

## Wireless Wisdom for Healthy Homes & Offices: How to Embrace Low-EMF Living

Mary Anne Tierney, RN, MPH

Electromagnetic Radiation Specialist  
Blue Ridge EMF Solutions  
Asheville NC

for the  
IAACN Scientific Symposium  
October 8, 2020

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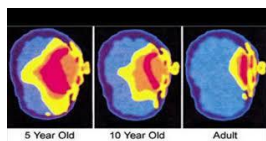
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## Why I Care: a Passion for Prevention

West African Child Survival Project

Researching Children's Vulnerability to  
RFR



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## Outline of this 2-Part Session

### Part I

- Four Types of EMFs
- EMF Safety Standards
- Safer Cell Phone Use
- Creating a Sleep Sanctuary
- Q & A
  
- 5 minute break

### Part II

- DIY EMF Assessment
- Safer Internet Set-Up
- Phone Options
- Personal EMF Protection Plan
- Resources for Follow-Up
- Q & A

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### Common Barriers to Low-EMF Living

Real & Perceived

- Need to stay in touch
- Not personally affected
- Convenience
- Partner's Preferences
- Disbelief from "War-Gamed" Science
- Dependence
- Addiction



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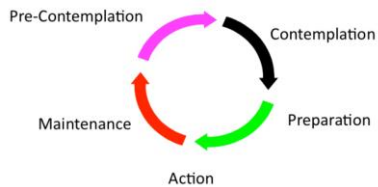
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### The Stages of Change



Prochaska, J., Norcross, J., DiClemente, C, 1994

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### Your Readiness to Embrace Low-EMF Living?

Not Interested	Maybe Someday or If I'm ill	Thinking About It	Ready	Definitely Ready!
1	2	3	4	5

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### Quick Review: 4 Types of EMFs

- Electric Fields
- Magnetic Fields
- Radio-Frequency Radiation
- Dirty Electricity or ElectroMagnetic Interference

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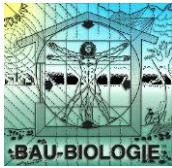
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### Basis of my Approach: Building Biology



- Founded in Germany post WWII after complaints of what we now call 'Sick Building Syndrome'
- The Joyful Science of Healthy Buildings
- Going beyond Green
- Nature is our Guide
- Quantitative Approach

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### Building Biology's EMF Safety Standards

Fields	No Concern	Slight Concern	Severe Concern	Extreme Concern
Electric Fields: v/m	<0.3	0.3 – 1.5	1.6 - 10	> 10
Magnetic Fields: mG	< 0.2	0.2 - 1	1.1 – 5	> 5
RFR uW/m <sup>2</sup>	< 0.1	0.1 - 10	10 – 1,000	> 1,000
Dirty Electricity mV (Greenwave standards)	< 25	26 - 50		> 50

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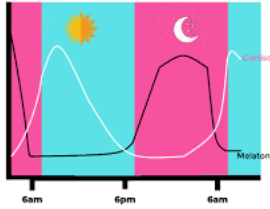
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**Increased Risks  
from Extra-low frequency EMFs**

*Daily Melatonin +  
Cortisol levels*



- Increased cortisol
- Decreased melatonin
- Disturbed sleep
- Anxiety
- Neurological effects
- Miscarriage
- DNA Damage
- Cancer (leukemia)
- Depression (Tierney References)

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**Electric Fields**

Goal for Healing: 1.5 volts/meter

**Sources**

- Overhead Power Lines
- Homes Wiring
- All Electronics
- Not high if grounded
- Lamps: no ground wire



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**Magnetic Fields**

Goal for Healing:  $\leq 1.0$  mG

- Overhead Power Lines
- Home Wiring
- Wiring Errors  
(even when lights on)
- All Motors in motion  
- Refrigerators
- Cars: alternators,  
battery, steel in tires



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### 3. Radio Frequency Radiation

Goal for Healing:  $\leq 10 \text{ W/m}^2$

#### Unsuspecting Sources

- Baby Monitors
- Play Stations
- Smart Home devices
- Smart Speakers
- Smart Air filters
- Smart Fitness Watches
- C-Pap: remove modem and turn off Blue Tooth



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### 4. Dirty Electricity or

Goal for Healing:  $\leq 50 \text{ GS units}$

- Solar Energy Inverters
- Energy-Saving Bulbs
- Wiring Errors
- Dimmer switches
- Variable Speed Motors in HVAC, front-load washers, pool and well pumps
- Switch Mode Power Supplies



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### Health Effects of DE/ EMI

- Cancer: Studies of "cancer clusters"
  - Increased Heart Rate
  - Asthma
  - Diabetes & increased blood sugar
- Nervous System**
- Headaches
  - Anxiety
  - Autism Spectrum Disorder
  - Behavioral Problems
  - ADD
  - Multiple Sclerosis
  - Electro-Hyper-Sensitivity (EHS)

(Tierney References)

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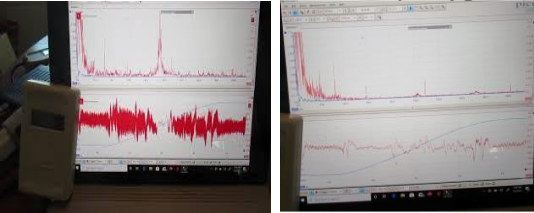
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22 y.o. w/ASD: "The pressure in my head just stopped" immediately after laptop unplugged

**Before: 1050 GS units  
400 mV; 95 kHz**

**After: 42 GS units  
Elevated frequency gone**



Windheim EMF Solutions, Sacramento, CA  
Oscilloscope & Spectrum Analyzer: before & after affects

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### EMF "Lab Values" for Healing: Quantitative & Evidence-Based

Types of EMF	Goal
Electric Fields	1.5 volts/meter
Magnetic Fields	≤ 1.0 milligauss
Radio-Frequency Radiation	≤ 10 W/m <sup>2</sup>
Dirty Electricity / EMI	< 50 GS units

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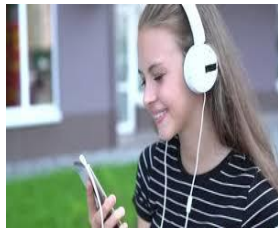
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**Building Biology Institute**  
The science of healthy buildings

#### Safer Tech Tips for Wireless Radiation

- Reduce Use
- Increase Distance
- Favor Hard-Wired Connections



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## Safer Cell Phone Use

Including Guidance from the American Academy of Pediatrics

- Keep phone OFF the Body
- Use Speaker Phone or
- Air Tube Head Set
- Avoid using it in the car
- Download movies, data; then switch to "Airplane Mode" to view



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## RFR Emissions from your Smart Phone

Against the Body

> 1,000,000 uW/m<sup>2</sup>



Let's end this fashion trend.

Why?

30,000 eggs irradiated

*"There comes a time when silence is betrayal." ~ MLK, Jr.*

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## Smart Phones: 4 Antennas Emitting RFR!

Go to Settings  
& Turn off What's Not  
Needed:

- Cellular Data
- Wifi
- Blue Tooth
- Maps (GPS)  
(Locator Service)



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### Use a Shielded Case



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### Creating a Low-EMF Sleep Sanctuary



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**Building Biology Institute**  
The science of healthy buildings

#### **Solutions**

5 Easy Steps to  
Creating a  
Sleeping  
Sanctuary

1. Use a battery-powered clock
2. Turn off bedroom-affecting electrical circuits
3. Eliminate, minimize, or shield Radio-frequency radiation (RFR)
4. Use beds without metal
5. Make sure there are no elevated magnetic fields.

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### Use Battery-Powered Alarm Clock instead of smart phone



- Avoid elevated electric and magnetic fields, RFR
- Helps avoid habit of “checking” smart phone



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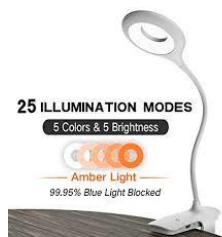
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### Unplug Lamps & all Electrically-Powered Devices

Rechargeable night lights



Rechargeable clip lamps:



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### Common Challenges with Electric Fields in Bedrooms

- C-Pap: use extension cord
- Space Heater
- Electric Blanket
- Grounding Mat
- Salt Lamp
- Phone chargers
- Beds with electric motors, battery power packs



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### Options for De-Energizing Circuits

- Manually turn off breakers each night

- Kill switch



- Remote Cut-off switches

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### Reduce and/or Shield RFR



- Foil**: highly effective, cheap

- Shielding Fabric**: canopies, windows

- Window Film**

- Y-Shield Paint**: highly effective must be grounded complex application

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### Cover your Smart Meter or Opt Out!

Iron Maiden



Look at Opt-Out Policies



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## Assure No Elevated Magnetic Fields

### Common Sources

- Wiring Errors
- Overhead Power Lines
- Bed behind or above refrigerator's motor
- Stray Current from Neighbor's Utilities



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Reduce Sources of Dirty Electricity:  
easier with Breakers Off!



### Common Sources:

- Energy-Saving Bulbs
- Power Supplies on electronics (laptops)
- Dimmer Switches
- Solar Invertors
- Smart Meters
- Wiring Errors

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Use a Bed & Mattress without Metal

Keep away from wall to increase air flow & reduce electric fields

Allergy-free cover on mattresses



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### Improving Your Sleep Sanctuary's Indoor Air Quality

- Fresh air: Open windows each day ~ even briefly!
- Or Air purifier or mechanical ventilation
- Allow in UV rays
- Damp dust
- Vacuum with HEPA
- Avoid carpeting
- Avoid VOCs
- Air out mattress, pillows
- Mold testing
- Radon testing: 3-day is best
- Allow air to flow under the bed



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## Part II: Wireless Wisdom for Healthy Homes & Offices: How to Embrace Low-EMF Living

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### Outline for Part II

- DIY Assessment of EMFs
- Safer Internet Set-Up
- Phone Options
- Personal EMF Protection Plan
- Resources for Follow-Up

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DIY Assessment of EMFs  
Screening to get started!

### Consumer Meters:

- More affordable
- Cost can be shared among friends, colleagues, patients
- Less sensitive &
- Less specific than professional meters

### Tips to Consider:

- All EMF reductions identified are worthwhile
- Yet Triage the “lowest hanging fruit”
- Major reductions often require assistance
- Avoid “Plug-in Solutions”- which can make things worse

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### Review: EMF “Lab Values” for Healing

Types of EMF	Goal
Electric Fields	1.5 volts/meter
Magnetic Fields	≤ 1.0 milligauss
Radio-Frequency Radiation	≤ 10 uW/m <sup>2</sup>
Dirty Electricity	< 50 GS units

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### Screening for Electric Fields

Body Voltage Kit: \$140

- Great tool to ID devices, circuits affecting you
- Limited sensitivity & range of frequencies
- Follow instructions
- Allow meter to settle
- Unplug electronics, lamps & turn off circuits to lower body voltage



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### Measuring Magnetic Fields (MF)

TF2: \$168 : 3 Axis meter



- ID wiring errors by holding it close to source
- Hallway/ 3-way switches most likely to have wiring errors
- Turn off circuit to confirm
- TF2 not sensitive enough for EF & RFR

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### Measuring Dirty Electricity

1<sup>st</sup>: Know what Grid is contributing so:

- Unplug ALL electronics
- Turn off ALL lights
- Turn off breakers on Washer, HVAC, Pool, Well
- Use AM Radio throughout home to < 540
- Measure midday when it's sunny to know impact of local solar panels
- Use a GS Microsurge Meter



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### Mitigating Dirty Electricity

- Eliminate the Source
- CFL & LEDs: major problem!
- Have wiring errors repaired
- Use laptops on battery power
- Breakers off at night will significantly reduce DE in wiring
- Electrician: Tighten all wiring connections
- If wiring errors: Plug-in filters will *increase* DE
- Filtering can help in office environments only IF no high MF.

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## Assessing RFR/Wireless Radiation

Safe & Sound Classic: \$149:  
Simple & sensitive



Safe & Sound Pro II \$385  
Specific & sensitive



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## Reducing RFR Indoors: Often Easy Yet BIG Lifestyle Change!

### Measure & Mitigate

- Measure at 3 feet away
- Hold at arm's length from your body – not blocking source
- Meter is directional
- RFR flows like light
- Shield with foil, fabrics, carbon-based paint
- Increase distance
- Hardwiring

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## Internet Connectivity 2 ways

Wi-Fi: Sprays Radiation



Ethernet: Carries RFR in cables



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### Good Internet Solutions:

#### Wi-Fi off at Night



#### Router Guard by Day



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### Better Internet Solution: Low-RF Router

- 90% less RFR emitted
- Passive “Beacon” signal: reduces DNA damage
- OFF Button for Wi-Fi when desired
- Ethernet still connected
- Yet RFR still emitted from personal device



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### BEST Internet Solution: Hard-Wired

- All desktops except Apple have Ethernet ports
- May need adaptor
- Get Router without Wi-Fi or able to turn off Wi-Fi
- Use “switch” for multiple internet users
- iPhones and iPads can also be hard-wired
- See Resource list



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### Adapters for Ethernet: PC, Older Apples

- USB to Ethernet
- Grounded on both ends reduces electric fields
- IF it stops working: Disconnect both ends, jiggle & reconnect
- Brands/ Options: CreateHealtyHomes.com to Shop Page



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### Adapters for MacBooks **Newest MacBook**

- USB-C to Gigabit Ethernet Adapter
- also called "Thunderbolt 2" ports



### Most other MacBooks

- Thunderbolt to Gigabit Ethernet Adapter
- RJ45 connector: tiny!



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### When Ready: Go to Settings

- Go to Network
- Disconnect Wi-Fi
- "Not Connected" is NOT Disabled!
- Red X should appear on some screens

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### Turn off RFR in Browser

Type this code into browser:

- 192.168.1.1 or
- 192.168.0.1
- Not all Internet Providers allow this access.

Try to uncheck all 4 Wi-Fi Connections:

- Private: 2.45 GHz & 5.0 GHz
- Public: 2.34 GHz & 5.0 GHz
- Uncheck ALL other Wi-Fi Networks (coffee shops, etc)

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### All Laptops

- Airplane Mode ON
- Blue Tooth OFF



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### Corded Mouse & Keyboard



### Or Infrared Keyboard



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### Disable Wi-Fi on Printer

- Connect USB cable to connect to PC/laptop
- Connect printer to Local Area Network (LAN)
- Settings:
- Disable Wi-Fi
- Disable Wi-Fi Direct

Then RECHECK all RFR readings!



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### Office Phone Options

- **Good:** Speaker Phone
- **Better:** Cell Phone with Shielded Case, Headset
- **Best:** Landline!
  - Traditional Phone Co
  - VIOP: Voice over Internet Protocol
  - Forward Cell Phone:
    - \*72 plus full number;
    - \*73 to Undo forward



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### Hard-Wiring iPads & iPhones: Lightening to Ethernet RJ45 Adapter

- Foinnex brand: \$37.59
- Grounded: drops Electric fields
- Can be temperamental
- Can receive email
- Can't receive calls, texts
- Unless you add Google Voice, iMessage for calls



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**Music: Nix the Smart Speakers!**

**Hard-Wiring Protocols for 2 Major Brands:**

1. [CreateHealthyHomes.com](http://CreateHealthyHomes.com)

2. [SageLiving.us](http://SageLiving.us)

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**Say NO to 5G Devices**

- IF Not: Your 5G products will automatically connect you to local small cells
- Trade in your 5G Phone for a 4G phone
- Keep your 4G phone!
- Ask provider if you can downgrade your 5G phone to 4G



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**The Building Biology Institute  
on Chips, Pendants & Gems**

- Do not use subtle energy devices as a sole means of protection, or your first line of protection.
- Use them as supplemental protection against EMR where it cannot be avoided.
- Use them as an adjunct to EMF reduction strategies, particularly for people with electrical sensitivity.
- Practice methods that will eliminate or reduce exposure to EMR in spaces that you control.

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**Your Readiness to Embrace  
Low-EMF Living?**

Not Interested	Maybe Someday or If I'm ill	Thinking About It	Ready	Definitely Ready!
1	2	3	4	5

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**Personal EMF Protection Plan**

Offers GOOD, BETTER, BEST Options for:

- Phone Use
- Sleep Sanctuaries
- Internet Connectivity

See Handout in the Drop Box

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**Resources for Follow Up**

**To Find an EMF Specialist:**

BuildingBiologyInstitute.org – Find an Expert –  
EMRS – look for your state/region

IF you do not see anyone in your area:

Contact:

[INFO@BuildingBiologyInstitute.org](mailto:INFO@BuildingBiologyInstitute.org)

**Resources for Low-EMF Living** in your  
DropBox

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## Resources to Learn More

- [Building Biology Institute.org](http://BuildingBiologyInstitute.org)
- **Dirty Electricity** by Sam Milham, MD, MPH
- [MDSafeTech.org](http://MDSafeTech.org)
- [EHTrust.org](http://EHTrust.org)
- [EMFPortal.org/en](http://EMFPortal.org/en)
- [BioInitiative.org](http://BioInitiative.org)



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## Sea Gypsies: Lessons to Teach Us All?

- Moken ethnic group of western Thailand
- Nomadic, sea-based culture; swim before walk
- Extraordinary ability to hold their breath and see under water for extended periods to harvest seafood
- “6<sup>th</sup> sense”: All survived 2004 tsunami
- In low-EMF environments:  
Are we better able to thrive despite the tsunami of RFR outside our homes?



~ Erica Mallory Blythe, MD

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Thank you!



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