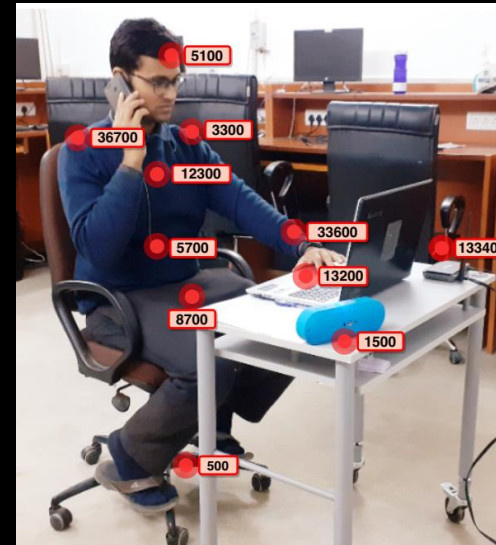


# The Body Electric + Microwave Radiation

Russell S. Witte, PhD

Professor  
Medical Imaging  
Optical Sciences  
Biomedical Engineering  
Neurosurgery

[rwitte@protonmail.com](mailto:rwitte@protonmail.com)



AZ Rep Meeting on 5G  
Sept. 30, 2020

# Marketing has a Powerful Effect on Perception

No child was too young for the tobacco marketers.

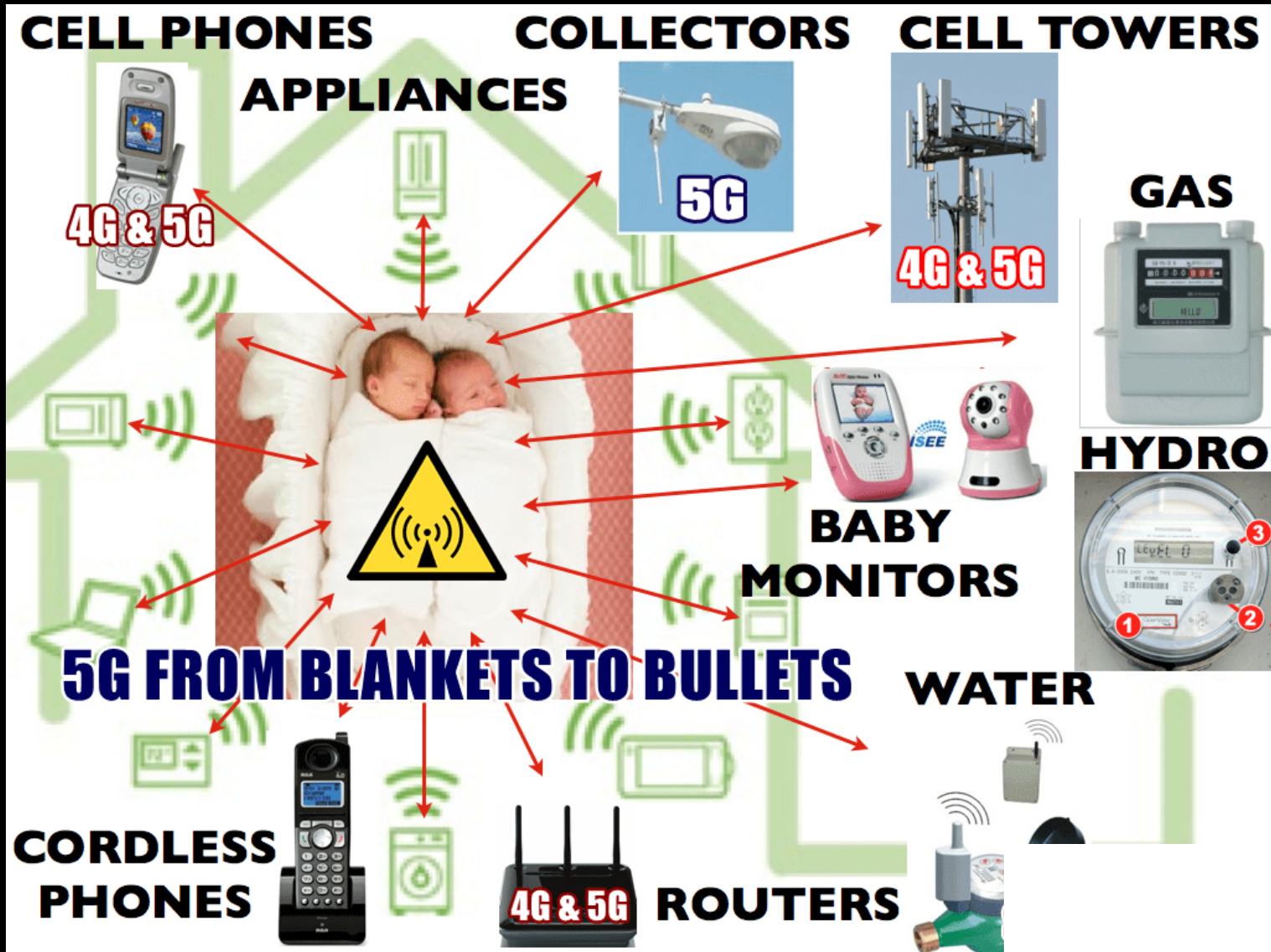


Stanford University

















But can such ads be trusted for public safety?

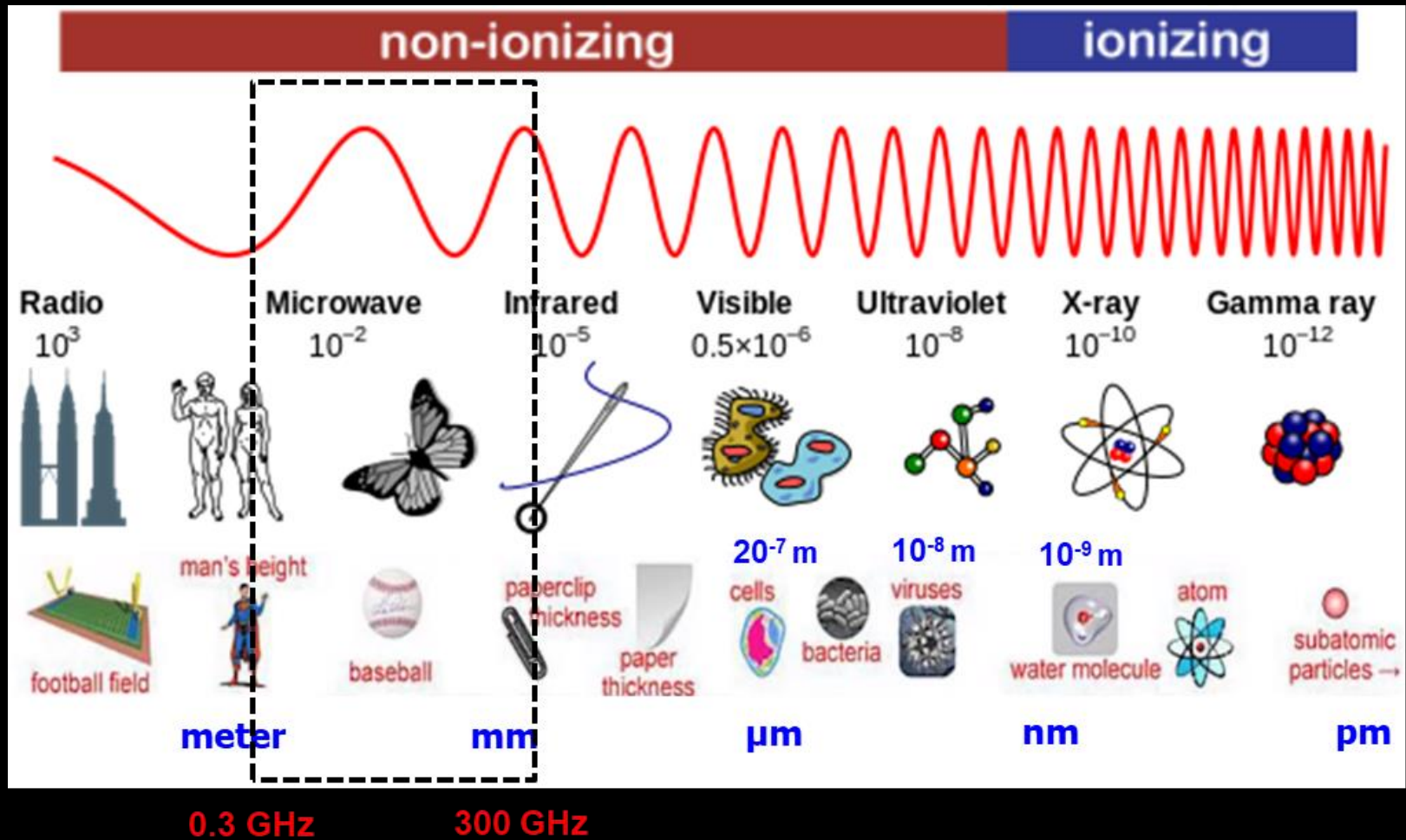
# What do all these devices have in common?



# .... they all emit microwave radiation

 1991 <b>2G</b>	 1998 <b>3G</b>	 2008 <b>4G</b>	 2020? <b>5G</b>
 Texting	  Texting    Internet access	  Texting    Internet access  Video	  Texting    Internet access   Ultra HD & 3-D video    Smart home
<b>2G Frequencies</b>	<b>3G Frequencies</b>	<b>4G Frequencies</b>	<b>5G Frequencies</b>
GSM 2G Upto 1.9 Ghz	HSDPA 3G Upto 2.1 Ghz	LTE 4G Upto 2.5 Ghz	IoT 5G Upto 95 Ghz

# Electromagnetic Spectrum and Scale



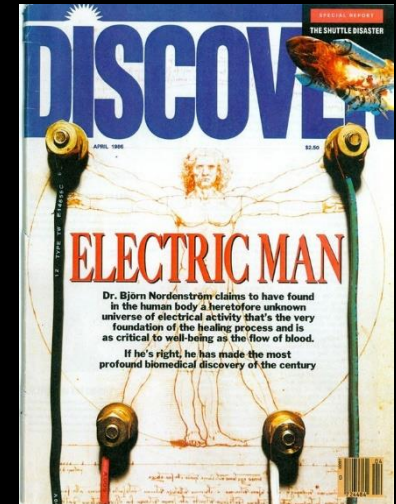
# Our Body is Inherently an Electrical System



**Björn Nordenström, MD**  
Chairman of the Nobel Assembly

“...all living systems contain numerous functioning electrical circuits. ...These circuits exist in all bodily functions and...determine the well being of the body.”

Biological Closed Electric Circuit Clinical, Experimental, and Theoretical Evidence for an Additional Circulatory System. (1983)

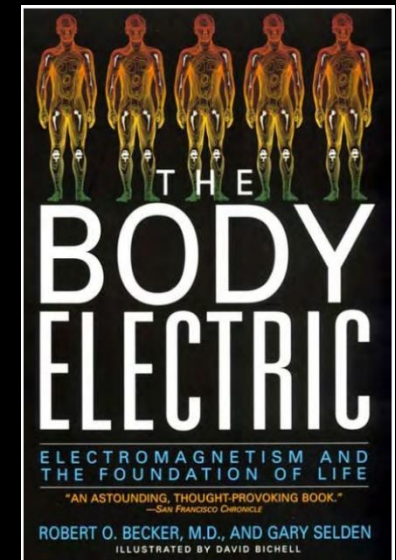


1986



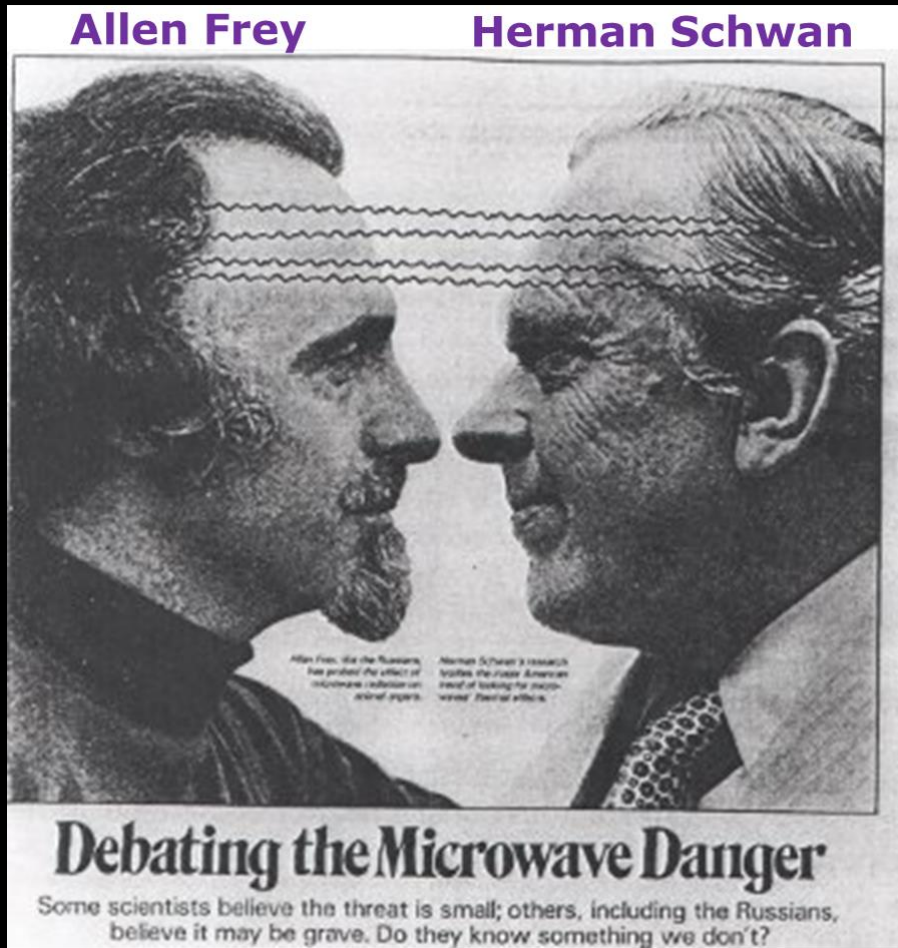
**Robert Becker, MD**  
Nominated twice for Nobel Prize

“We are now in the process of revising the past century’s biochemical concept, under which all major life processes are chemical in nature, to one that proposes that such processes are electromagnetic in nature.”

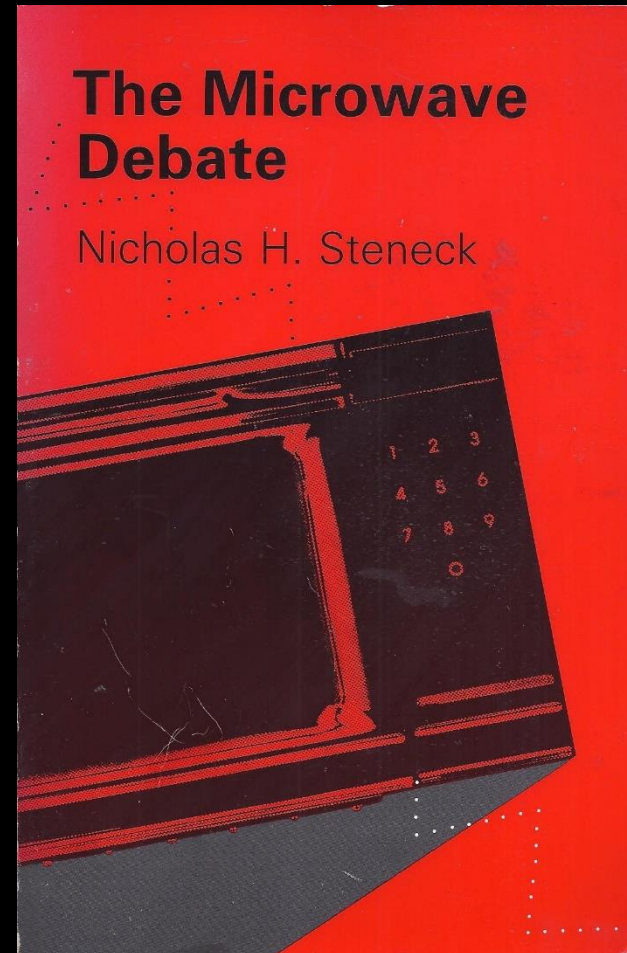


1985

# Debating the Microwave Danger (1960s)



From: *Microwave Debate* by Nicholas Steneck, p.193. (MIT press, 1984, out of print).



Steneck (1984)

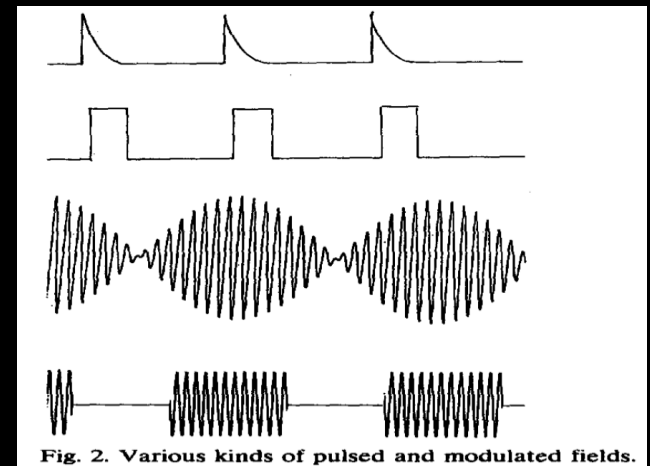
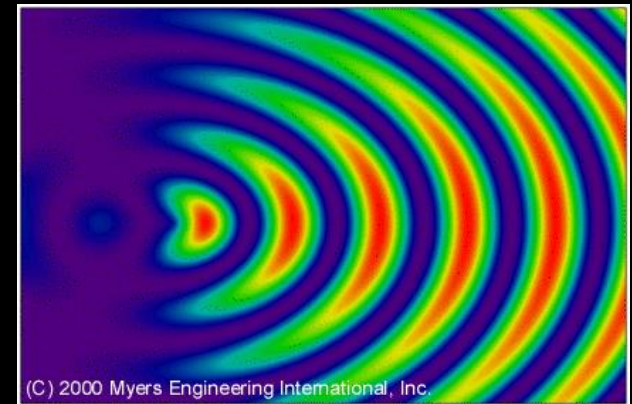
# Electromagnetic Radiation and Wave Properties

## Properties of Waves

1. Frequency (rate)
2. Amplitude (power)
3. Intensity (power density)
4. Pulse (beats)
5. Modulation (information)
6. Spatial radiation pattern
7. Polarity (orientation)

**All properties affect biological systems!**

## Sample Radiation Pattern



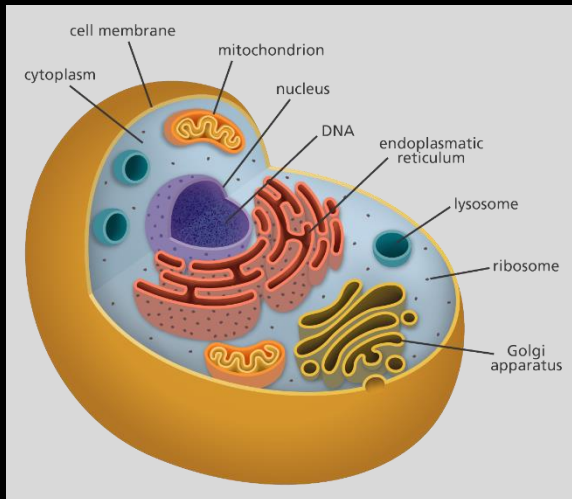


# Microwave Radiation Affects Living Systems at All Scales

**Molecular-DNA**



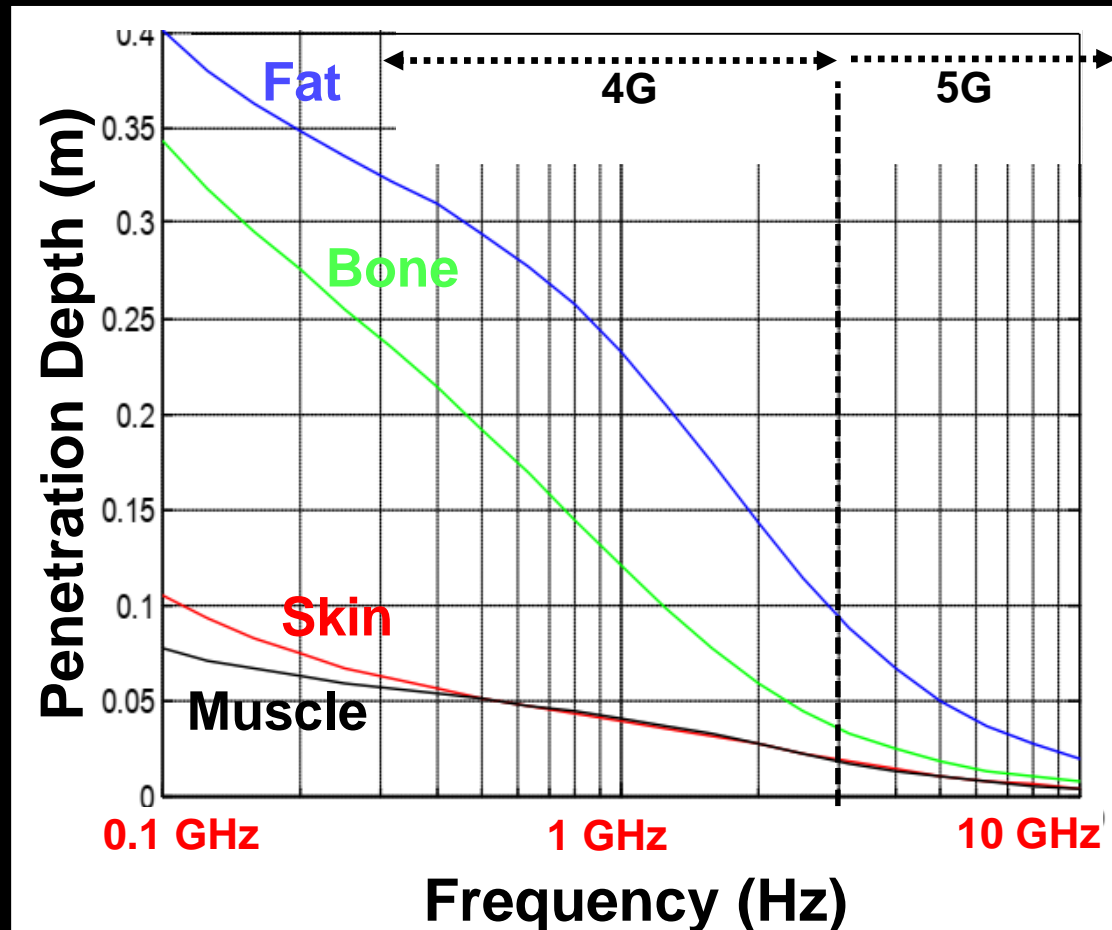
**Organelle-Cells**



**Organ-Organism**

→ Living systems most sensitive to microwave intensity, pulsing/modulation (on/off), dose (cumulative effects)

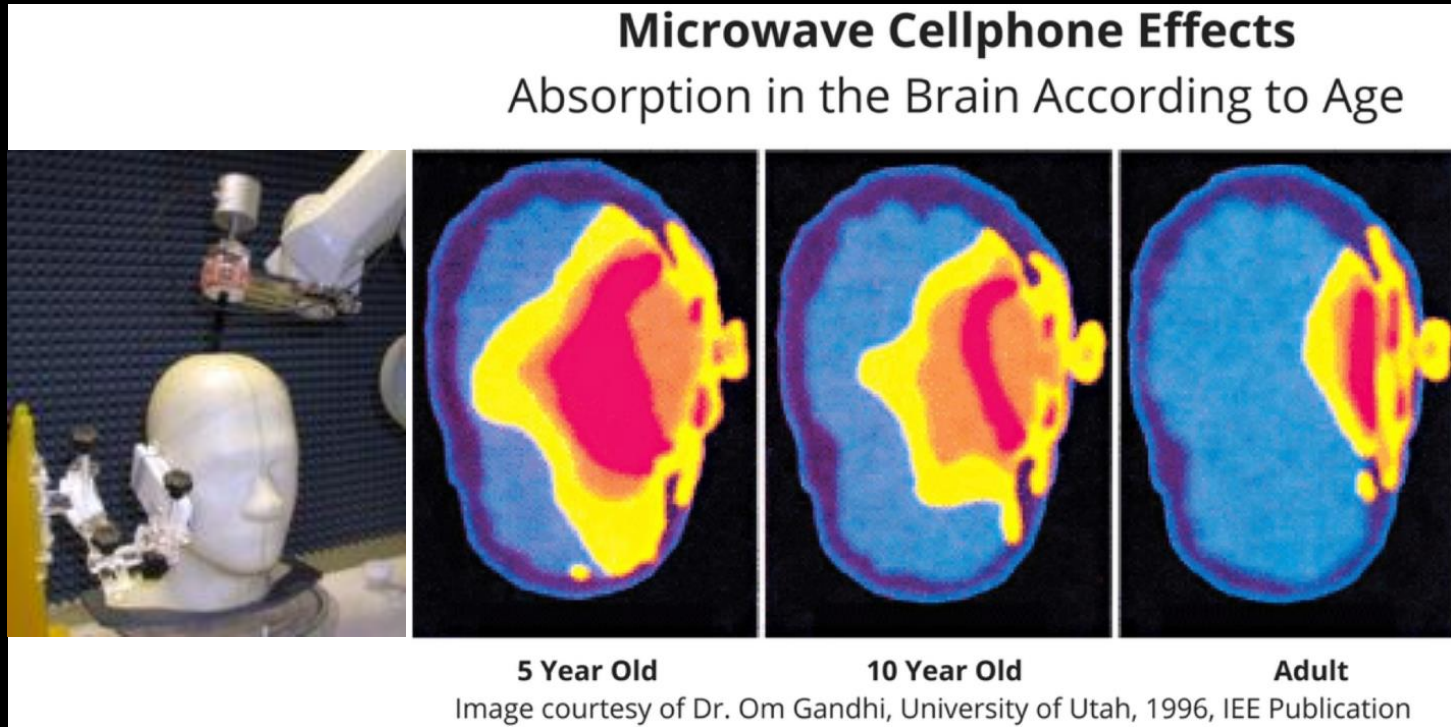
# Microwave Penetration in Tissue



Modified from Mohammed 2014v(JBET)

- Salt water strongly absorbed by microwaves
- Effects in tissue are cumulative
- Radiation dose = important! (exposure over time)

# Children Most Vulnerable to Microwave Radiation



- Thinner skull and bone than adults
- ↑ absorption in brain (3X)
- ↑ absorption in bone marrow (10X)

# Favorite studies (from 20,000+) and links

<https://www.emf-portal.org/en>

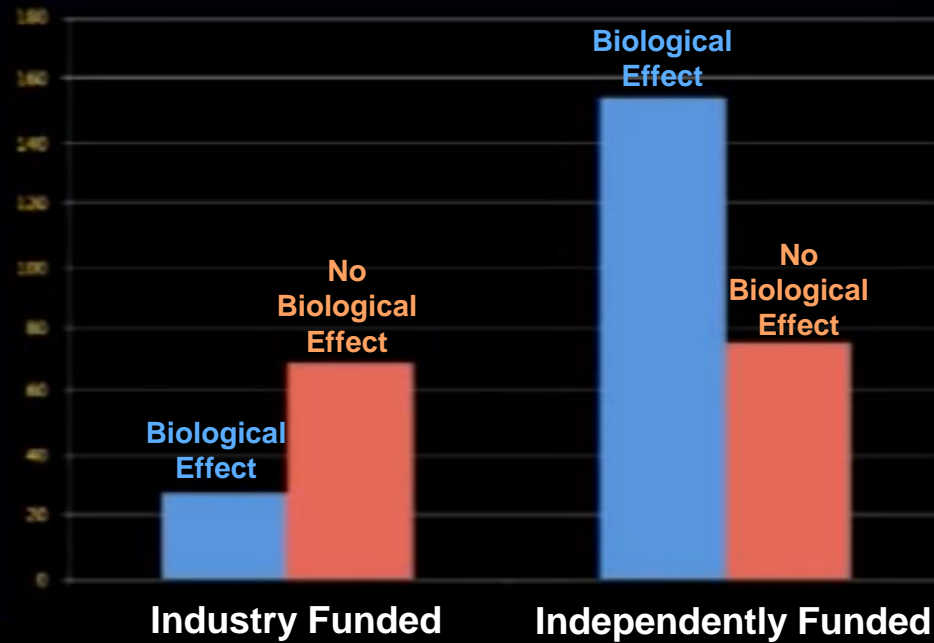
## Works Cited (copy and paste links into browser)

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- [2] **Army** (Adams and Williams 1976, 35 pages): **Biological Effects of Electromagnetic Radiation and Microwaves-- Eurasian Communist Countries** <https://tinyurl.com/tuclavh>
- [3] **Naval Medical Research Institute** (Z Glaser, 1971, 106 pages).  
Bibliography of >2000 papers **Reporting Biological Phenomena ("Effect") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation**  
<https://apps.dtic.mil/docs/citations/AD0750271>
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- [5] **Airforce** (Boelen, 1994, 32 Pages, House Report). **Radiofrequency/Microwave Radiation Effects and Safety Standards: A Review** <https://apps.dtic.mil/dtic/tr/fulltext/u2/a282886.pdf>
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[https://www.orsaa.org/uploads/6/7/7/9/67791943/influence\\_of\\_microwave\\_radiation\\_on\\_the\\_organism\\_of\\_man\\_and\\_animals.pdf](https://www.orsaa.org/uploads/6/7/7/9/67791943/influence_of_microwave_radiation_on_the_organism_of_man_and_animals.pdf)
- [7] **NASA** (Raines 1981, 125 pages). **Electromagnetic field interactions with the human body: observed effects and theories.** <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19810017132.pdf>
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<https://www.cia.gov/library/readingroom/docs/CIA-RDP88B01125R000300120005-6.pdf>
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- [14] **NIH** (National Toxicology Program, 2018) Cell Phone Radiofrequency Radiation Study. **Largest study (\$30 Million) ever on biological effects of cell phone radiation.**  
Toxicology and **carcinogenesis** studies in B6C3F1/N mice exposed to whole-body radio frequency radiation at a frequency (1,900 MHz) and modulations (GSM and CDMA) used by cell phones  
[https://ntp.niehs.nih.gov/ntp/htdocs/lt\\_rpts/tr596\\_508.pdf](https://ntp.niehs.nih.gov/ntp/htdocs/lt_rpts/tr596_508.pdf)
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Toxicology and **carcinogenesis** studies in Sprague Dawley SD rats exposed to whole-body radio frequency radiation at a frequency (900 MHz) and modulations (GSM and CDMA) used by cell phones  
[https://ntp.niehs.nih.gov/ntp/about\\_ntp/trpanel/2018/march/tr595peerdraft.pdf](https://ntp.niehs.nih.gov/ntp/about_ntp/trpanel/2018/march/tr595peerdraft.pdf)
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Evaluation of the **genotoxicity** of cell phone radiofrequency radiation in male and female rats and mice following subchronic exposure.  
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<https://ehtrust.org/worlds-largest-animal-study-on-cell-tower-radiation-confirms-cancer-link/>
- [18] **Toxicology Letters** (2020). **Adverse health effects** of 5G mobile networking technology under real-life conditions.  
<https://www.sciencedirect.com/science/article/abs/pii/S037842742030028X>
- [19] **IEEE** (2020) Electromagnetic Radiation due to Cellular, Wi-Fi and Bluetooth technologies: **How safe are we?**  
<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&number=9016183> Note: IEEE retracted article without explanation
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<https://arxiv.org/ftp/arxiv/papers/1503/1503.05944.pdf>
- [21] **NIH** (1974, McRee, 7 pages). **Biological Effects of Microwave Radiation.**  
<https://www.tandfonline.com/doi/pdf/10.1080/00022470.1974.10469899>

## Recommended Links: Harmful effects of low power microwave radiation (including 4G & 5G)

- Sharon Goldberg, MD: Testimony at Michigan Legislature [14 min]: <https://www.youtube.com/watch?v=CK0AhMe-KA>
- Paul Heroux, PhD: Testimony at Michigan Legislature [8 min]: [https://youtu.be/2J77-9\\_FRYc](https://youtu.be/2J77-9_FRYc)  
Department of Epidemiology, Biostatistics, and Occupational Health, Miguel University
- Martin Blank, PhD. Columbia University, Physiology and Cellular Biophysics.  
Public appeal regarding low-level microwave radiation: <https://vimeo.com/123468632>
- Blank M, R Goodman. 2009 Electromagnetic fields stress living cells. *Pathophysiology*. 16:71-78 (2009)
- Dr. Nicholas Gonzalez, MD. Renowned New York City Physician  
Health Risks from Electromagnetic Fields. <https://vimeo.com/142196113>
- Frank Clegg, ex-President of Microsoft Canada: Wireless Tech Forum Making Technology Safe [10 min]  
<https://www.youtube.com/watch?v=S6BY7Fr1U>
- Dr. Devra Davis, PhD. What Brain and Sperm Share and Why Care. TEDxJacksonHole [15 min]  
[https://www.youtube.com/watch?v=Pm5Qc5s4\\_8M](https://www.youtube.com/watch?v=Pm5Qc5s4_8M)
- Dr. Devra Davis, PhD (Nov. 19, 2019). 5G Health Effects: University of California San Francisco [40 min]  
[https://www.youtube.com/watch?v=unmp\\_OT1051w](https://www.youtube.com/watch?v=unmp_OT1051w)
- Health Effects of EMF Radiation – Prof. Olle Johansson, PhD (renowned expert in microwaves, biology, and medicine)  
<https://youtu.be/IvN6zE6XNmM>
- Dafna Tachover, Attorney and Founder of We Are The Evidence. Testifies in Opposition to 5G in MI [45 min].  
<https://www.youtube.com/watch?v=e6JmJvXre3U>
- Renowned Professor Martin Pall, PhD (Biochemistry, WSU) warning to NIH and CDC (2019):  
<https://youtu.be/kBsUWbUB6PE>
- City Council (Maui County, 2019): **Overview** of problems with 5G for laymen 11/6/19 [20 min]  
<https://youtu.be/MeE7xLU2k?i=504>
- John Kitson (Candidate for MP in UK) at 5G UKIP Conference [25 min]  
<https://youtu.be/8SyTaoyuMPQ>
- Sharon Goldberg, MD: One-on-One Interview (health concerns + 5G). <https://youtu.be/1Qc5B39LB7c> [60 min]
- Russell Witte, PhD (Prof of Medical Imaging, University of Arizona). **The Body Electric and Microwave Radiation.**  
<https://www.youtube.com/watch?v=qN6CEs0kKM>
- A Rationale for **Biologically-based Public Exposure Standards** for Electromagnetic Fields  
<https://bioinitiative.org/>
- Scientific Research On Wireless Health Effects: Peer Reviewed Scientific Research On Wireless Radiation**  
<https://ehtrust.org/science/>  
<https://ehtrust.org/ev-issues/cell-phones-wireless/5g-internet-everything/20-quick-facts-what-you-need-to-know-about-5g-wireless-and-small-cells/>
- Physicians for Safe Technology: **Health Effects of Digital Technology**  
<https://midsafetech.org/conversion-and-exposure-limits-emr-emf/>
- 5G: Compelling Evidence for 8 Distinct Types of Harm Caused by EMF Exposures and Mechanism that Causes Them  
Martin L. Pall, PhD, Professor Emeritus of Biochemistry and Basic Medical Sciences, Washington State University  
<https://www.ehtrust.org/wp-content/uploads/5g-emf-hazards-dr-martin-l.-pall-eu-emf2018-6-1-us3.pdf>
- Martin L. Pall, PhD, Professor Emeritus of Biochemistry and Basic Medical Sciences, Washington State University  
Non-thermal Effects of Microwave EMFs <https://www.ehtrust.org/wp-content/uploads/142-Reviews-Pall-PhD.pdf>
- Professor University College Cork (2019). On the Clear Evidence of the Risks to Children from Smartphone and WiFi Radio Frequency Radiation. <https://tinyurl.com/wrb4ym0>
- Search Engine for microwave radiation studies (>35,000, most peer-reviewed): <https://www.emf-portal.org/en>
- 5G in 5 Minutes:** <https://youtu.be/hKowG0XV50k>  
Documentary: **5G Trojan Horse:** <https://youtu.be/ld28GCZE-UQ>  
Documentary: Generation Zapped: <https://www.amazon.com/Generation-Zapped-Dominique-Belpomme/dp/B07DP9LXF1>

# Evidence of Sponsorship Bias



Lai 2008

# 2300+ Paper Review by U.S. Navy in 1972 Reports Harm from Microwave Radiation

AD 750271

## NMRI

NAVAL MEDICAL RESEARCH INSTITUTE



2300 Papers Cited

BIBLIOGRAPHY OF REPORTED BIOLOGICAL PHENOMENA ('EFFECTS') AND CLINICAL MANIFESTATIONS ATTRIBUTED TO MICROWAVE AND RADIO-FREQUENCY RADIATION

RESEARCH REPORT

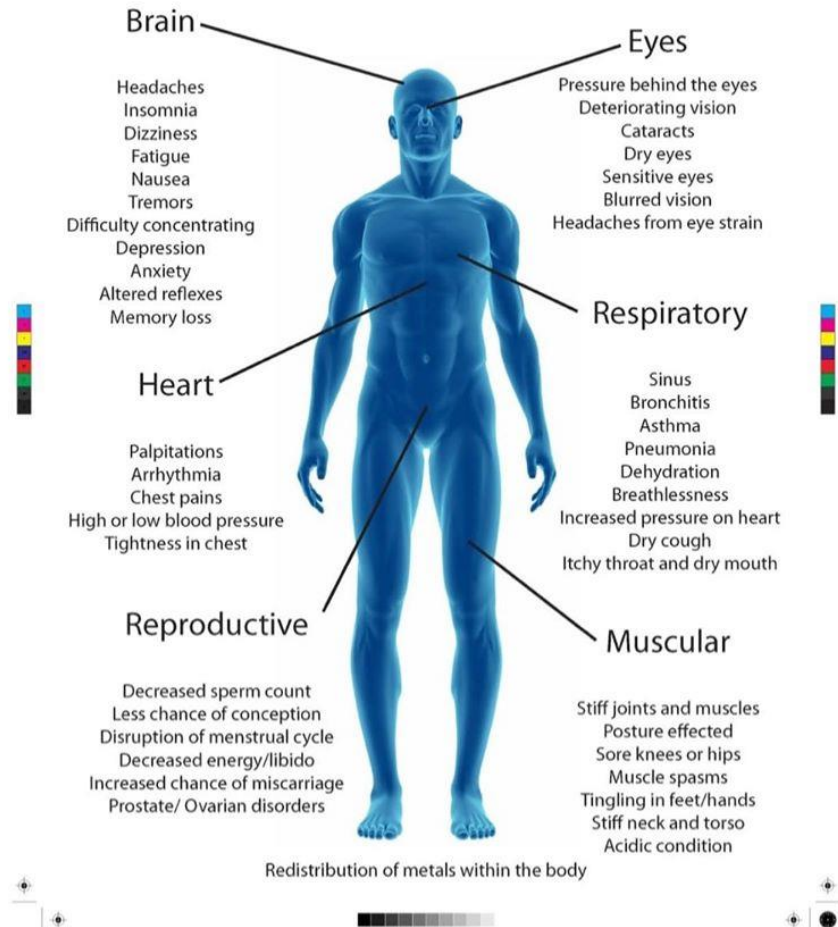
MF12.524.015-0004B

REPORT NO. 2  
REVISED

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### Symptoms of Exposure to Radio Frequency Radiation - RF EMF

Some symptoms found by the  
US Naval Medical Research Institute 1972 - declassified



# Top Scientists Convene in Warsaw in 1973 and Conclude Microwave Radiation is Harmful

Biologic Effects and Health Hazards of Microwave Radiation

350 Pages of Study

Biologic Effects and Health Hazards of Microwave Radiation

World Health Organization

Conclusion b)

Note: This is not the actual book cover

Influence of Microwave Radiation on the Nervous System and Behavior

PHYSIC STRESSORS ARE POTENT MEDIATORS OF THE NEURAL RESPONSE TO MICROWAVE IRRADIATION

*Justesen, D. M. Levinson and L. R. Justesen*

Department of Experimental Neuropsychology, Veterans Administration Hospital, Kansas City, Missouri, U.S.A.

Occupational Exposure and Public Aspects of Microwave Radiation

FINDINGS IN PERSONS EXPOSED TO MICROWAVES

*E. Klimková-Deutschová*

(b) In addition to their heating effect in tissues microwaves interact with the electric dipole moment of biologic molecules. These interactions may be observed and interpreted in terms of the shape and size of the macromolecules and the nature of the structure of the water in the neighboring environment. Such parameters may be correlated with the incidence and treatment of certain diseases with which the molecules in question are associated. In this way it would be possible to find a direct link between a clinical condition and a structural abnormality at a molecular level as, for example, has been done in the case of sickle-cell anemia and hemoglobin.

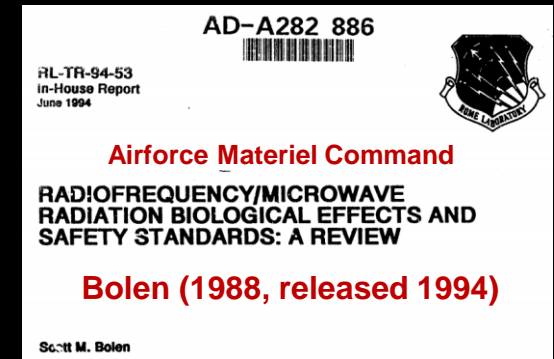
Note: This is not the actual book cover

Institute for Postgraduate Study, Military Medical Academy, Warsaw, Poland

# Biological Effects of Microwave Radiation

## Carcinogenic Effects

- 1) Chromosomal Damage \*
- 2) Mutagenic Effects (DNA damage)
- 3) Lymphoblastoid Transformations (leukemia)
- 4) Oncogenic Effects (sugar, hormone imbalance)



The NIOSH Technical Report [8] summarizes the findings of several researchers. Chromosomal and mitotic anomalies have been observed in a variety of animal and human cells for varying exposures to RF/MW radiation. Pulsed and CW radiation ranging in frequency from 15 to 2950 MHz and power densities from 7 to 200 mW/cm<sup>2</sup> have caused abnormalities to occur in chromosomes. The reported affects include: linear shortening of the chromosomes, irregularities in the chromosomal envelope, abnormal bridges and stickiness, translocations, chromosomal breaks and gaps, chromatid breaks, acentric chromosomes, dicentric chromosomes, deletions, fragmentation, and ring chromosomes [8].

observed chromosomal anomalies that appeared in forms described as polyploidy, aneupl [8] M. J. Dwyer and D. B. Leeper, "Carcinogenic Properties of Non-ionizing Radiation; Volume II - Microwave and Radiofrequency Radiation", National Institute for Occupational Safety Technical Report, published by The U. S. Department of Health, Education & Welfare, NIOSH Contract Number 210-76-0145, Cincinnati, March 1978. aps [17].



# Effects of Microwave Radiation on Central Nervous System (Ford Foundation, 1965)

## THE EFFECT OF MICRO WAVES ON THE CENTRAL NERVOUS SYSTEM

By W. Bergman

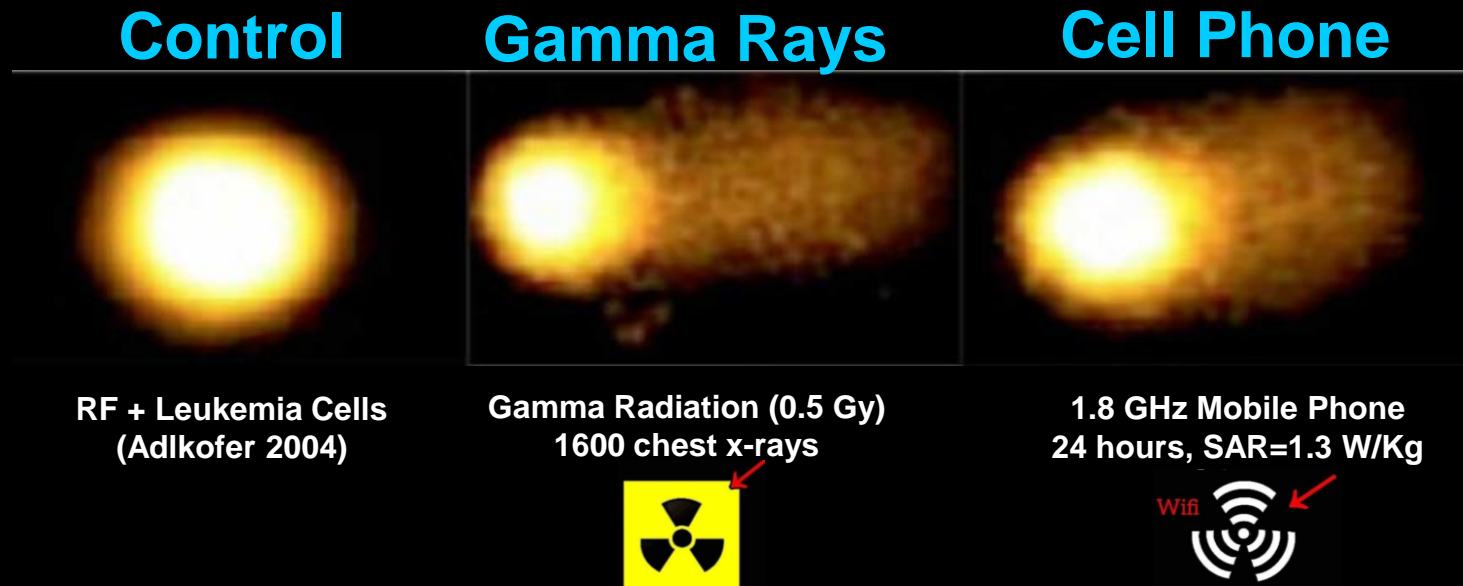
Translated from the German  
For Research and Scientific Laboratory  
Ford Motor Company  
By The Technical Library Research Service

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# Cell Phone Microwave Radiation Damages DNA

## European Commission's Reflex Study (2004)



- Comet assay measures DNA damage
- EC Reflex study: 24 hrs at 1.8 GHz (cell phone) damages DNA
- Replicated by others (e.g., National Toxicology Program in 2020)

# Largest Study Ever (National Toxicology Program-NIH) Concluded Cell Phone Microwave Radiation is Harmful




**“CLEAR EVIDENCE” CELL PHONE RADIATION CAUSED CANCER IN LANDMARK U.S. STUDY**

Environmental and Molecular Mutagenesis  Environmental Mutagenesis and Genomics Society

Research Article |  Open Access |  

Evaluation of the genotoxicity of cell phone radiofrequency radiation in male and female rats and mice following subchronic exposure

Stephanie L. Smith-Roe , Michael E. Wyde, Matthew D. Stout, John W. Winters, Cheryl A. Hobbs, Kim G. Shepard, Amanda S. Green, Grace E. Kissling, Keith R. Shockley, Raymond R. Tice ... See all authors 



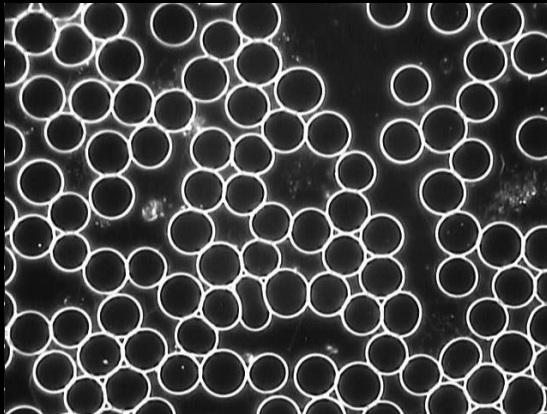
**NTP**  
National Toxicology Program  
U.S. Department of Health and Human Services

SPRAGUE DAWLEY  
(HSD:SPRAGUE DAWLEY® SD®)  
RATS EXPOSED TO  
WHOLE-BODY RADIO  
FREQUENCY RADIATION AT A  
FREQUENCY (900 MHz)  
AND MODULATIONS  
(GSM AND CDMA)  
USED BY CELL PHONES

- >10 yr, \$30 million study in mice & rats (gold standard)
- Nine types of cancer (brain, heart, prostate)
- Cardiac myopathy (enlarged heart)
- Genotoxicity (DNA damage)

# Human Blood After *In Vivo* Exposure to Microwaves Tools for Assessing the "Biological Terrain"

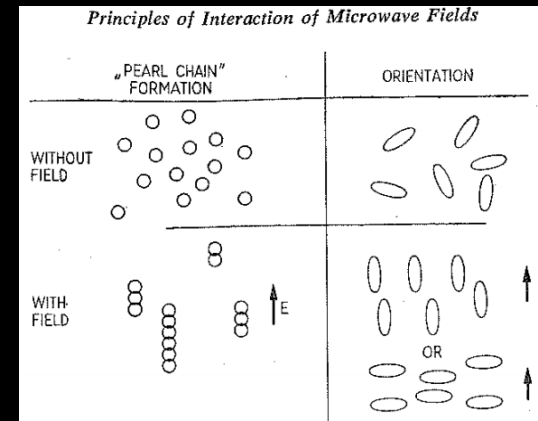
## Healthy Red Blood Cells



Dark Field  
Phase Contrast  
Imaging

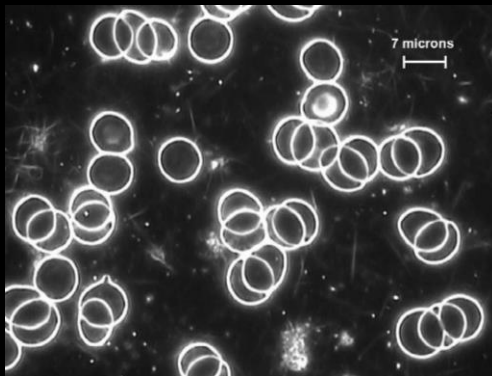
- Clean Plasma
- Round RBCs
- Separable

## Pearl Formation



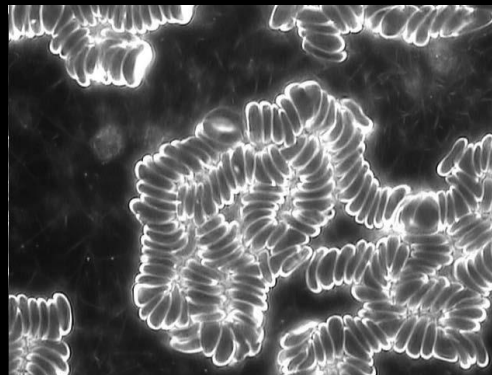
Schwan 1974

## Low Exposure



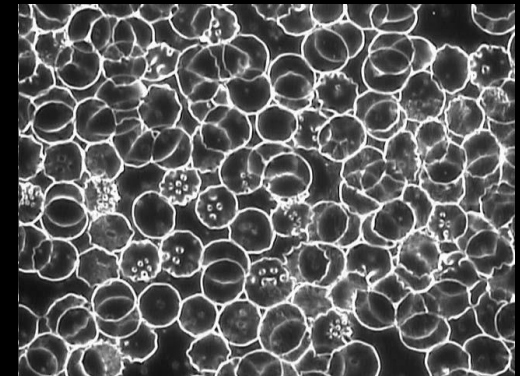
Healthy RBCs

## “Carrying” Exposure



“Rouleaux” Aggregates

## “Active” Exposure

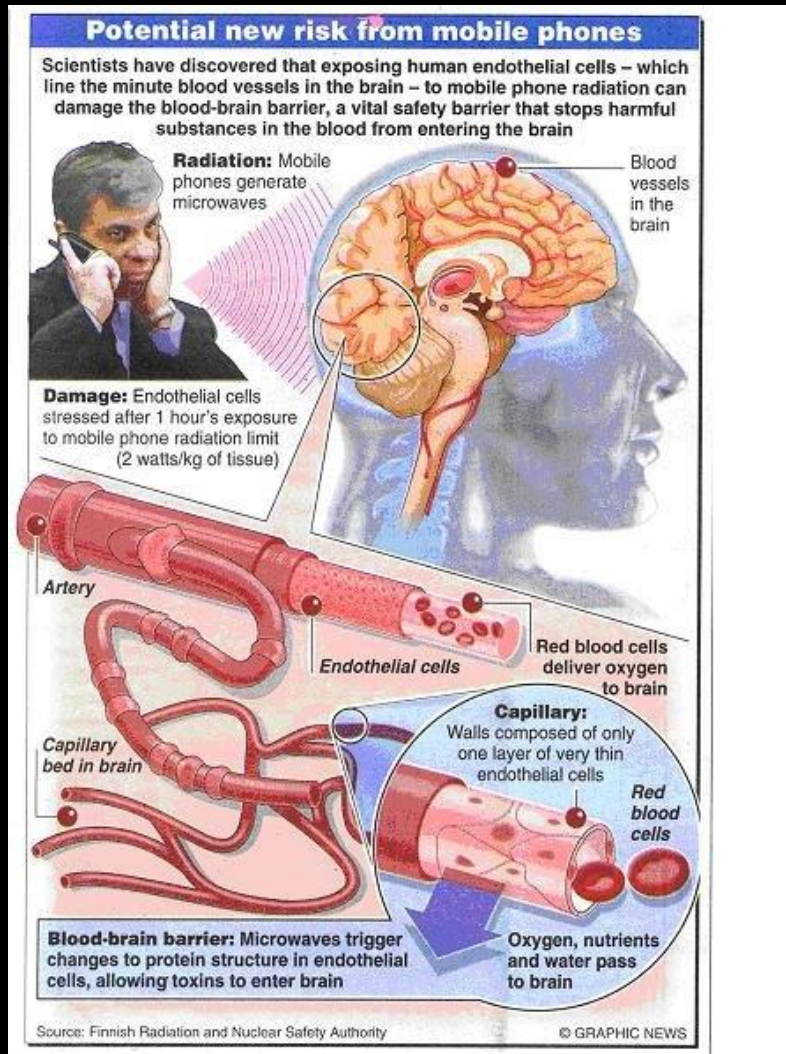


Spikey RBCs (echinocytes)

Smart Phone Microwave Exposure

Female  
75 yrs

# Many studies report compromised Blood Brain Barrier (BBB) after microwave exposure



## Microwaves increase BBB permeability

Oscar, K.J., and Hawkins, T.D. 1977. Microwave alteration of the blood brain barrier system of rats. *Brain Res.* 126:281.

Preston, E., Vavasour, E.J., and Assenheim, H.M. 1979. Permeability of the blood-brain barrier to mannitol in the rat following 2450 MHz microwave irradiation. *Brain Res.* 174:109.

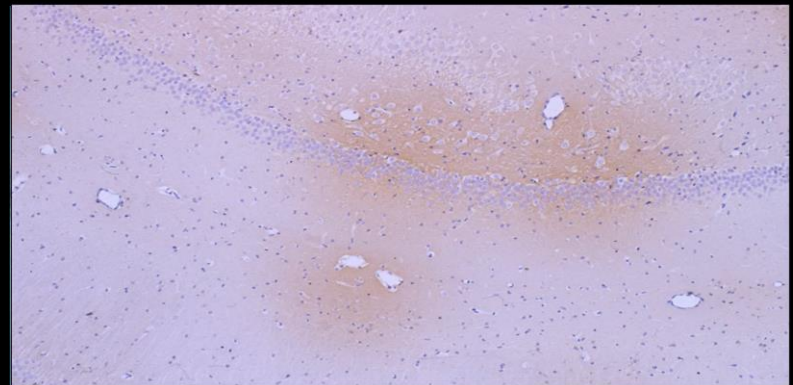
Frey, A.H. 1980. On microwave effects at the blood-brain barrier. *Bioelectromagnetics Soc. Newsl.* Nov. 1980.

# Cell Phone Radiation: Effects on Rat Blood Brain Barrier

Sham

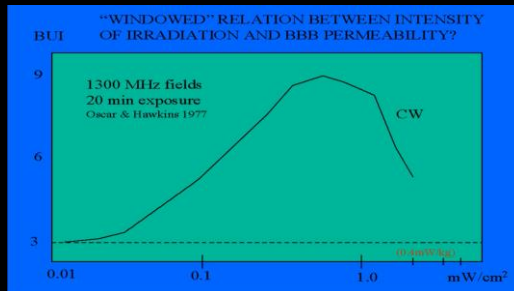


2 hours @  
915 MHz  
<8 mW/Kg



Dr Leif Salford

<https://youtu.be/OXcLmh5ZGBg>



Persson, B. R. R. & Salford, L. G. 1996, "Permeability of the blood-brain barrier in rats induced by continuous wave and pulse-modulated 915 MHz electromagnetic radiation exposure in TEM-cells.," CEC-XIII-244/6/-96 edn, A. Chiabrera & J. Juutilainen, eds., EU DG XIII, Brussel, pp. 66-72.

Persson, B. R. R., Salford, L. G., & Brun, A. 1997, "Blood-Brain Barrier permeability in rats exposed to electromagnetic fields used in wireless communication." *Wireless Networks*, vol. 3, pp. 455-461.

Salford, L. G., Brun, A., Eberhardt, J., Malmgren, L., & Persson, B. 1992, "Electromagnetic field-induced permeability of the blood-brain barrier shown by immunohistochemical methods," in *Interaction Mechanism of Low-Level Electromagnetic Fields in Living Systems*, B. Nordén & C. Ramel, eds., Oxford University Press, Oxford, pp. 251-258.

# Microwave Radiation: Causal Factor in Alzheimer's disease?

## Microwaves and Alzheimer's disease (Review)

XIA ZHANG, WEN-JUAN HUANG and WEI-WEI CHEN

Department of Neurology, Xuzhou Central Hospital, Xuzhou, Jiangsu 221009, P.R. China

EXPERIMENTAL AND THERAPEUTIC MEDICINE 12: 1969-1972, 2016

The Journal  
of Chemical Physics

ARTICLE

[scitation.org/journal/jcp](https://scitation.org/journal/jcp)

## Electromagnetic field modulates aggregation propensity of amyloid peptides

Cite as: J. Chem. Phys. 152, 035104 (2020); doi: [10.1063/1.5126367](https://doi.org/10.1063/1.5126367)

Submitted: 2 September 2019 • Accepted: 23 December 2019 •

Published Online: 16 January 2020



View Online



Export Citation



CrossMark

N. Todorova,<sup>1,2</sup>  A. Bentvelzen,<sup>1,2</sup> and I. Yarovsky<sup>1,2,a)</sup> 

### AFFILIATIONS

<sup>1</sup>School of Engineering, RMIT University, GPO Box 2476, Melbourne, Australia

<sup>2</sup>Australian Centre for Electromagnetic Bioeffects Research, Australia

# Microwave Auditory Effect

## Microwave Hearing

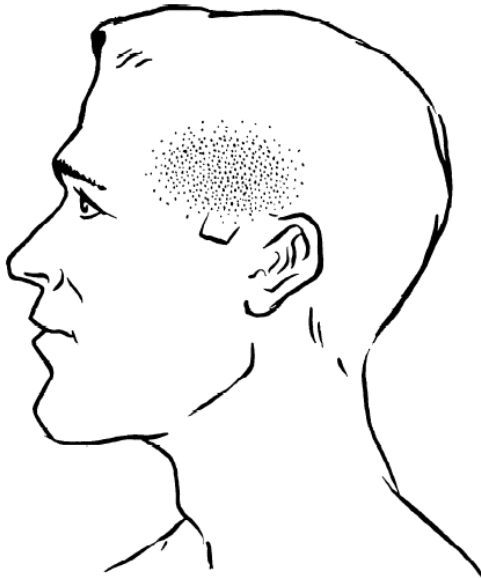


FIG. 6. Area most sensitive to electromagnetic energy (shaded portion).

A. Frey 1961

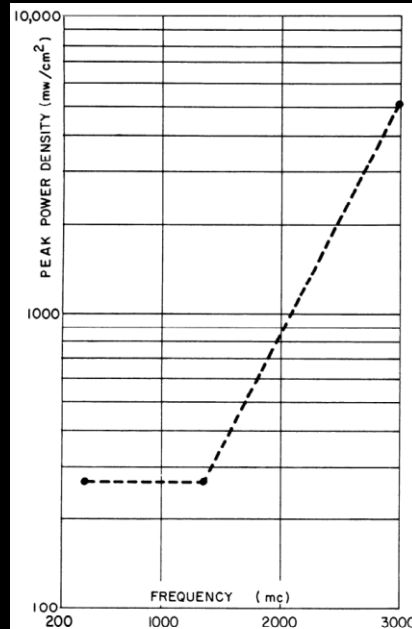


FIG. 4. Threshold energy as a function of frequency of electromagnetic energy (ambient noise level 70-90 db).

## Microwave Auditory Effects And Applications

By

JAMES C. LIN, Ph.D.

Associate Professor of Electrical Engineering  
Adjunct Associate Professor of Physical Medicine and Rehabilitation  
Wayne State University

Former Assistant Professor of Rehabilitation Medicine  
and Assistant Director, Bioelectromagnetics Research Laboratory  
University of Washington School of Medicine

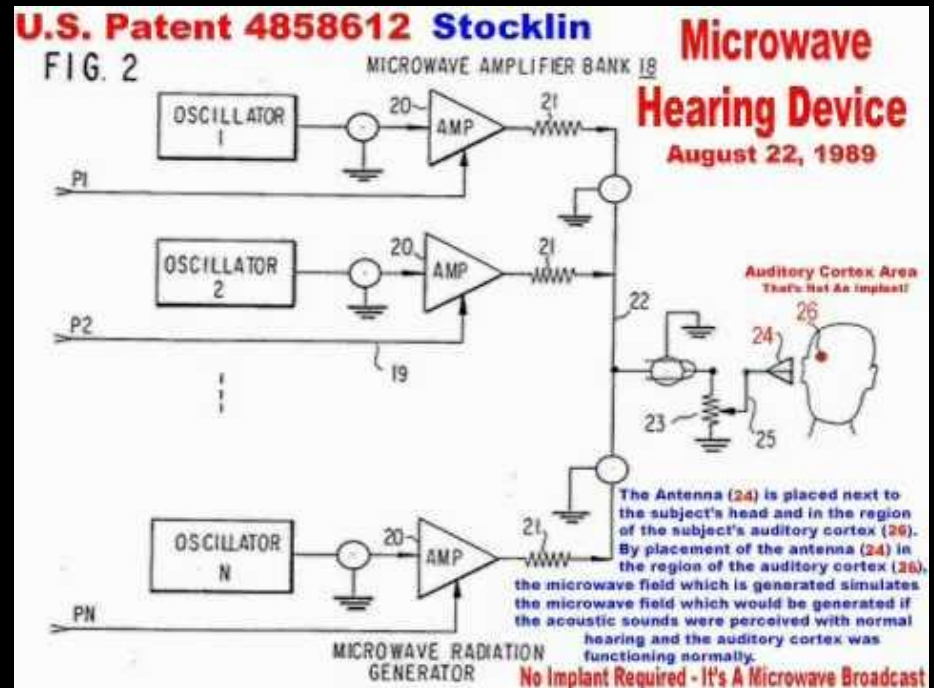
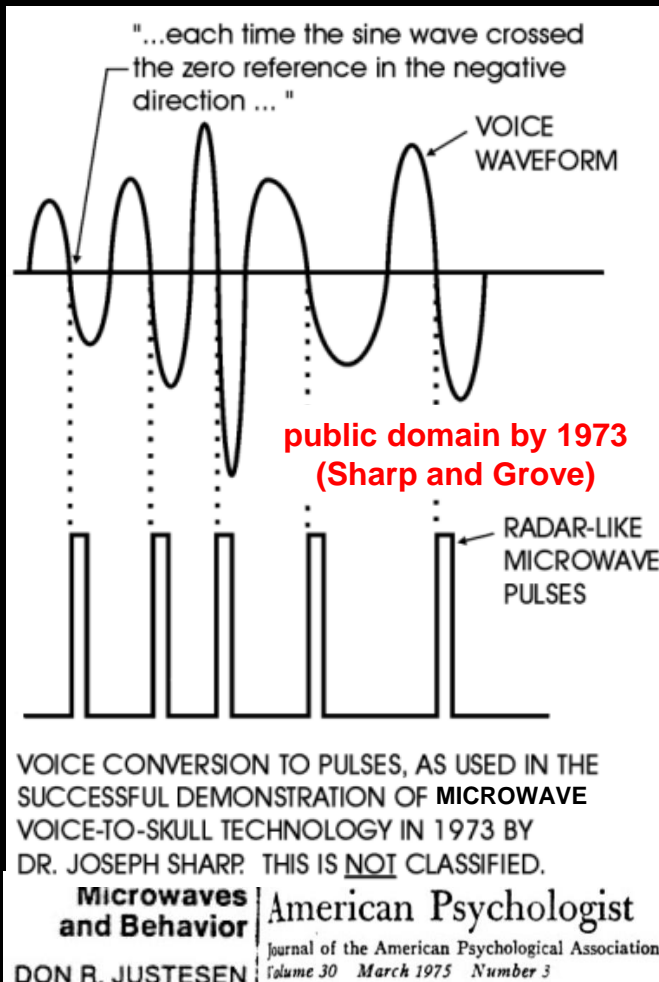


CHARLES C THOMAS • PUBLISHER  
Springfield • Illinois • U.S.A.

J. Lin 1978



# Voice to Skull (V2K) Technology Exploits Microwave Hearing Effect



- Any sound or voice can be generated in the head using pulsed microwaves
- Security threat if abused?
- Health hazard?

# Microwave Radiation: Causal Factor in Tinnitus?

Original article



PRESS  
RELEASE

## Tinnitus and mobile phone use

Hans-Peter Hutter,<sup>1</sup> Hanns Moshhammer,<sup>1</sup> Peter Wallner,<sup>2</sup> Monika Cartellieri,<sup>3</sup>  
Doris-Maria Denk-Linnert,<sup>4</sup> Michaela Katzinger,<sup>4</sup> Klaus Ehrenberger,<sup>4</sup>  
Michael Kundi<sup>1</sup>

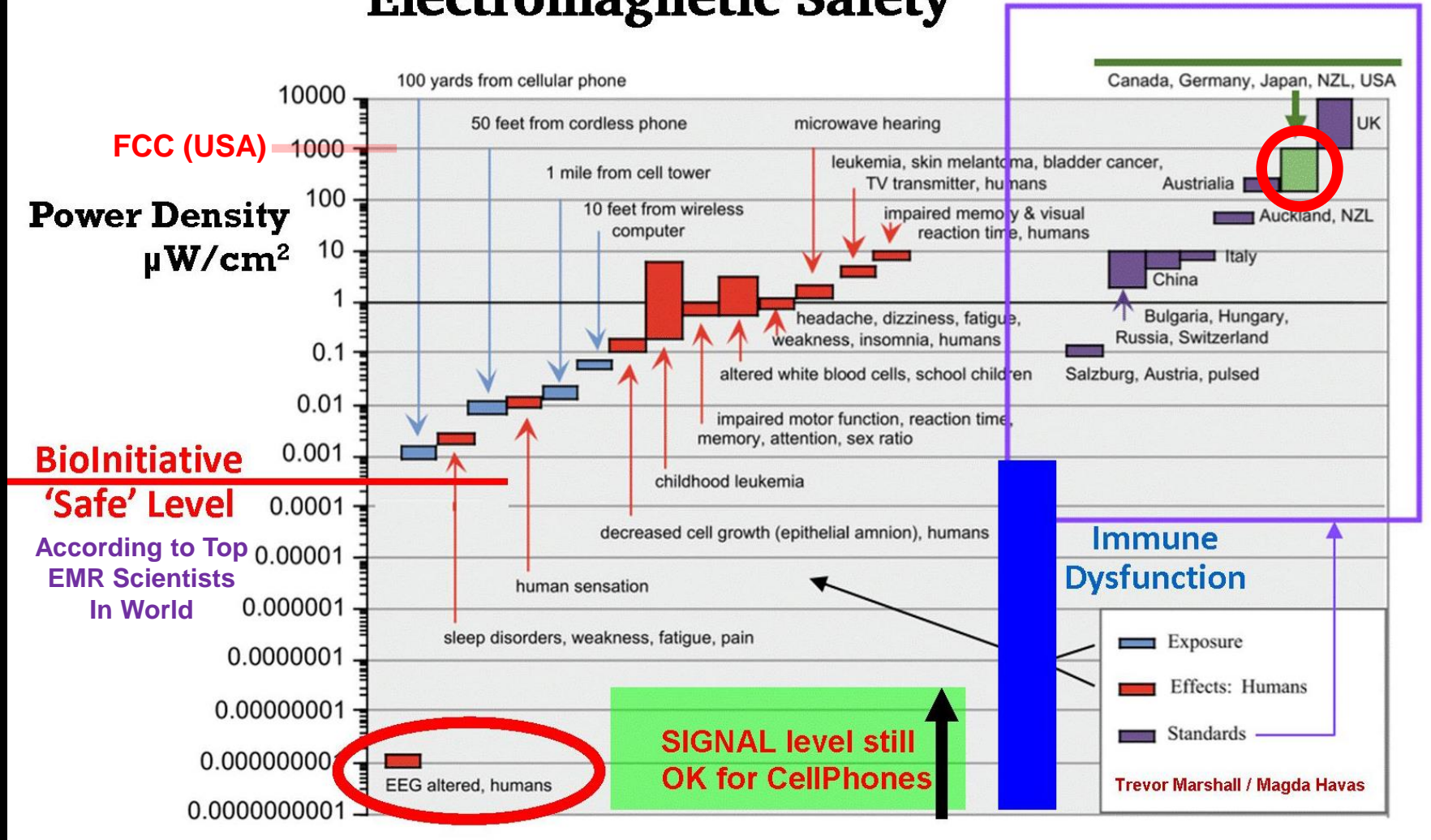
**Conclusions** Mobile phone use should be included in future investigations as a potential risk factor for developing tinnitus.

Hutter et al., 2010

# Many studies conclude harm well below exposure guidelines

## Electromagnetic Safety

### Thresholds for Various Countries



# Symptoms vs. Distance from Cell Tower

Rapid aging syndrome (RAS)  
Electro-Hyper-Sensitivity (EHS)

1. Fatigue
2. Sleep disturbance
3. Headaches
4. Feeling of discomfort
5. Difficulty concentrating
6. Depression
7. Memory loss
8. Visual disruptions
9. Irritability
10. Hearing disruptions
11. Skin problems
12. Cardiovascular
13. Dizziness
14. Loss of appetite
15. Movement difficulties
16. Nausea

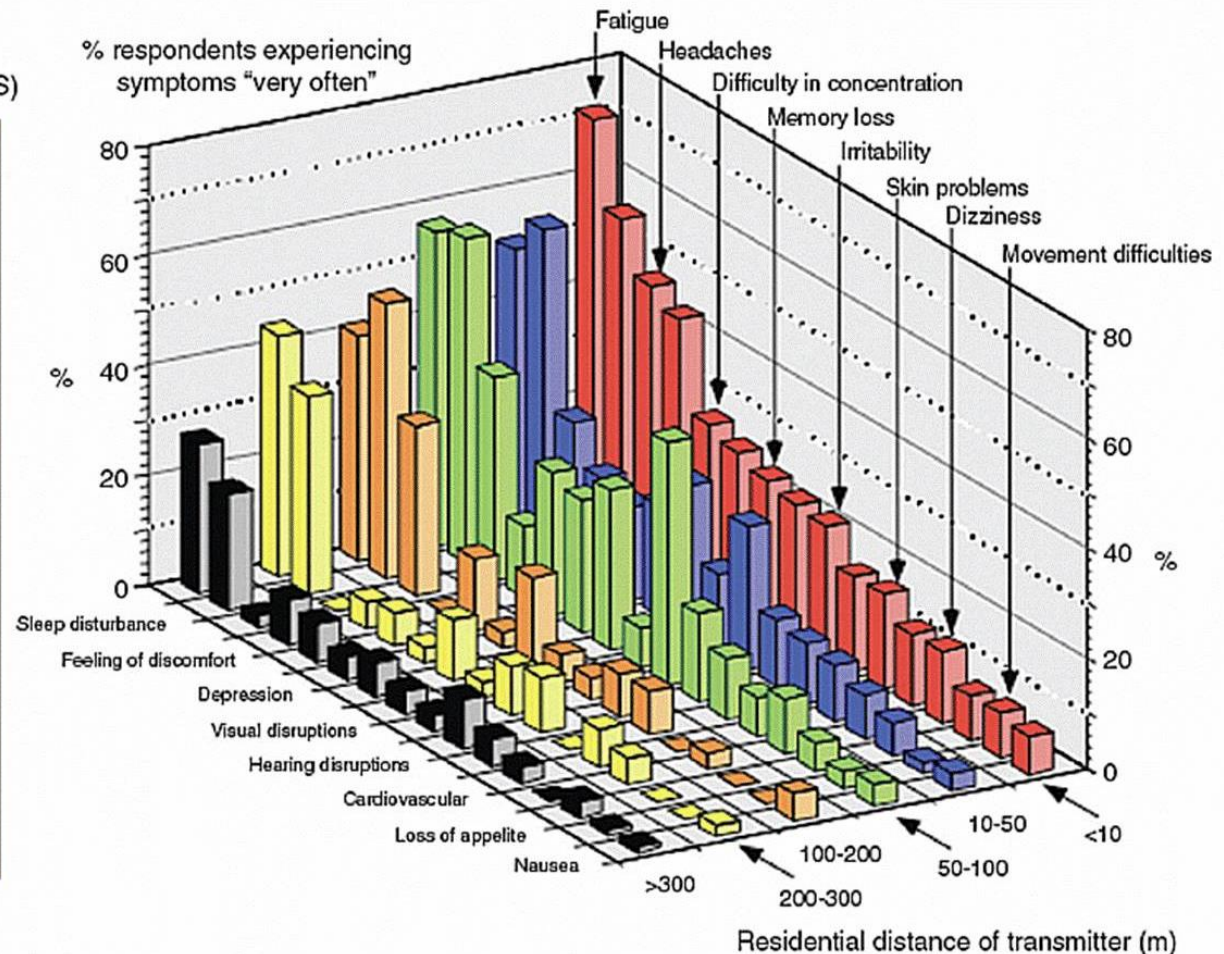


Figure 2. Symptoms experienced by people living near cellular phone base stations. Based on work by Santini et al. 2002, reproduced from Havas 2013.

# Arizona Crossroads What Future will We Choose?



**Fake Palm Trees that Emit Microwaves 24/7 ?**

# Spot the 5G Antennas

**Raycap**

**Small Cell  
Concealment  
Solutions**

*We've Got 5G Covered™*

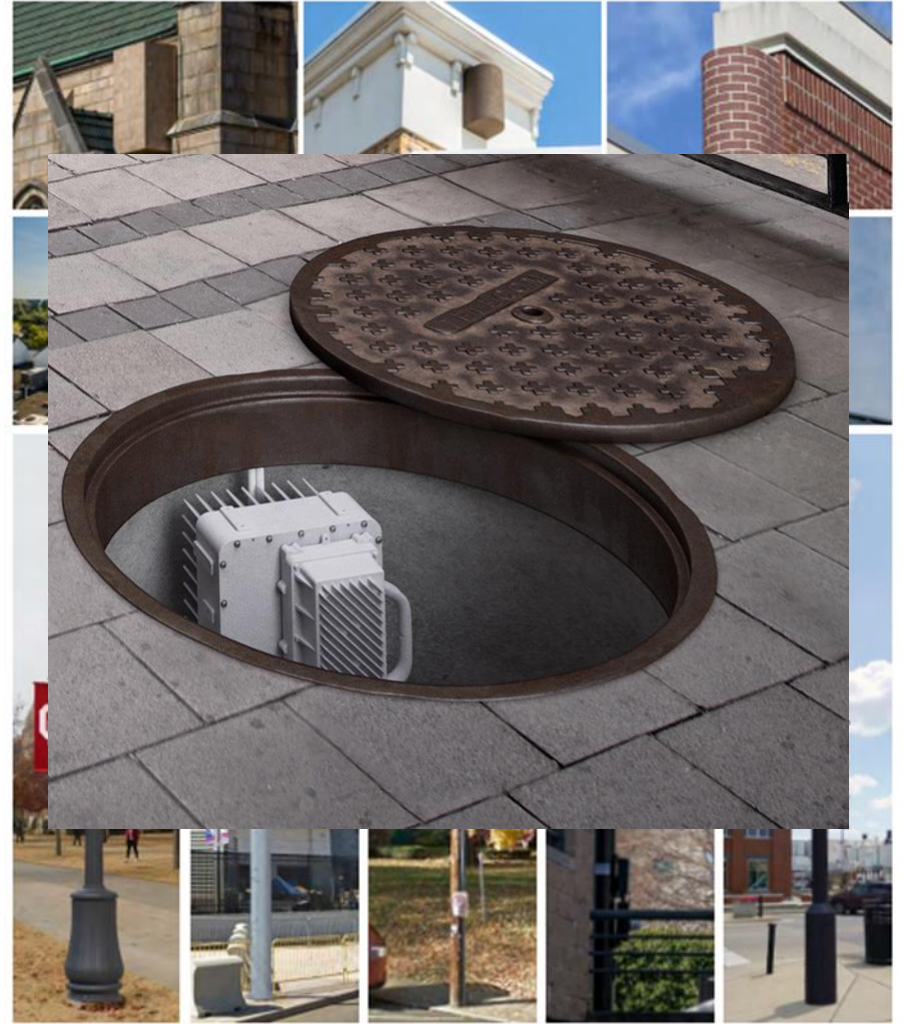
## The Obvious

Examples of 5G Small Cell Installations



<https://www.5gcrisis.com/identify?fbclid=IwAR1C8mXLFYHhpwb6cZ0hmc24W1ftzxP5xj0YkjXlavgJE-VdxSIKEjVIA>

## The Stealth



<https://www.stealthconcealment.com/>

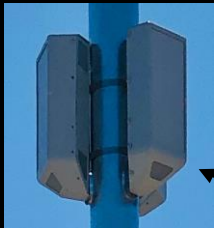




Speedway and Tucson Blvd.



Speedway and ~Wilmot



Tucson Blvd and Drachman



Dodge and Blackledge



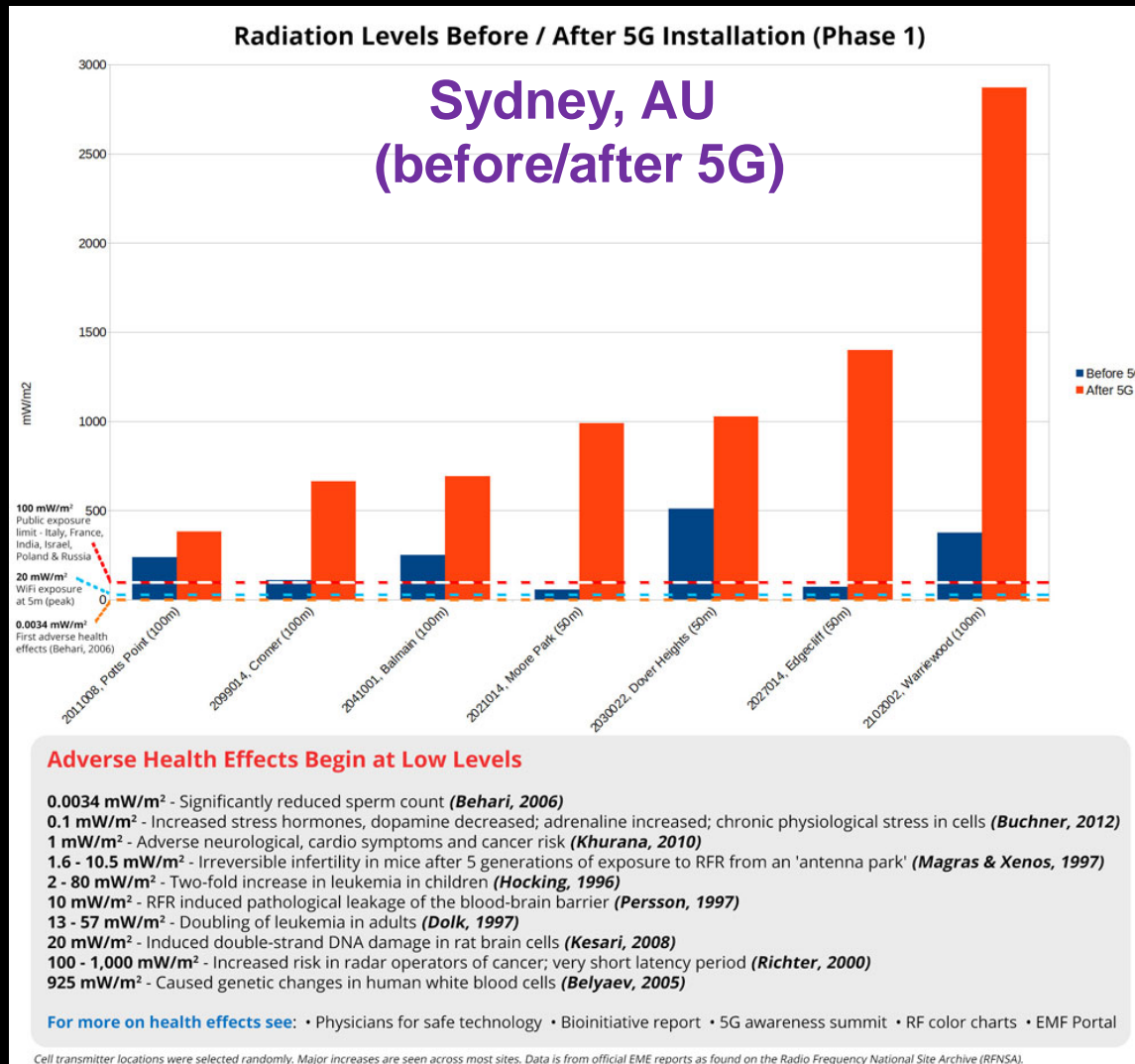
Flowing Wells Varsity/JV Baseball Field



Power Density Meter Cornet ED88T+ <\$200



# 5G Dramatically Increase Microwave Radiation Exposure



**Microwave Power Density Readings Before (blue) and After (red) switching on 5G WTFs in Sydney, Australia (RFNSA 2019)**

# Major Problem (solvable!) with "Small" Cell WTFs

## Macro WTF



## 5G "Small" WTF



Vertical Distance off Ground:

**200 ft.**

**35 ft.**

Horizontal Distance Away:

**2500 ft.**

**60 ft.**

Power in 2<sup>nd</sup> Story Bedroom:

**0.002**

**50,000**

**Too Much Power!**

**5 Bars on Cell Phone (-85 dBm)**

**25 million times more powerful! (>-15 dBm)**

<https://scientists4wiredtech.com/readinglaw/>

<https://ourtownourchoice.org/wewantit/>

# Path Forward: Take Advantage of 1996-TCA!

## Key Readings from 1996 Telecom Act

### 47 U.S. Code § 332 – Mobile services

(a) **Factors which Commission must consider** in taking actions to manage the spectrum to be made available for use by the private mobile services, the Commission shall consider, consistent with section 151 of this title, whether such actions will—

**(1) promote the safety of life and property;**

### 47 U.S. Code § 324 – Use of minimum power

**In all circumstances**, except in case of radio communications or signals relating to vessels in distress, **all radio** stations, including those owned and operated by the United States, **shall use the minimum amount of power necessary** to carry out the communication desired.

(June 19, 1934, ch. 652, title III, § 324, 48 Stat. 1091.)

# Health Consequences of Microwave Power

## Relative to Five Bars on Cell Phone (“Excellent” Signal)

Power Output Scale	Consequences on Human Health (based on thousands of published studies)	$\mu\text{W}/\text{m}^2$
0.0005x	EEG altered in humans; alters brain waves	0.000001
<b>1</b>	<b>FIVE BARS ON CELL PHONE</b>	<b>0.002</b>
15,000x	Sleep disorders, weakness, fatigue, pain	30
50,000x	Human sensation	100
500,000x	Decreased cell growth, humans	1,000
600,000x	Childhood leukemia	1,200
1,250,000x	Impaired motor function, reaction time, memory, attention	2,500
3,750,000x	Altered white blood cells, humans	7,500
5,000,000x	Headache, dizziness, fatigue, weakness, insomnia, humans	10,000
15,000,000x	Microwave hearing	30,000
25,000,000x	Leukemia, skin, melanoma, bladder cancer	50,000
50,000,000x	Impaired memory, visual reaction time, humans	100,000
5,000,000,000x	FCC Maximum Permissible RF-EMR Exposure Guidelines, General Pop.	10,000,000

→ Local city councils must assume their authority to regulate operations of all WTFs by limiting Effective Radiating Power (ERP) to ensure five bars and conducting periodic “needs testing” throughout the city to ensure compliance

More info here: <https://ourtownourchoice.org/wewantit/>

# No Need to Get Bamboozled & Bullied . . .

- **What State/Wireless Industry Tells Cities:** [HB.2365](#). An authority may not . . . institute a moratorium for the collocation of a [“so-called”] small wireless facility ([sWTF](#)).
- **What the Federal Govt. Tells Cities:** [47 U.S. Code § 324](#) – “In all circumstances . . . all [licensed] radio . . . **shall use the minimum amount of power necessary** to carry out the communication desired.”



[FCC Order 18-111](#): ¶ 157. "in the case of a natural disaster or other **comparable emergency\*** an express or de facto **moratoria that violates section 253(a)** **may nonetheless be “necessary”** to “protect the **public safety** and welfare”. . . emergency moratoria are **legally permissible** under 47 USC § 253.”



**\*COVID-19 is such an emergency!**

<https://scientists4wiredtech.com>

# What authority do local municipalities have to regulate WTFs?

Plenty(!) based on 1996 Telecom Act (47 U.S. Code) § 153 and DC Circuit Ruling (Mozilla vs. FCC, Oct. 1, 2019)

## Title 1

- Internet/Data
- IoT/IoB
- 5G Densification

→ Local control of placement, construction, modification, operations



## Title 2

- Telephone/Voice
- Wireless Calls
- Wireless Text

→ Local control of operations by law



# Privacy is Gone in Front Yards (and in homes) . . .

- **Loss of privacy:**  
24/7 surveillance, just like in airports, mwWaves "see" thru clothes & bounce off skin
- VentureBeat: body scanners show nearly nude images of people trying to board flights; OSI's Rapiscan Systems moving to other government agencies.



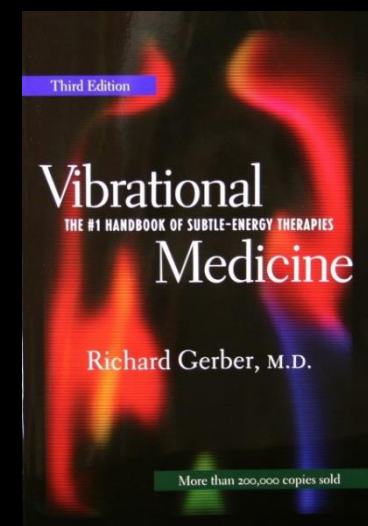
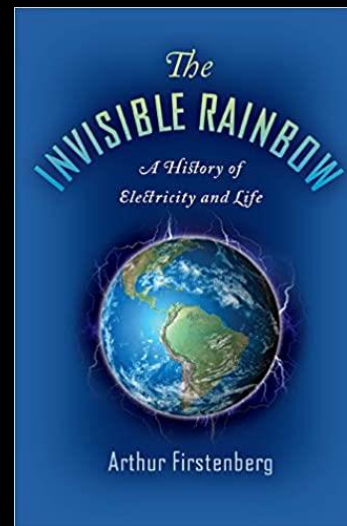
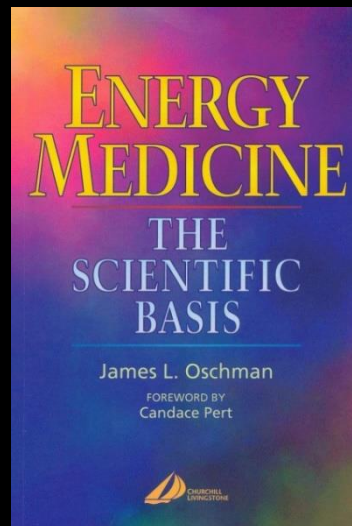
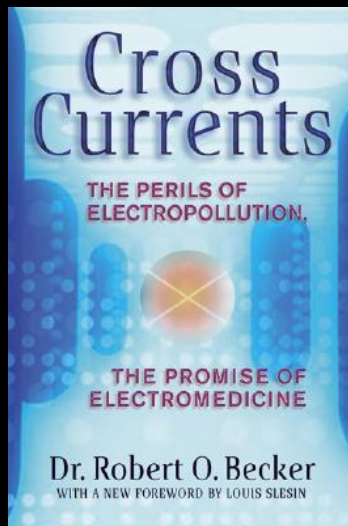
Millimeter-Wave Body scanners allow routine digital strip searches of individuals who are not suspected of any crime. For more info, see EPIC: Radiation Risks lawsuit and EPIC: ATR lawsuit, and EPIC: Suspension of Body Scanner Program

## IMP4GT Attacks (IMPersonation attacks in 4G neTworks)

<https://scientists4wiredtech.com/3g-4g-5g-national-security-failure/>

# Recommendations (Educate Public)

- Educate public to health consequences of microwaves and provide tips to minimize their exposure
- Recommend tips to reduce sources of microwave radiation
- Promote teaching of the human body as a bioelectric communication system at schools/universities to better understand diseases and promote healing





# Simple Tips to Reduce Microwave Radiation



## TURN IT OFF WHEN NOT IN USE.

Avoid unnecessary radiation by powering off wireless devices, network equipment, and hotspots when not in use, like at bedtime.



## PRE-DOWNLOAD INSTEAD OF STREAMING.

Remember that when you wirelessly stream videos or music the radiation goes into your body. It is better to pre-download audio and video files and then watch or listen with wireless connections turned off.



## AIRPLANE MODE

Learn how to set your phone to Airplane Mode with antennas OFF. Airplane Mode turns off most of the wireless antennas.

## ANTENNAS OFF

Also be sure the Wi-Fi, Bluetooth, and Mobile Data antennas are OFF in the phone settings. Even with antennas off, you still can play music, take photos, and make videos.



## CORDED PHONE

Corded phones do not emit wireless radiation.



## USE A PLUG-IN ETHERNET CORD.

It is super fast. Whenever possible connect your laptop, tablet, or computer with an ethernet cord (with Wi-Fi OFF, and Bluetooth OFF).



## AVOID MAKING CALLS IN CARS

The cell phone works harder to get a signal through metal, so the radiation is stronger.



## TEXT INSTEAD OF TALK

Remember to hold the phone away from your body. Pics and video increase radiation.



## DISTANCE MATTERS.

Maximize the distance between people and wireless devices.



## WIRED (NOT WI-FI & NOT BLUETOOTH)

Use a wired mouse, speakers, printer, game system, keyboard, tv, etc.



## SPEAKERPHONE

Keep the phone away from your brain by using speakerphone.



## BEWARE THE LOW SIGNAL

The weaker your signal strength, the stronger the radiation from your phone.

## MINIMIZE FACETIME AND SOCIAL MEDIA ON CELL PHONES.

When you use facetime or post images, your phone emits more radiation. Instead, do social media or video sharing on a computer connected to the Internet by ethernet cord (with Wi-Fi turned off).



## DO NOT SLEEP WITH YOUR PHONE

Use a battery-powered alarm clock, and power off the phone.



## HEALTHY SLEEP

Remove electronics and wireless devices from around your bed. Do not sleep with your cell phone.



## REDUCE TIME

Reduce the time you spend on cell phone and wireless overall. Choose safer tech.



## DISTANCE IS YOUR FRIEND

Phones should not be in your pocket, bra, or touching your body.

Here are some examples of recommendations made by the American Academy of Pediatrics, the Vienna Medical Association, and the Cyprus Medical Association.

# Recommendations (Empower Cities)

- Repeal HB 2365 and give authority back to cities!
- Local cities must assume their duty to regulate (protect “safety and property”) as mandated by the 1996 TCA
- Set limits on ERP to “minimize power” only necessary to provide 5 bars on cell phone (\$\$\$ for city?)
- Perform “needs tests” to justify placement of new WTFs
- Implement WIRED solutions for fast, secure and safe data communications (via city-owned fiber optic network?)

**Action Link for AZ Legislatures**

<https://scientists4wiredtech.com/arizona/>

<https://ourtownourchoice.org/wewantit/>

<https://scientists4wiredtech.com/readinglaw/>