewed research) are compared to safe levels (based on USA regulatory limits)
- Smart Meters in Northern CA by PG&E know to have higher EMF than those in SoCal by SCE
  - Building Biologists do not routinely recommend removal of smart meters in SoCal
- Power Density is measured in  $\mu\text{W}/\text{cm}^2$



Take Back Your Power  
(All)

Government Safety Limit is > 10,000 Times Higher Than Levels Know To Harm

# Safe EMF Levels Provided by the International Institute for Building Biology & Ecology (IBE) <https://hbelc.org/>

Building Biology Evaluation Guidelines for Sleeping Areas  
SBM-2008, Page 1

No Concern	Slight Concern	Severe Concern	Extreme Concern
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## 1 AC ELECTRIC FIELDS (Low Frequency, ELF/MLF)

	V/m	< 1	1-5	5 - 50	> 50
Field strength with ground potential in volt per meter	V/m	< 1	1-5	5 - 50	> 50
Body voltage with ground potential in millivolt	mV	< 10	10 - 100	100 - 1000	> 1000
Field strength potential-free in volt per meter	V/m	< 0.3	0.3-1.5	1.5 - 10	> 10

Values apply up to and around 50 (60) Hz, higher frequencies and predominant harmonics should be assessed more critically.

ACGIH occupational TLV: 25000 V/m; DIN/VDE: occupational 20000 V/m, general 7000 V/m; ICNIRP: 5000 V/m; TCO: 10 V/m; US-Congress/EPA: 10 V/m; BUND: 0.5 V/m; studies on oxidative stress, free radicals, melatonin, childhood leukaemia: 10-20 V/m; nature: < 0.0001 V/m

## 2 AC MAGNETIC FIELDS (Low Frequency, ELF/MLF)

Flux density in nanotesla	nT	< 20	20-100	100 - 500	> 500
in milligauss	mG	< 0.2	0.2-1	1 - 5	> 5

## 3 RADIOFREQUENCY RADIATION (High Frequency, Electromagnetic Waves)

Power density in microwatt per square meter	$\mu\text{W}/\text{m}^2$	< 0.1	0.1-10	10 - 1000	> 1000
		< 0.1	0.1-10	10 - 1000	> 1000

## 4 Dirty Electricity (not from building biology) 25-50 GSU

**In Practice, “No Concern” Levels Are Often Difficult To Achieve**

# Safe Levels (Based On Research) vs Safe Levels (Regulatory Agencies)

## 1) Electric Fields (60Hz)

- \*SCE: No limit
- Building Biology (IBE): (Body Voltage)
  - Sleep: 0.01 V. Office: 0.1 V
- +Disruption of pineal gland's production of melatonin: fatigue, increase in allergies, insomnia, depression

## 2) Magnetic Fields (60Hz)

- \*SCE: No limit: ...levels to 20-30 mG often found... short exposure to 9000 mG ok
- Building Biology: Slight: 0.2-1 mG, Severe: 1-5 mG
- +Immune system dysfunction, development of various cancers, extreme fatigue, and prolonged depression
- 1.5 to 2mG, increase in child Leu (Sweden/ Canada)
- 1mG, lower surv for child recovering Leu (Germany)

- \*REF SCE: "there are no federal or state of CA established limits for EMF exposure"  
<https://www.sce.com/safety/family/environmental-health>

## 3) Dirty Electricity

- \*SCE: No Limit
- Stetzer Electric, Inc.
  - 25-50 GSU
- +Diabetes, migraine, anxiety, multiple sclerosis, muscle and joint problems, and suicide

## 4) Electromagnetic Waves

- FCC Exposure Standards: Smart Meter: 655  $\mu\text{W}/\text{cm}^2$
- FCC Cell Tower (GMS1800/GSM1900/...): 1000  $\mu\text{W}/\text{cm}^2$
- Building Biology: Slight Concern: .001  $\mu\text{W}/\text{cm}^2$
- +Cancer, infertility, sleep difficulties, memory problems, and damage to central nervous system
- +REF: Truth about cancer <https://thetruthaboutcancer.com/dirty-electricity-emf/>
- <https://image.slidesharecdn.com/hfradiation-levels-of-gsm-cellular-phone-towers-in3080/95/hfradiation-levels-of-gsm-cellular-phone-towers-in-5-638.jpg?cb=1422612576>
- REF: Smart Meter [http://sagereports.com/smart-meter-rf/?page\\_id=216](http://sagereports.com/smart-meter-rf/?page_id=216)

**Isn't EMF Safe?**

**Activism**

**Electromagnetic Concepts**

**Debate About Safe Levels**

**Measurement Methods**

**Case Study: Findings and Mitigation**

**EHS Recovery – Preliminary Findings**

**Beyond Conventional Science – Preliminary Findings**

**Closing**

# Four Types of EMF to Measure In Your Home

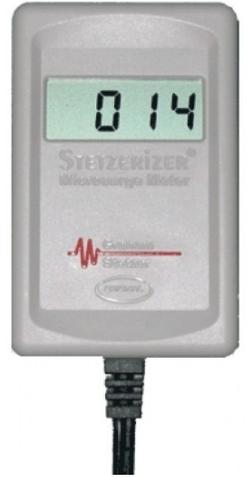
## 1) Electric Fields (60Hz)

- Due to Voltage on house wiring
- 120V AC, 60 Hz



## 3) Dirty Electricity

- Due to switching power supplies, chargers for computers, phone, TVs, any digital electronics
- Comes in on power lines
- High frequency transients 3 kHz to 10,000 kHz
- Harmonics of 60 Hz



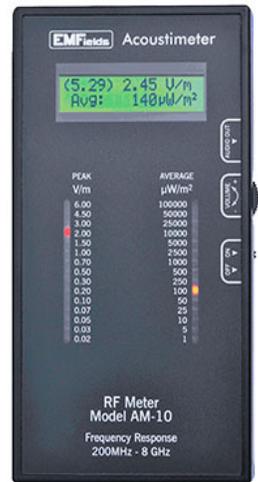
## 2) Magnetic Fields (60Hz)

- Due to power lines, house wiring errors, currents on pipes
- 60Hz



## 4) Electromagnetic Waves

- Cellular Phones and Towers
  - ATT: 850 MHz, 1900 MHz, 2300 MHz
  - Sprint: 800 MHz, 1900 MHz, 2400 MHz
  - Verizon: 700 MHz, 1900 MHz, 2100 MHz
- Note
  - 2400 MHz = 2,400,000,000 Hz = 2.4GHz



Separate Meter For Each Type of EMF

Isn't EMF Safe?

Activism

Electromagnetic Concepts

Debate About Safe Levels

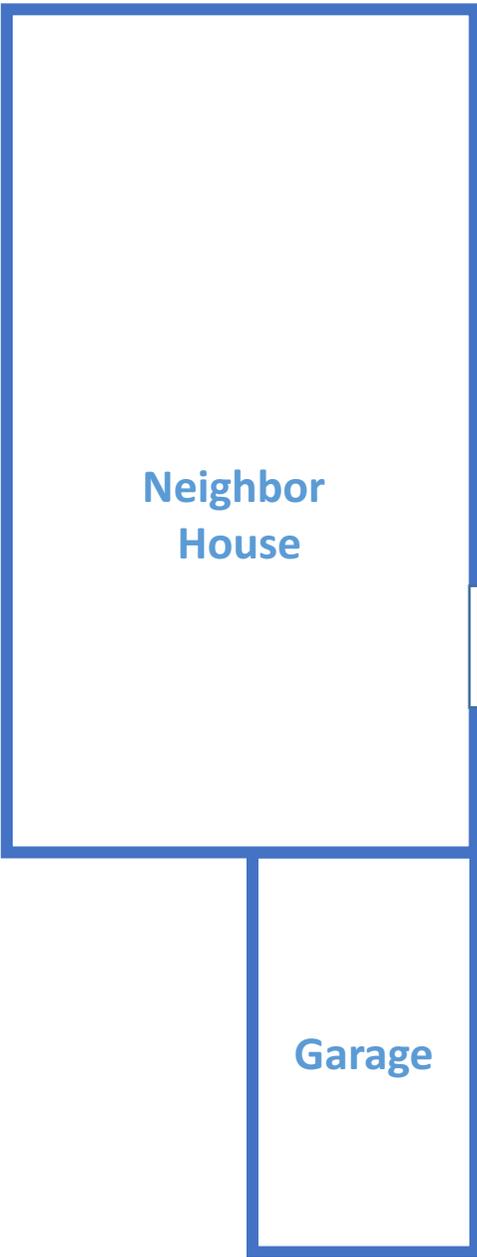
Measurement Methods

**Case Study: Findings and Mitigation**

EHS Recovery – Preliminary Findings

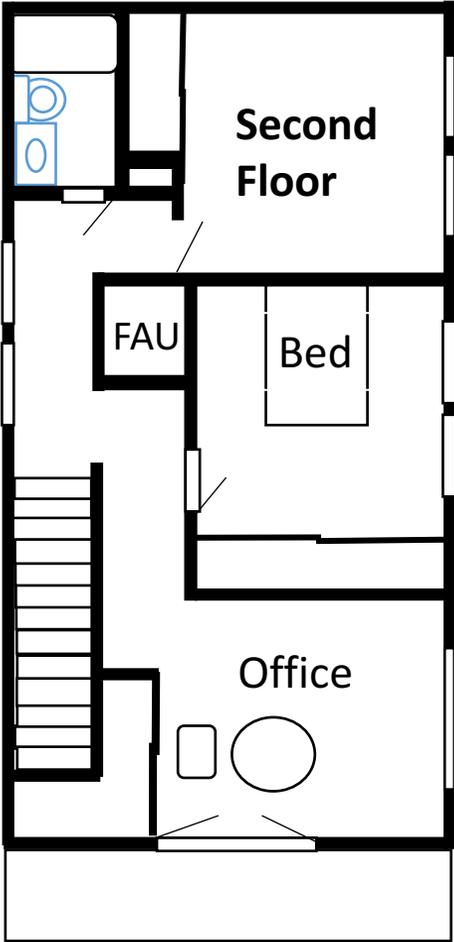
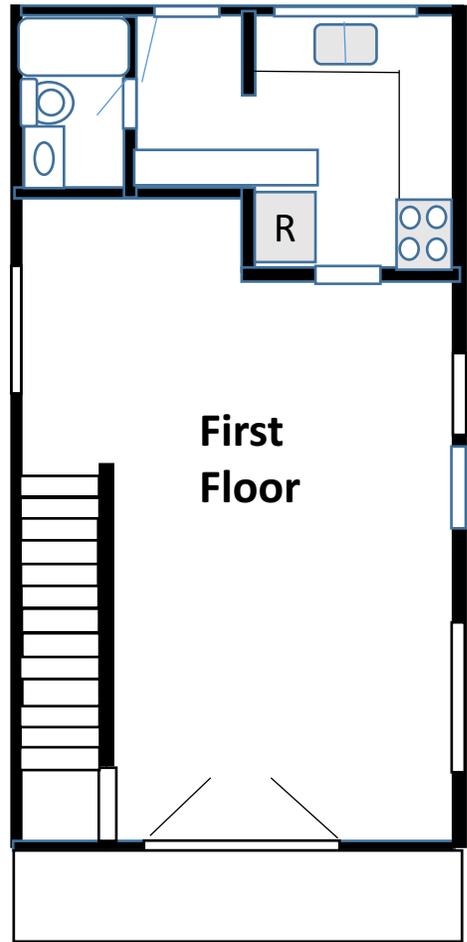
Beyond Conventional Science – Preliminary Findings

Closing



## EMF Assessment – Case Study Findings

Drawings Not to Scale



### Pre-Retired

- No wifi at work
- Not home much, most time at home in Bed

### Retired

- More time at home; most time in kitchen and office

### EMF Assessment

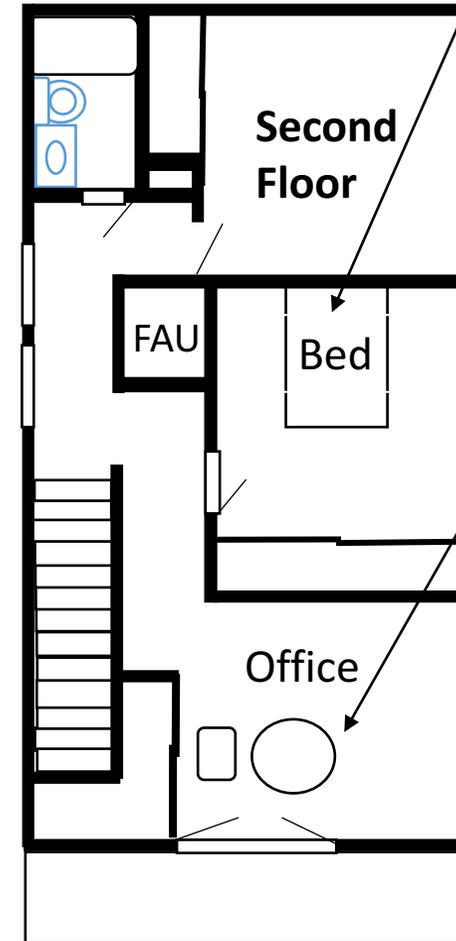
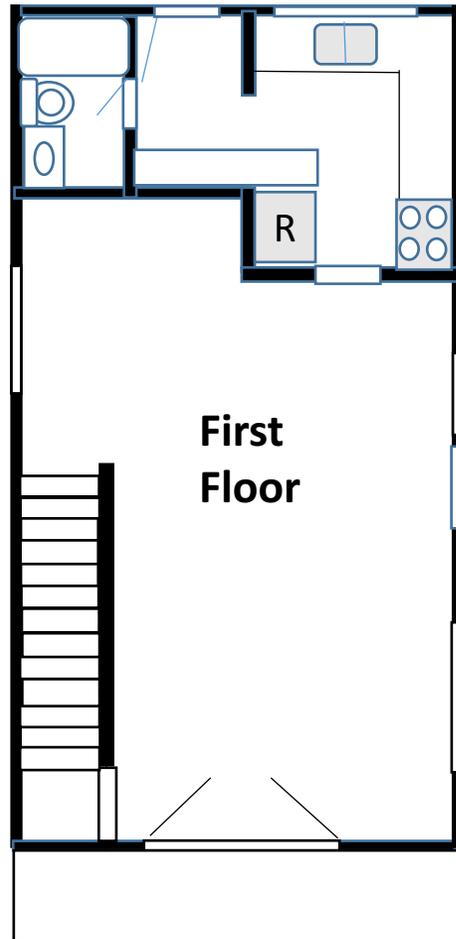
- Highest EMF in Kitchen and Office
- After retire, neighbor remodel increases EMF in my house

Side Street

Power Line

Garage

## EMF Mitigations: Electric Fields (examples)



### Mitigations

-Removed all power cords above bed, all electrics off nightstand

-Induced Body Voltage:

- Lying in bed
- Goal: .001V AC
- Measured: 0.08 V AC
- **Is: 8X over reco level**
- **Was: 400X over reco level**

-External keyboard and mouse, moved power strip away from feet, grounded computer

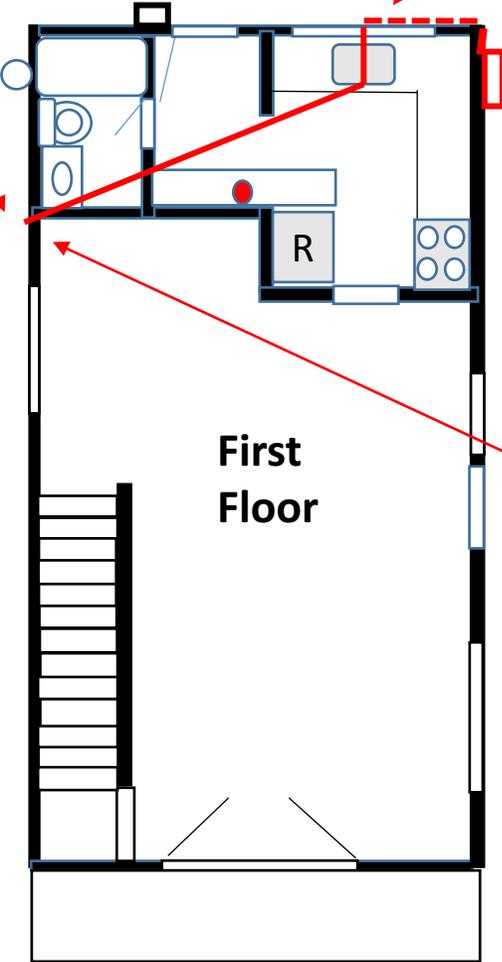
-Induced Body Voltage:

- Hands over laptop, feet by power strip
- Goal: .01V AC
- Measured: 0.16 V AC
- **Is: 1.6 X over reco level**
- **Was: 140V over reco level**

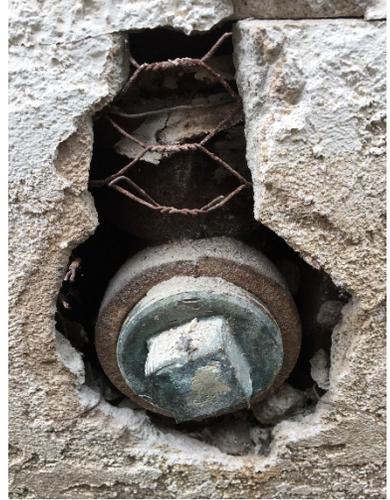
# EMF Mitigations: Magnetic Fields (examples) (1 of 2)



Current on sewer Line



Current stopped when broke connection btw chicken wire and sewer clean out



Current stopped



## Mitigations

-Power Line: Magnetic field cannot be shielded by *conventional* physics ☹️; *unconventional* technologies in review

- **3-4 X over slight concern level**

-Stopped current on sewer line

- Opened stucco and broke connection between sewer line and chicken wire (Shown)

- Total of 9 holes in stucco stop all currents on water pipes, gas pipe, sewer and conduit. (Not Shown)

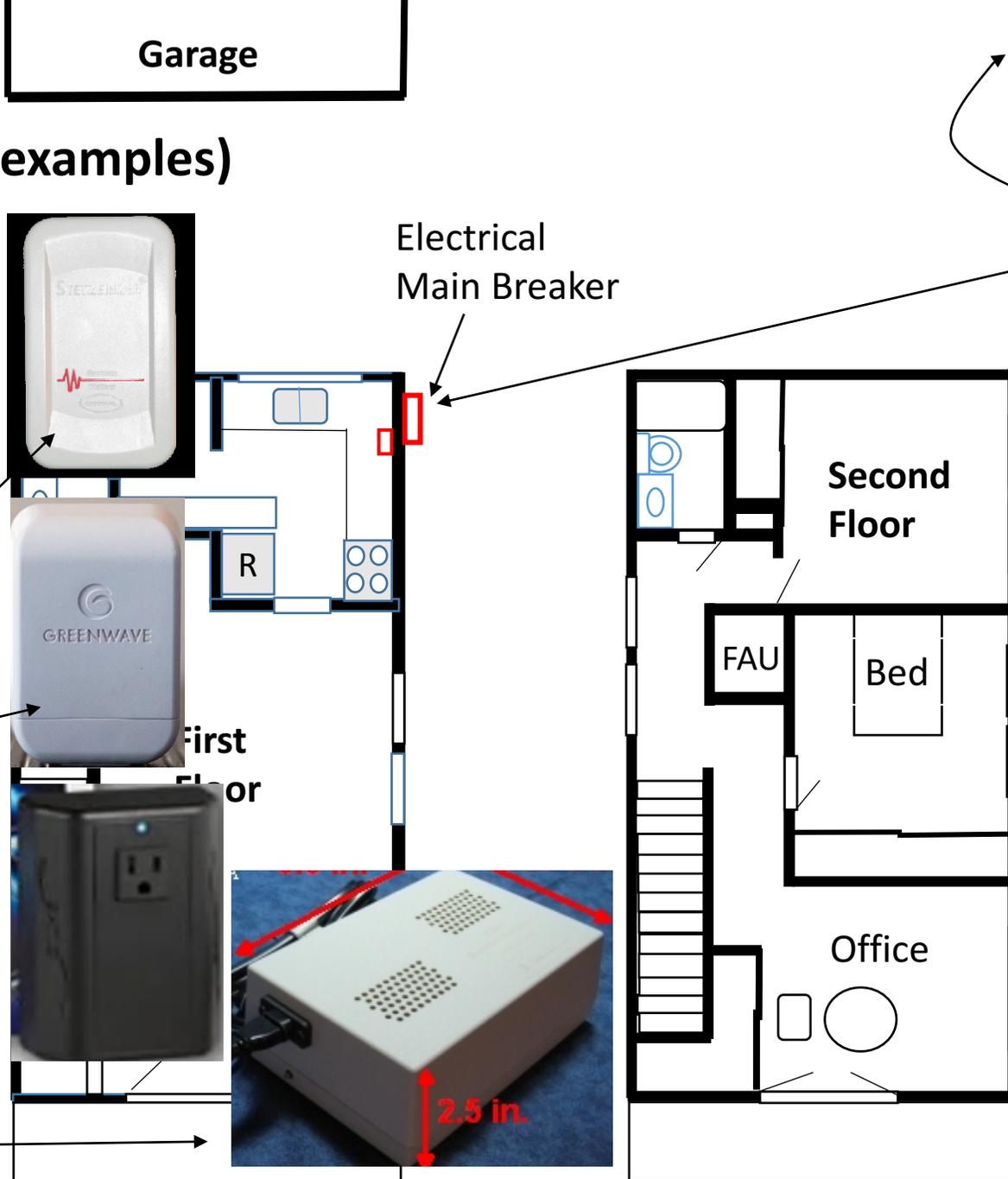
**Power Line: Cannot Shield M-Field  
Sewer: Stop Current, Stop M-Field  
Total of 9 holes in stucco to stops currents**

Power Line

# EMF Mitigations: Dirty Electricity (DE) (examples)

## Notes:

- Filters reduce DE
- Plug in wall near DE source
- Some people feel worse with filters installed
- Filter Options:
  - Stetzerizer 35\$
  - Greenwave 30\$
  - Satic 199\$
  - PxDNA 300\$
- IBE does not routinely recommend removing smart meters



## Mitigations:

- Neighbor Smart meter Tx off
- Removed my smart meter
- Stopping current on sewer reduced DE
- Installed 2 Satic filters
- Installed 2 PxDNA filters
- Goal: 25-50 GSU
- Was: >1999
- Is: 47 GSU
- **Was: >40X over reco value**
- **Is: Meets reco value**
- Stopping current on pipes reduced DE

**Reduced DE To  
Safe Level**

*I think DE  
Measurement and  
Mitigation Methods  
Need More Research*

Garage

South neighbor →  
Smart Meter 50 ft  
from kitchen

# EMF Assessment Findings: Radio Frequency (examples)

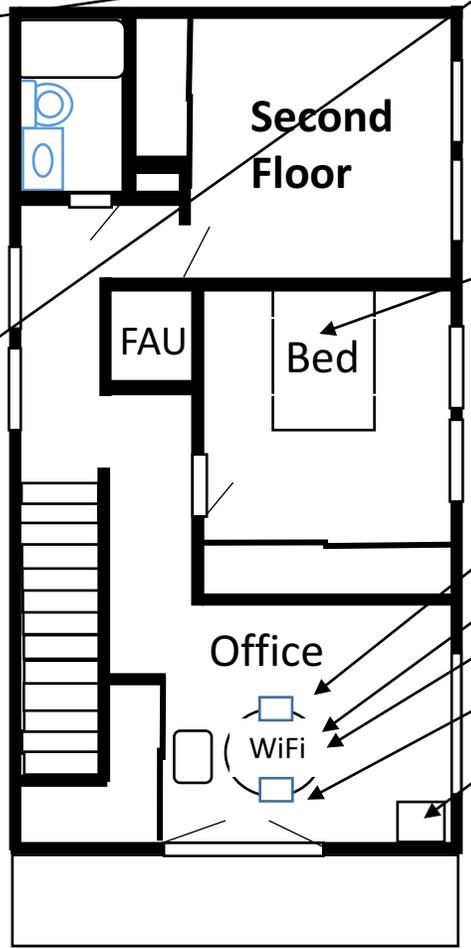
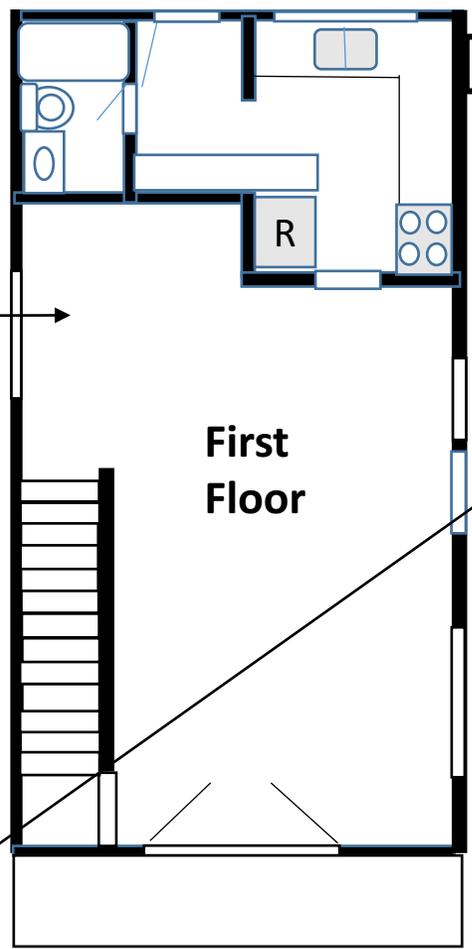
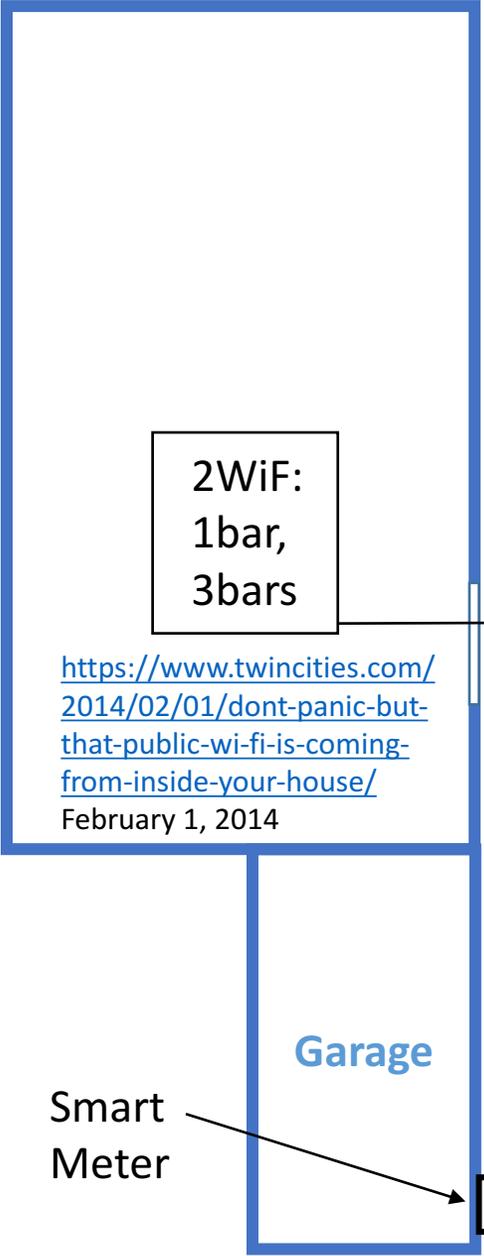
**Findings**  
179 RF antennas within 2 mi  
of home (see next slide)

3 smart meters: home under  
test, home to east, home to  
south

**Findings**  
Cell tower and wifis

**Findings**  
iPhone  
Laptop finds 17 networks  
Laptop Wifi  
Cordless Phone  
Router with wifi

**Largest RF Sources  
Were on My Desk!**



## Findings from <http://antennasearch.com/>

Use <http://antennasearch.com/>  
To Find Antennas Near You

### House Under Test

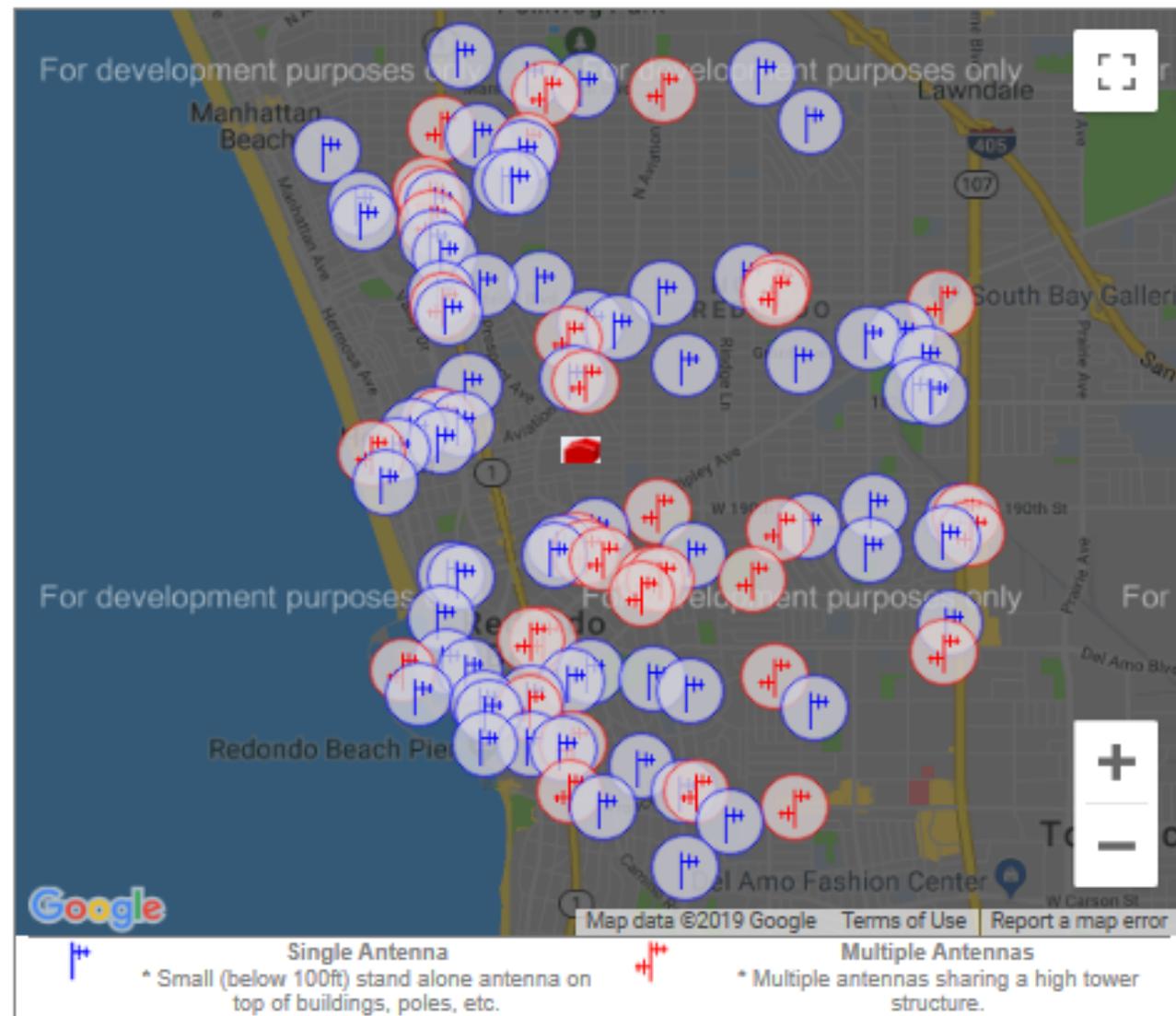
- 179 antennas within 2 miles.
- **Nearest antenna is .25 miles, Los Angeles County Dept Of Public Works.**
- Nearest Tower is .33 miles, Los Angeles Smsa Limited Partnership.
- **Cancer rates higher within 500 meters (.28 miles) of transmitting cell tower; 10 yr Study (Brazil)**
- Transmit power & antenna gain drive level in home

### Antennas

- Actual signal emitters for cellular, paging and other
- Placed on towers or stand alone or placed on top of offices, condos, churches, light poles, signs, etc.

**If Antenna Within 0.28 Miles,  
Recommend Measuring RF  
Level Within Home**

### Antennas Within Two Miles of House Under Test



# 66 of 179 Antennas Within Two Miles: <http://antennasearch.com/>

Site Num	Antenna Owner	Height	Dist
(1)	<a href="#">Nextel West Corp.</a>	43 feet	.40 miles
	<a href="#">Nextel West Corp.</a>	43 feet	.40 miles
(2)	<a href="#">Usa Mobility Wireless, Inc.</a>	NA	.91 miles
	<a href="#">Torrance Memorial Medical Center</a>	49 feet	.91 miles
(3)	<a href="#">Nextel West Corp.</a>	38 feet	1.08 miles
	<a href="#">Nextel West Corp.</a>	38 feet	1.08 miles
(4)	<a href="#">Nextel West Corp.</a>	46 feet	1.19 miles
	<a href="#">Nextel West Corp.</a>	46 feet	1.19 miles
(5)	<a href="#">Nextel West Corp.</a>	38 feet	1.38 miles
	<a href="#">Nextel West Corp.</a>	38 feet	1.38 miles
(6)	<a href="#">Paging Network Of America, Inc.</a>	NA	1.46 miles
	<a href="#">Arch Wireless License Co., Llc</a>	NA	1.46 miles
	<a href="#">Usa Mobility Wireless, Inc.</a>	NA	1.46 miles
	<a href="#">Paging Network Of America Inc</a>	52 feet	1.46 miles
	<a href="#">Paging Network Of America Inc</a>	52 feet	1.46 miles
	<a href="#">Ams Spectrum Holdings, Llc</a>	48 feet	1.46 miles
(7)	<a href="#">Pagemart Ii Inc</a>	49 feet	1.50 miles
	<a href="#">Pagemart Ii Inc</a>	49 feet	1.50 miles
	<a href="#">Ams Spectrum Holdings, Llc</a>	49 feet	1.50 miles
	<a href="#">Ams Spectrum Holdings, Llc</a>	49 feet	1.50 miles
(8)	<a href="#">New Cingular Wireless Pcs, Llc</a>	46 feet	1.69 miles
	<a href="#">Clearwire Spectrum Holdings Iii Llc</a>	56 feet	1.68 miles
	<a href="#">Nextel West Corp.</a>	45 feet	1.67 miles
(9)	<a href="#">Nextel West Corp.</a>	61 feet	1.89 miles
	<a href="#">Clearwire Spectrum Holdings Iii Llc</a>	67 feet	1.88 miles
(10)	<a href="#">Los Angeles Smsa Limited Partnership</a>	119 feet	.33 miles
	<a href="#">California Water Service Company</a>	43 feet	.35 miles
	<a href="#">City Of Redondo Beach</a>	43 feet	.33 miles
	<a href="#">City Of Redondo Beach</a>	43 feet	.33 miles
(11)	<a href="#">Redondo Beach Police Department</a>	40 feet	.35 miles
	<a href="#">Redondo Beach, City Of</a>	98 feet	.35 miles
(12)	<a href="#">Redondo Beach, City Of</a>	95 feet	.37 miles
	<a href="#">Redondo Beach, City Of</a>	39 feet	.37 miles
(13)	<a href="#">Silverado Senior Living Holdings, Inc</a>	82 feet	.54 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	194 feet	.53 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	NA	.53 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	NA	.53 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	194 feet	.53 miles
	<a href="#">Palos Verdes Estates, City Of</a>	194 feet	.53 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	194 feet	.53 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	194 feet	.53 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	194 feet	.53 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	165 feet	.53 miles

Site Num	Antenna Owner	Height	Dist
(14)	<a href="#">South Bay Regional Public Communications Authority</a>	194 feet	.56 miles
	<a href="#">Redondo Beach Unified School District</a>	89 feet	.53 miles
(15)	<a href="#">Providence Little Company Of Mary Medical Center - Torrance</a>	NA	.57 miles
	<a href="#">California, State Of</a>	NA	.57 miles
	<a href="#">Redondo Beach, City Of</a>	184 feet	.57 miles
	<a href="#">California, State Of</a>	NA	.57 miles
(16)	<a href="#">Hermosa Beach City Of</a>	36 feet	.60 miles
	<a href="#">Hermosa Beach, City Of</a>	16 feet	.60 miles
	<a href="#">Hermosa Beach City Of</a>	36 feet	.60 miles
(17)	<a href="#">Beach City, Inc.</a>	NA	.77 miles
	<a href="#">Boston Market 757</a>	NA	.77 miles
(18)	<a href="#">Taco Bell 3132</a>	NA	.79 miles
	<a href="#">Anastasi Construction Company Inc</a>	NA	.79 miles
(19)	<a href="#">South Bay Regional Public Communications Authority</a>	32 feet	.82 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	20 feet	.81 miles
	<a href="#">Los Angeles, County Of</a>	NA	.81 miles
	<a href="#">Hermosa Beach, City Of</a>	59 feet	.81 miles
(20)	<a href="#">Los Angeles County Dept Of Public Works</a>	23 feet	.96 miles
	<a href="#">Los Angeles, County Of</a>	19 feet	.96 miles
(21)	<a href="#">Redondo Beach, City Of</a>	NA	1.07 miles
	<a href="#">Redondo Beach, City Of</a>	69 feet	1.07 miles
	<a href="#">Los Angeles, County Of</a>	NA	1.06 miles
	<a href="#">Redondo Beach, City Of</a>	NA	1.07 miles
	<a href="#">Redondo Beach, City Of</a>	108 feet	1.07 miles
	<a href="#">Redondo Beach, City Of</a>	115 feet	1.07 miles
	<a href="#">Redondo Beach, City Of</a>	NA	1.07 miles
	<a href="#">Redondo Beach, City Of</a>	66 feet	1.07 miles
(22)	<a href="#">Los Angeles, County Of</a>	59 feet	1.14 miles
	<a href="#">Los Angeles, County Of</a>	59 feet	1.14 miles
	<a href="#">Los Angeles, County Of</a>	66 feet	1.14 miles
(23)	<a href="#">Redondo Beach, City Of</a>	92 feet	1.17 miles
	<a href="#">Redondo Beach, City Of</a>	82 feet	1.17 miles
	<a href="#">Redondo Beach, City Of</a>	NA	1.17 miles
(24)	<a href="#">American Time &amp; Signal Co.</a>	NA	1.26 miles
	<a href="#">Torrance Unified School District</a>	40 feet	1.26 miles
(25)	<a href="#">Redondo Beach, City Of</a>	39 feet	1.30 miles
	<a href="#">Providence Little Company Of Mary Medical Center - Torrance</a>	NA	1.30 miles
(26)	<a href="#">Skechers Usa</a>	46 feet	1.37 miles
	<a href="#">Los Angeles, County Of</a>	39 feet	1.37 miles
(27)	<a href="#">South Bay Regional Public Communications Authority</a>	145 feet	1.46 miles
	<a href="#">Torrance, City Of</a>	145 feet	1.46 miles
	<a href="#">Manhattan Beach Unified School District</a>	148 feet	1.46 miles
	<a href="#">El Segundo, City Of</a>	145 feet	1.46 miles
	<a href="#">Master Meter Inc.</a>	160 feet	1.47 miles
	<a href="#">Neptune Technology Group, Inc.</a>	118 feet	1.47 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	145 feet	1.46 miles
	<a href="#">South Bay Regional Public Communications Authority</a>	145 feet	1.46 miles

Site Num	Antenna Owner	Height	Dist
(28)	<a href="#">Advanced Electronics, Inc.</a>	49 feet	1.47 miles
	<a href="#">Radiocall Acquisition, Llc</a>	49 feet	1.47 miles
	<a href="#">Advanced Electronics Acquisitions Corp</a>	49 feet	1.47 miles
(29)	<a href="#">Manhattan Beach Unified School District</a>	36 feet	1.66 miles
	<a href="#">Kinecta Federal Credit Union</a>	NA	1.66 miles
(30)	<a href="#">Clearwire Spectrum Holdings Iii Llc</a>	52 feet	1.69 miles
	<a href="#">Comfort Inn</a>	36 feet	1.71 miles
(31)	<a href="#">Mcdonalds Restaurants Of California, Inc.</a>	NA	1.76 miles
	<a href="#">California Water Service Company</a>	79 feet	1.76 miles
(32)	<a href="#">Nordstrom Inc #342</a>	NA	1.90 miles
	<a href="#">Nordstrom Inc #342</a>	42 feet	1.90 miles
(33)	<a href="#">Torrance, City Of</a>	NA	1.92 miles
	<a href="#">City Of Torrance</a>	33 feet	1.90 miles
	<a href="#">Torrance, City Of</a>	NA	1.92 miles
(34)	<a href="#">Linde Gases Of Southern California Inc</a>	16 feet	1.91 miles
	<a href="#">Arkema Inc.</a>	NA	1.91 miles
(35)	<a href="#">Sprint Telephony Pcs, L.p.</a>	100 feet	.36 miles
	<a href="#">Sprint Telephony Pcs, Llc</a>	100 feet	.36 miles
(36)	<a href="#">Los Angeles Smsa Limited Partnership</a>	39 feet	1.21 miles
	<a href="#">Clearwire Spectrum Holdings Iii Llc</a>	45 feet	1.22 miles
(37)	<a href="#">Nextel West Corp.</a>	94 feet	.95 miles
(38)	<a href="#">Nextel West Corp.</a>	89 feet	1.05 miles
(39)	<a href="#">Los Angeles County Dept Of Public Works</a>	36 feet	.25 miles
(40)	<a href="#">Los Angeles County Dept Of Public Works</a>	33 feet	.37 miles
(41)	<a href="#">Hozies Radiator Service</a>	NA	.43 miles
(42)	<a href="#">American Time &amp; Signal Co.</a>	NA	.60 miles
(43)	<a href="#">Hermosa Beach, City Of</a>	NA	.65 miles
(44)	<a href="#">Arrow Electronics</a>	NA	.65 miles
(45)	<a href="#">South Bay Regional Public Communications Authority</a>	60 feet	.72 miles
(46)	<a href="#">Landmark Square</a>	151 feet	.76 miles
(47)	<a href="#">Hermosa Beach, City Of</a>	NA	.80 miles
(48)	<a href="#">Los Angeles County Dept Of Public Works</a>	13 feet	.82 miles
(49)	<a href="#">Mobile Relay Associates</a>	NA	.84 miles
(50)	<a href="#">Equity Residential</a>	40 feet	.86 miles
(51)	<a href="#">California, State Of</a>	NA	.86 miles
(52)	<a href="#">Manhattan Beach Unified School District</a>	46 feet	.87 miles
(53)	<a href="#">Century-tci California, L.p., Debtor-in-possession</a>	NA	.93 miles
(54)	<a href="#">Journey Of Faith</a>	NA	1.00 miles
(55)	<a href="#">Aes Redondo Beach, Llc</a>	NA	1.01 miles
(56)	<a href="#">Starbuck S #520</a>	NA	1.02 miles
(57)	<a href="#">Los Angeles County Dept Of Public Works</a>	13 feet	1.07 miles
(58)	<a href="#">The Redondo Beach Hotel</a>	NA	1.07 miles
(59)	<a href="#">Redondo Beach Hospitality Co. Dba Shade Hotel Redondo Beach</a>	NA	1.11 miles
(60)	<a href="#">Redondo Beach, City Of</a>	NA	1.13 miles
(61)	<a href="#">Auto Parts Club</a>	NA	1.14 miles
(62)	<a href="#">Crowne Plaza Hotel</a>	98 feet	1.15 miles
(63)	<a href="#">Casa De Los Amigos</a>	NA	1.21 miles
(64)	<a href="#">Kaiser Permanente Mahattan Mob</a>	NA	1.22 miles
(65)	<a href="#">California, State Of</a>	NA	1.29 miles
(66)	<a href="#">Chevron Usa Inc.</a>	30 feet	1.30 miles

Garage

South neighbor →  
Smart Meter 49 ft  
from kitchen

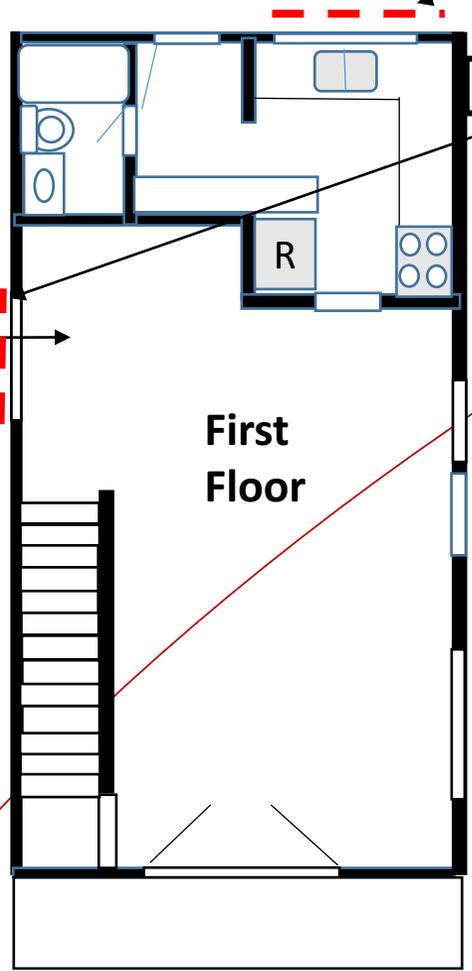
**Mitigations**

**EMF Assessment Mitigations:  
Radio Frequency (examples)**

- Metal screen over kit window reduces RF
- Metal screen over dining window reduces RF
- South neighbor smart meter Tx turned off
- Removed smart meter
- East neighbor smart meter removed
- Bed canopy (faraday cage) 1200\$

2WiF:  
1bar,  
3bars

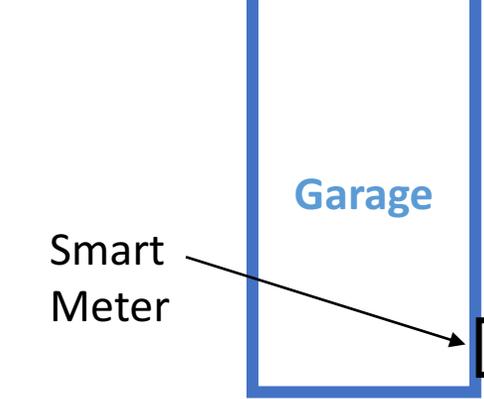
<https://www.twincities.com/2014/02/01/dont-panic-but-that-public-wi-fi-is-coming-from-inside-your-house/>  
February 1, 2014



**Mitigations**

- Turned off all wireless:
- iPhone in airplane mode except to check messages
  - Hardwired Laptop; wifi turned off
  - Cordless Phone removed /corded phone installed
  - Router wifi turned off

**RF Greatly Reduced**



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Closing

# Findings Of Dr. Klinghardt, MD, PhD

*"Dietrich Klinghardt is one of the most brilliant and gifted medical pioneers of our time."  
Dr. Joseph Mercola*

## Clinical Experience

- EMF exposure levels during pregnancy are correlated with Autism
- Reduction in Autism symptoms tied to reducing EMF exposure
- Reduction in EMF levels is correlated with a patients ability to recover from Candida, Cancer, Lyme disease, Epstein Bar, Chronic mold infection, Chronic parasite infections, Parkinson's, MS, and ALS

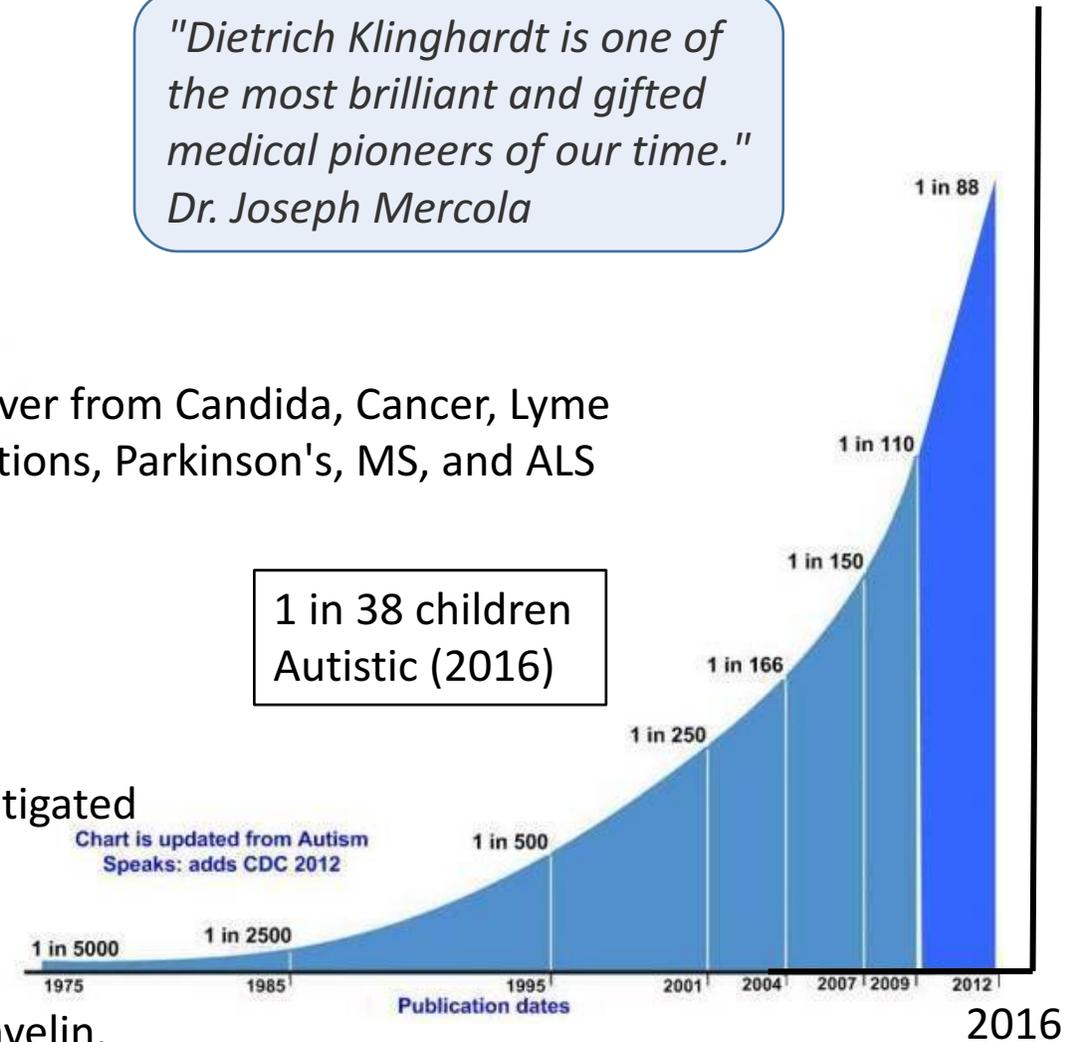
## EMF Mitigation Recommendations

- Pre-conception health care guidelines
  - Protect sleeping location of the mother
  - Established exposure limits on RF and Electric Field
- Only admits new patients after the EMF in their home has been mitigated

## Treatment

- Blood markers identified to determine if patient impacted by EMF
- 1) Detox heavy metals, 2) Treat chronic infections and 3) Rebuild myelin.

<https://www.bing.com/videos/search?q=documentaries+on+emf&view=etail&mid=9F19297D3966E440B6F09F19297D3966E440B6F0&FORM=VIRE>

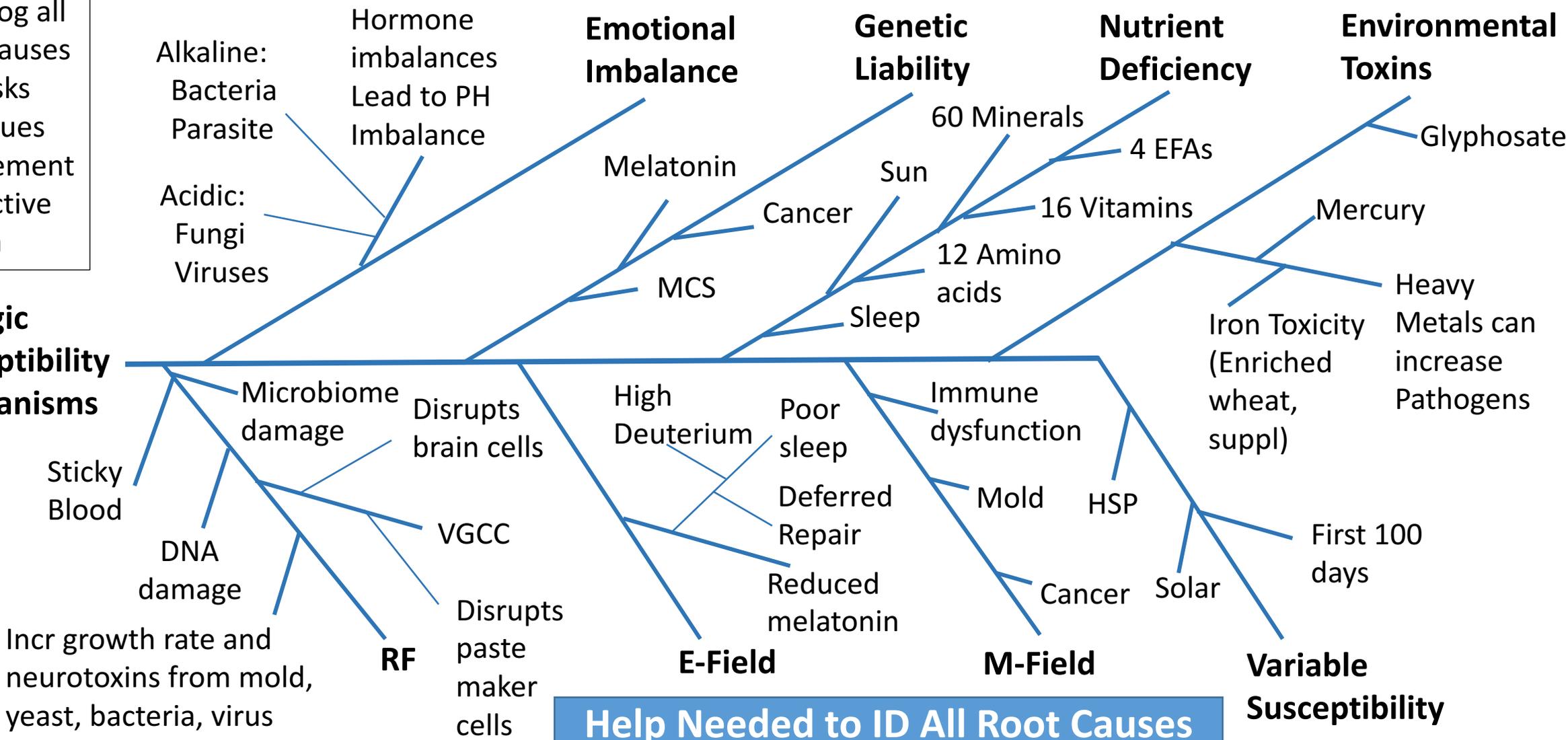


**“Estimate: 80% of Health Problems are Caused Or Contributed To By Man Made Electromagnetic Radiation”**

# Fishbone Diagram for Biologic Effects From EMF And Related Cofactors

**Method**  
 -Catalog all root causes  
 -ID Risks  
 -ID Issues  
 -Implement corrective action

**Biologic Susceptibility Mechanisms**



**Help Needed to ID All Root Causes**

## Mitigations for EMF Sensitivity (1 OF 2) – Very Preliminary

Root Cause	Corrective Action	Claim	Reference
DNA damage	DMSO Tool: None	In lab DMSO reverses double strain DNA damage	Conversations with Archie Scott. <a href="http://archiescott.com/protection-from-radiation-damage-by-the-use-of-dmso/">http://archiescott.com/protection-from-radiation-damage-by-the-use-of-dmso/</a>
High levels of Deuterium	Deuterium depletion (DD) with water, diet, sleep, sun Tool: breath and saliva test	100% reversal of EMFS; effective with cancer too	Conversation with Dr Que/ Dr Cooper. <a href="https://www.ddcenters.com/">https://www.ddcenters.com/</a>
Voltage Gated Calcium Channels (VGCC)	Activate Nrf2 (ex Protandim) Supplement Magnesium	Reduces oxidative stress. See pubmed.gov (24 studies)	Conversation with Martin L. Pall, Ph.D.
Damage to microbiome /immune system	Manage good/bad gut flora with supplements. Tool: Utopia	If improve flora / immunity, may reduce EMFS	Conversation with Dr Brody <a href="http://brodynd.com/">http://brodynd.com/</a> <a href="https://ubiome.com">https://ubiome.com</a>
Emotional Trauma	Biomagnetism, TAT, EFT	Releases toxic emotions, rebalances emotions	Conversations with Mariana Ito and Tapas Fleming <a href="http://somoslife.com/">http://somoslife.com/</a>

**List Of Root Causes And Corrective Actions Are In Work**

Isn't EMF Safe?

Activism

Electromagnetic Concepts

Debate About Safe Levels

Measurement Methods

Case Study: Findings and Mitigation

EHS Recovery – Preliminary Findings

**Beyond Conventional Science – Preliminary Findings**

Closing

# Beyond Conventional Science – Very Preliminary

- **Protective Pendants and Other Devices**
  - “Spiritually is Physics that has not yet been explained by Science”, Nassim Hamein
- **HSPs (Highly Sensitive Persons) and EMF**
  - EHS; is it a sickness or a gift? MD, England

# Emerging Technologies Claim To Protect Against Harmful EMF

There are many Pendants, Stickers for phones and computers, Crystals, Minerals, Plug-in devices. Examples:

- **Safe Space.** 30-299\$. Protect Yourself from the Damaging Effects of EMF <https://www.safespaceprotection.com/>
  - Subtle energy patterns are permanently programmed into a range of products, each addressing EMFs and other toxins for specific situations
- **Energy Dots.** 40-265\$ - Protection from cell phone and EMF radiation. <https://energydots.com/advice/>
  - Re-tunes man-made EMFs to a natural harmonic by a process known as the 'principal of entrainment'
- **Iyashi Source** 33-183\$. Shield yourself from harmful EMFs. <https://iyashisource.com/>
  - Zero point energy, scalar energy, negative ions, far-infrared, magnets, crystals and more
- **Airestech** 38.5-290\$. Universal protection from electromagnetic radiation pollution coming from widely spread personal communication devices, power lines and cellular towers <https://www.airestech.com>
  - The resulting hologram interacts with external radiation, harmonizing it with the body's radiation, thus preventing a battle between external radiation and the radiation from the body's cells.
- **BioElectric Shield.** 207\$ to 5226\$. Total EMF and Personal Energy Protection <https://www.bioelectricshield.com/>
  - Not only does it refract EMF, it deflects negative emotional energy. Thus, you can be around other people or situations without picking up their energy, particularly when it's negative.

**Devices NOT Based on Conventional Physics, Making Assessment Difficult**

# Observations About Products To Protect Against Harmful EMF

- **EMF exposure limits are never addressed**
  - Magnetic field (Cancer: 10 mG). Q: If my house is at 20 mG, will your product protect me?
  - Radio Frequency (Cancer: 0.87 V/m). Q: If cell tower outside is at 6 V/m, will your product protect me?
- **Theory of operation not explained in detail, no references provided**
- **Testing by “independent” labs** (Is it really independent if funded by the manufacture?)
  - Tests shows biological impacts from EMF are mitigated
  - No standardized test methods in this industry
    - Medical Thermal Imaging, GDV (Kilian) imagery, EEG spectral power distribution, Red Blood Microscopy
    - No long term studies
- **All products have testimonials**
  - Customers report feeling better. Could this be the placebo effect?

**Tests Show Biological Impacts Of EMFs Are Mitigated**

# Are EMF Protective Pendants/ Stickers Beneficial in the Long Run?

- Five year study on 2 groups of chickens, reported by Dr Klinghardt MD, PhD
  - Coop 1 with protective devices sold on the market, and Coop 2 without

## Chicken Coop 1

- 24/7 lights so lay eggs all the time  
Heated so comfortable
- Cleaned up electricity: ground up crystals, devices emitting frequencies

## Chicken Coop 2

- 24/7 lights so lay eggs all the time  
Heated so comfortable

### Observations

- Chickens looked happier
- Running around
- Laid twice as many eggs as Coop 2

### Observations

- Chickens looked unhappy
- Cowered in the corner away from electric outlets and equip

- <https://www.bing.com/videos/search?q=the+potential+danger+of+emf+protective+pendants%2c+dots+and+devices%3f&&view=detail&mid=D6EAA9B75DA95B98C70E&rvsmid=6440812D2A593C8D5E486440812D2A593C8D5E48&FORM=VDRVRV>

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**Chickens with Protective Devices Lived ½ The Life Span**

- NOTES:
  - I could not locate this study.
  - Types of protective devices not specified.

# Objective Evidence Demonstrating Long Term EMF Protection Is Lacking

## My Concern – Products may provide a false sense of protection

- Suppose:
  - Product relieves headache from cell phone by mitigating Rouleaux effect
    - Person believes they are protected from EMF
  - Product does not mitigate DNA damage from cell phone
    - Person develops cancer
- Different products may be mitigating different biologic effects
- There are no long term studies showing all biological impacts are mitigated

## My Recommendation

- Do not rely on protective devices using unconventional technologies until more data is available
- Reduce EMF exposure using conventional physics (Ref Case Study)

**Long Term Studies Showing Reduction Of All Bio Markers Are Needed**

## Beyond Conventional Science – Very Preliminary

- **Protective Pendants and Other Devices**
  - “Spiritually is Physics that has not yet been explained by Science”, Nassim Hamein
- **HSP (Highly Sensitive Persons) and EMF**
  - EHS; is it a sickness or a gift? You can make a good case for both, MD, England

## Reports Are Intuitives, Empathics, and Psychisc Are More Often EMF Sensitive

- Judith Orloff, MD. Scientific Explanations of Empathy and Empaths:
  - Both the brain and the heart generate electromagnetic fields
  - Some believe these fields transmit information about people's thoughts and emotions
  - Empaths may be particularly sensitive to this input and can become overwhelmed by it
  - Empaths often have stronger physical and emotional responses to changes in the electromagnetic fields of the earth and sun.
  - <https://chopra.com/articles/5-scientific-explanations-of-empathy-and-empaths>
  - <http://health-splash.org/empaths-are-especially-susceptible-to-the-effects-of-emf-radiation/>

**Closing**

**Please Complete Your Evaluation Form 😊**

# It Is Easy To Learn More About EMF Safety

## Documentaries

- “Generation Zapped” <https://generationzapped.com/>

## You Tubes

- Dr Devra Davis: "The truth about mobile phone and wireless radiation"
  - <https://www.youtube.com/watch?v=BwyDCHf5iCY>
- Dr Kinghardt: “EMF RADIATION The Health Crisis Of Our Time!”
  - <https://www.bing.com/videos/search?q=emf+dr+kinghardt&&view=detail&mid=9F19297D3966E440B6F09F19297D3966E440B6F0&&FORM=VRDGAR>
- Barrie Trower: The Dangers of Wi-Fi to Women and Children
  - [https://www.youtube.com/watch?time\\_continue=10&v=mRLSPWviyzQ](https://www.youtube.com/watch?time_continue=10&v=mRLSPWviyzQ)

## Research

- Dr Magda Havas, PhD <https://magdahavas.com/>
- Environmental Health Trust <https://ehtrust.org/>
- BioInitiative Report <https://bioinitiative.org/>
- Scientists for Wired Technology <https://scientists4wiredtech.com/>

*EMF Part 2: July 11, 6:30-8:45*

- *What should be included in an in home EMF assessment*
- *Demo on how to measure EMF*
- *Documentary on smart meters – “Take Back your power”*

*Find antennas near you*

<http://antennasearch.com/>

*For an in-Home EMF Assessment  
email [Info@HealthEngineers.org](mailto:Info@HealthEngineers.org)*

**Handout: “Biological Impacts of EMF” by Bill Houtl, Somos Life, 15 June 2019**

## Important Topics Not Discussed Today

- Health concerns and the “5G” roll out
- How the communication industry has shaped public policy
- Blue light at night can impact sleep quality
- Earthing with ground currents
- Geopathic stress addresses the impact of earth energies on human well-being

# Conclusions

- Regulatory safety standards do not protect us from harm
- Many opportunities for activism to spread the word about safety and engage politically
- The EMF in your house can be measured and mitigated if needed
- It is easy to learn more; there are 6000 studies to review!

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  - Greenwave
  - Satic
- Scientists
  - Archie Scott, Chemist, DMSO advocate
  - Martin Pall, PhD, published on VGGC effect
- Medical Practitioners
  - Dr Bob Lund, ND, connected EMF to health
  - Dr Robert Brody, ND, gene expression and microbiome imbalances
  - Dr Copper, DC, Center for Deuterium Depletion
  - Dr Que, PhD, Center for Deuterium Depletion
- Emotional Health Practitioners
  - Mariana Ito, founder of Somos Life, Biomagnetism
  - Tapas Fleming, founder of TAT Life

**THE END**

- Thank you for your attention -

**Please Complete Your Evaluation Form 😊**