

Current Standards for Cell Phones and Cell Towers are Out of Date and Non-protective

Federal Institute of Telecommunications
August 10, 2017

Devra Davis, PhD MPH FACE
Annie J. Sasco, MD, MPH, MS, DrPH
Anthony B. Miller, MD, FRCP
Theodora Scarato LCSW-C

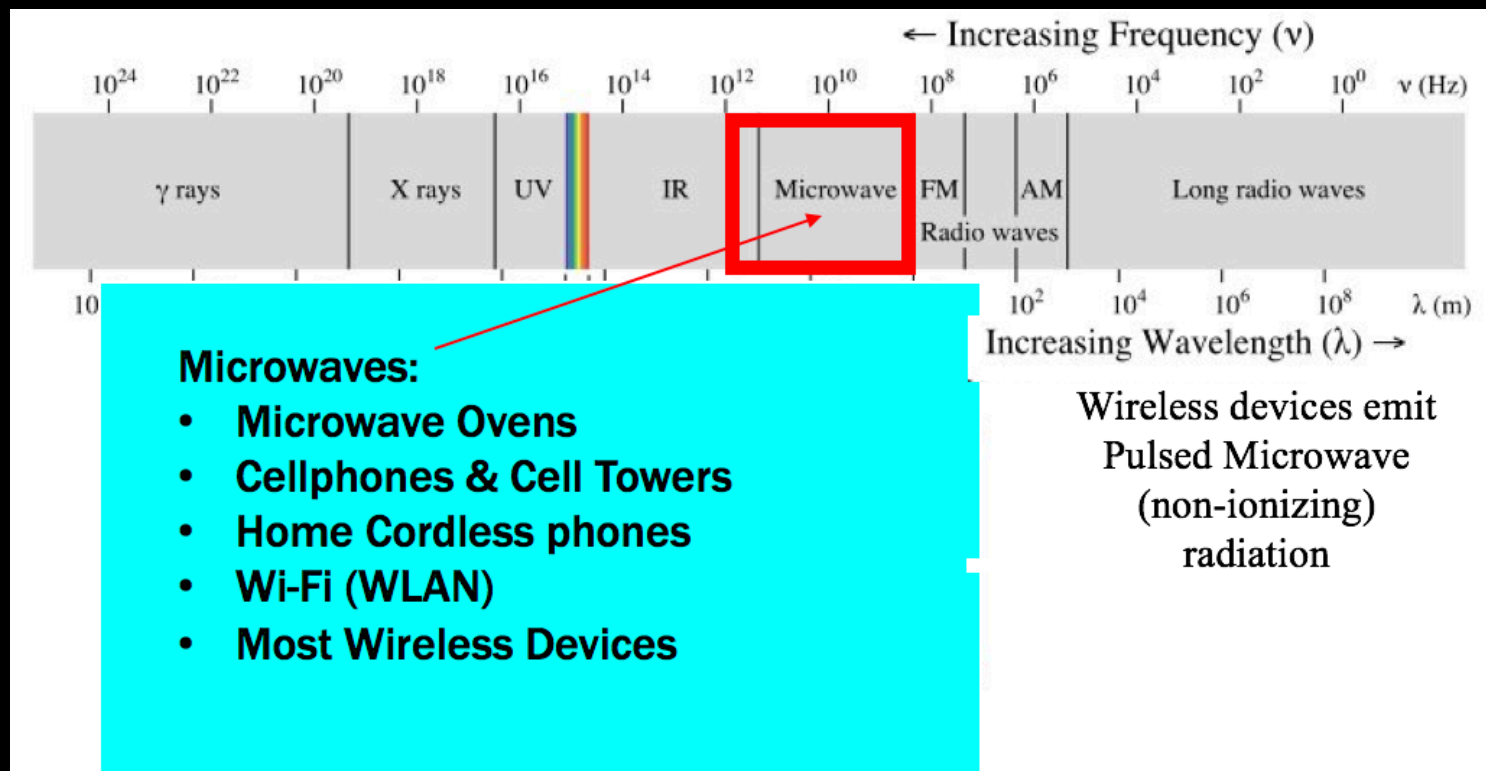
Devra Davis, PhD, MPH

- *President and Founder of the Environmental Health Trust*
- Visiting Professor of Medicine at the Hebrew University Hadassah Medical Center and the Ondokuz Mayıs University Medical School
- Member of Team Awarded Nobel Peace Prize with Al Gore 2007 for working on Climate and Health
- Founding Director of Center for Environmental Oncology, University of Pittsburgh Cancer Institute
- Founder of National Academy of Sciences Board on Environmental Studies and Toxicology
- Associate Editor of Frontiers in Radiation and Health

Outline

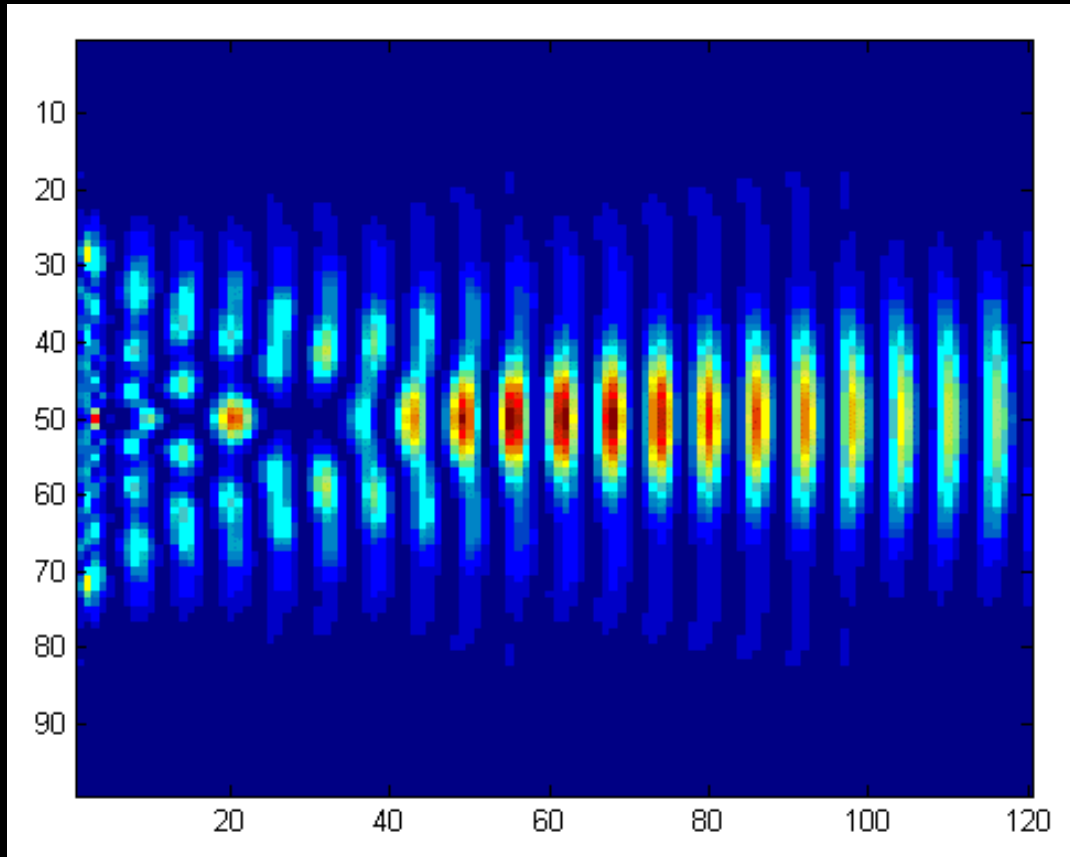
1. Introduction to Radio Frequency Radiation
2. Current Standards
3. Scientific Evidence of Biological Harm
4. IARC 2011 Classification (Prof. Annie Sasco, D Sc, MD, former IARC chief, University of Bordeaux)
5. Emerging 5G Technologies
6. International Actions & Recommendations
7. Insurance & Liability Issues

Radiation Electromagnetic Spectrum



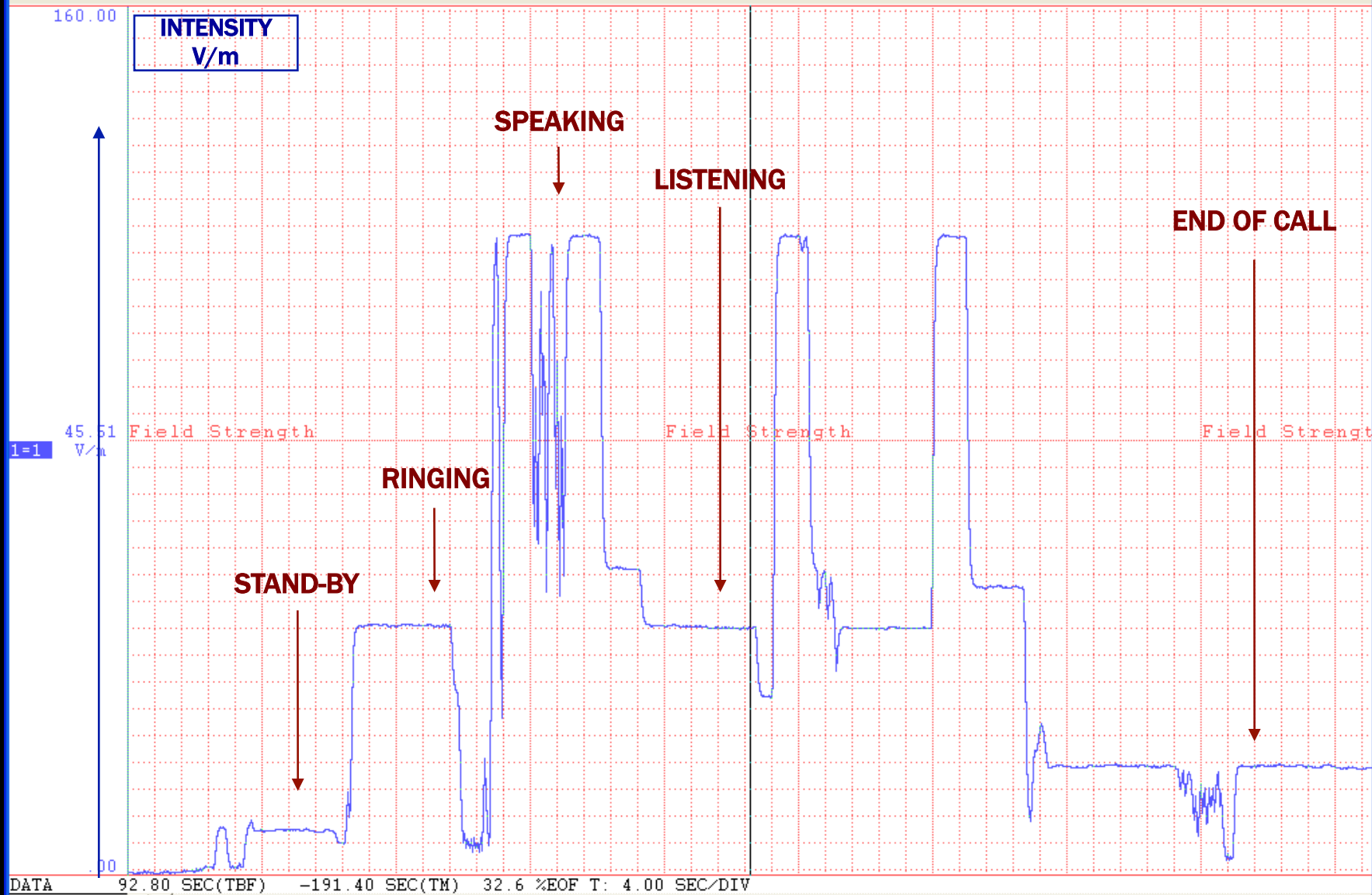
Small Cells and DAS antennas emit a range of microwave frequencies for 2G, 3G and 4G applications.

The Impact of Any Form of Radiation Depends On the Nature of the Waves



Courtesy of Margaritis et al

- Frequency
- Amplitude
- Pulse
- Wavelength/Form
- Information



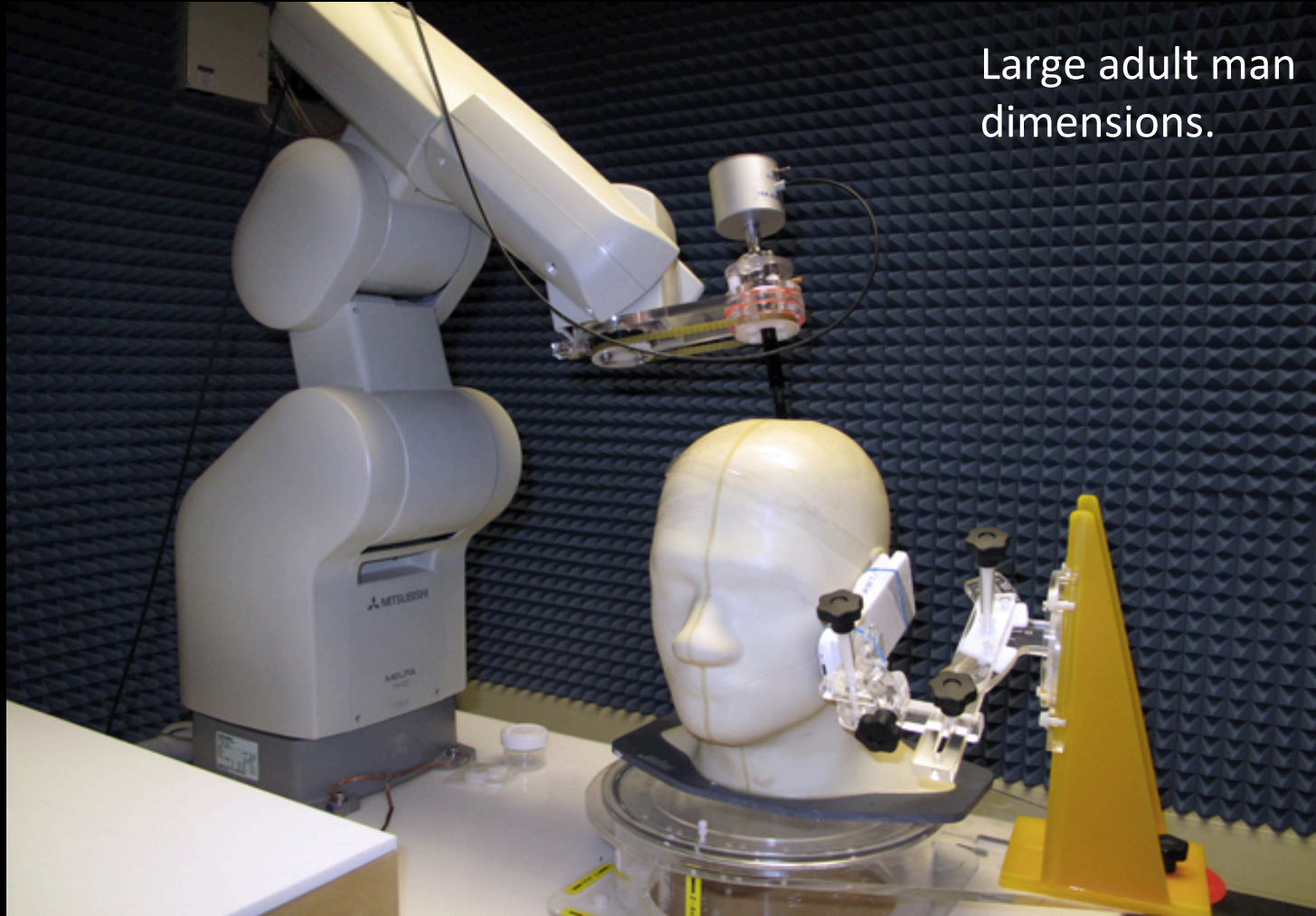
Time 4 sec/division

The SAR Test

Cell phone radiation compliance testing and specific absorption rate limits.

SAR Method for Testing Cell Phones Outdated

FCC limits unchanged Since 1996



Limits are designed to avoid heating (1°C increase) after 30 minute call.

Dosimetric Parameters and Exposure Standards



- Dosimetry is in “Specific Absorption Rate” – SAR (W/kg) and it’s higher (“peak spatial”) value (psSAR).
- Two exposure standards: ICNIRP and FCC.
 - ICNIRP: 2.0 W/kg for any 10 gram of tissue (10g-psSAR) averaged for 6 min
 - FCC (IEEE 1995): 1.6 W/kg for any 1 gram of tissue (1g-psSAR) averaged for 30 min.

Higher Averaging Volume Allows Higher Exposure

1.6 W/kg
averaged over
1 g of tissue



2.0 W/kg
averaged over
10 g of tissue

1 gram versus 10 grams

EMF Radiation Limits: SAR Values for Mobile Handsets of Some Countries

Countries	SAR Value Limits
United States	1.6 W/kg averaged over 1 g of tissue
India	1.6 W/kg averaged over 1 g of tissue
Australia	1.6 W/kg averaged over 1 g of tissue
Canada	1.6 W/kg averaged over 1 g of tissue
Europe	2.0 W/kg averaged over 10 g of tissue
Rep. of Korea	2.0 W/kg averaged over 10 g of tissue
Japan	2.0 W/kg averaged over 10 g of tissue
Brazil	2.0 W/kg averaged over 10 g of tissue
China	2.0 W/kg averaged over 10 g of tissue

Extremities such as the wrists, ankles, hands, and feet, the SAR limit is 4.0 W/kg averaged over 10 grams of tissue. Ear – the pinna- is included in USA.

The SAR Method is Outdated and Obsolete.

- Separation distance does not reflect how we use phones today.
- Children and pregnant women are not protected.
- Based only on heating.
- Interactions with metal implants, orthodontics and piercings are not considered.
- SAR test methods can have a 30% margin of error.
- Liquid inside phantom does not represent human tissue.

French National Agency (ANFR) Radiation Testing of 379 Cell Phones

2012: Began testing cell phones at 0 mm.

2016: French Health Agency Report (ANSES) reported 89% of cell phones exceed SAR limits when tested at body contact- 2015 testing.

June 1, 2017: Under pressure, ANFR released data on cell phone models with exact SAR measurements at body contact.

International Regulatory Failure To Protect Citizens

Cell Phone Radiation SAR Measurement

Cell Phone	Manufacturer separation distance	0 mm Body Contact simulation
Polaroid, PRO 881A	1.05 W/kg	7.42 W/kg
HTC, ONE SV	0.366 W/kg	7.18 W/kg
Blackberry Z10	0.934 W/kg	6.80 W/kg
NOKIA, <u>Lumina 530</u>	0.86 W/kg	6.57 W/kg
Apple, IPHONE 5	1.45 W/kg	5.32 W/kg
Apple IPHONE 7	1.34 W/kg	?

SAR
LIMIT
2 W/kg

[ANFR France Test Levels for 379 Phones](#)

The equivalent US FCC SAR for body contact is higher.

Mobile Phone in Pocket Dose to Gonads and Bone Marrow



Fernandez, Personal Communication (2016)

Scientific Evidence of Biological Harm

Nonionizing Electromagnetic Fields

Myth: No effects At *low non thermal levels*

Fact: Research has found biological effects at low non-thermal levels in thousands of studies.

- EEG well replicated
- Sleep alterations
- Brain Cancer: All human epi- independent +10yrs
- Oxidative stress markers
- Immune system
- Neurological development
- Sperm and Reproductive organs



2016 National Toxicology Program Study Largest best-designed U.S. Government (\$25 Million)



- 2-Year Exposures to Cell Phone Radiation – CDMA and GSM (prenatal in rats)
- Daily exposure to RFR for ~9 hours (10min on/10min off cycles); Mice at 1900 MHz, Rat at 900 in **shielded chambers**
- Exposures comparable to 36 years of half an hour daily from currently used phones (appx 3000 animals)

Low Level Non-Thermal Exposures

The study tested the assumption that FCC limits are based on- *that low level non thermal radiofrequency could not cause health effects.*

Control Group + 3 Levels of CDMA and GSM

- 1.5 W/kg SAR
- 3 W/kg SAR
- 6 W/kg SAR



NTP studies ensured *no rise* in temperature (lethal increases at 10 and 12 W/kg)

FCC SAR Limits 1.6 W/kg

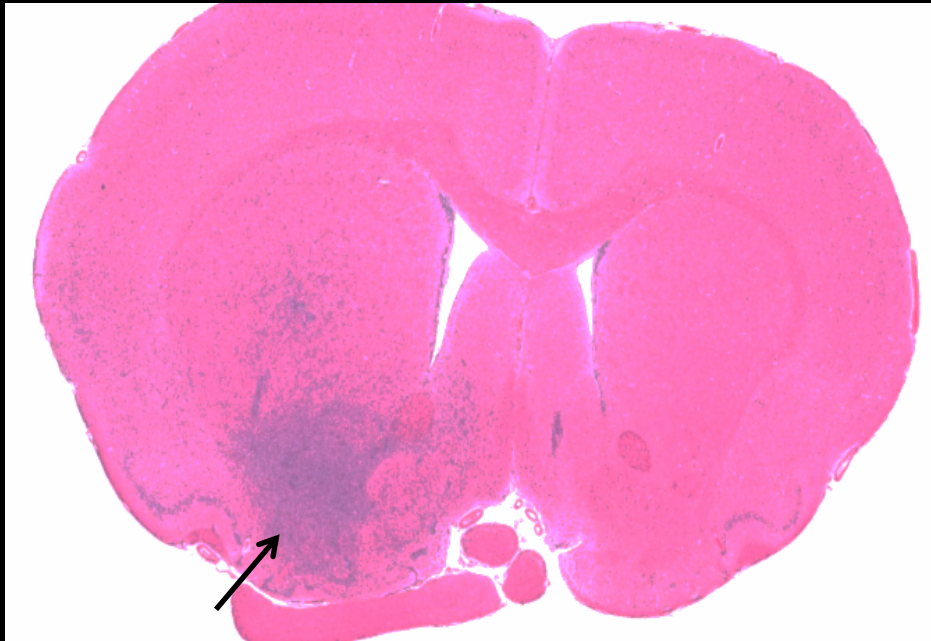
Europe SAR: 2 W/kg over 10 g

4 W/kg for ear, hands, wrists, arms, legs, ankles



Cancers found in NTP Rats Parallel Findings from Human Studies

Increased Gliomas in Brain



Increased incidence of brain gliomas reached statistical significance in males with CDMA modulation.

Increased Schwannomas



Images from Birnbaum NIEHS
Presentation 2017

GSM or CDMA modulations of RFR in male rats resulted in a statistically significant, positive trend in the incidence of schwannomas in heart.

"These findings appear to support the International Agency for Research on Cancer (IARC) conclusions regarding the possible carcinogenic potential of Radiofrequency Radiation." – National Toxicology Program, June 2016 Presentation

Genetic Toxicology Study

Comet assay: Mixed results in different tissues and brain regions.

		MALE					FEMALE				
RATS	CDMA	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood
	GSM	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood
MICE	CDMA	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood
	GSM	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood	Frontal Cortex	Cerebellum	Hippocamp	Liver	Blood

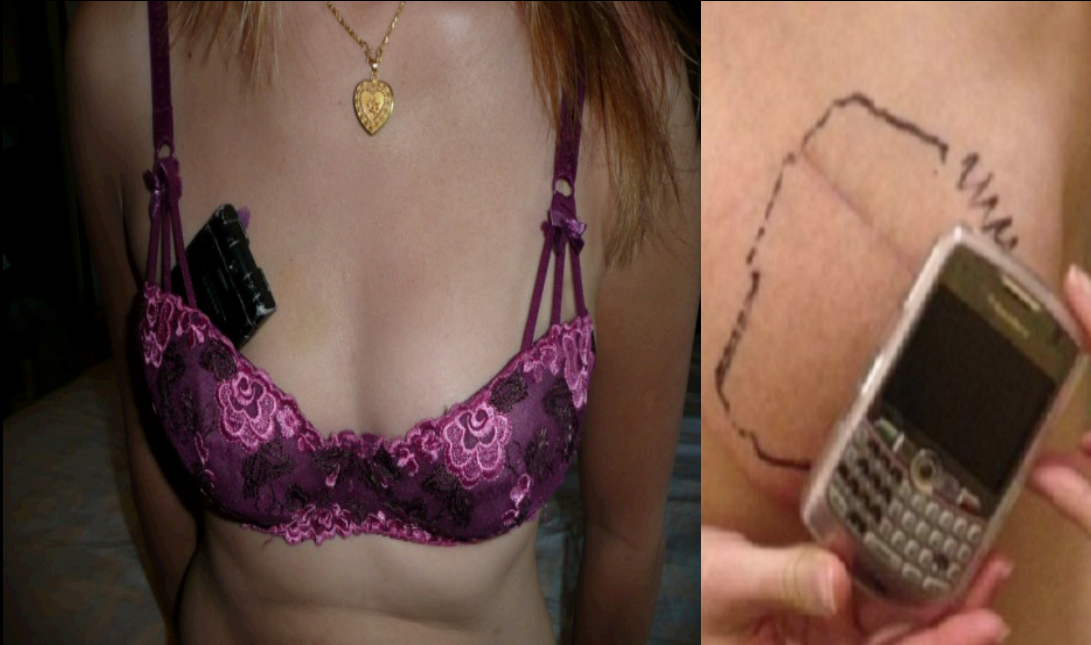
NTP M. Wyde Slides

- Yellow** Statistically significant trend and pairwise SAR-dependent increase
- Blue** Statistically significant trend or a pairwise increase
- Green** Not significantly different, but increased in 2 or more treatment groups

However in Micronucleus assay: No significant increases in micronucleated red blood cells in rats or mice

Breast Cancer and Cell Phones

Published Case Reports of Young Women



No Family History,
Neg for BRCA1/2,
No Risk Factors
Similar Pathology
Sentinel Cases?

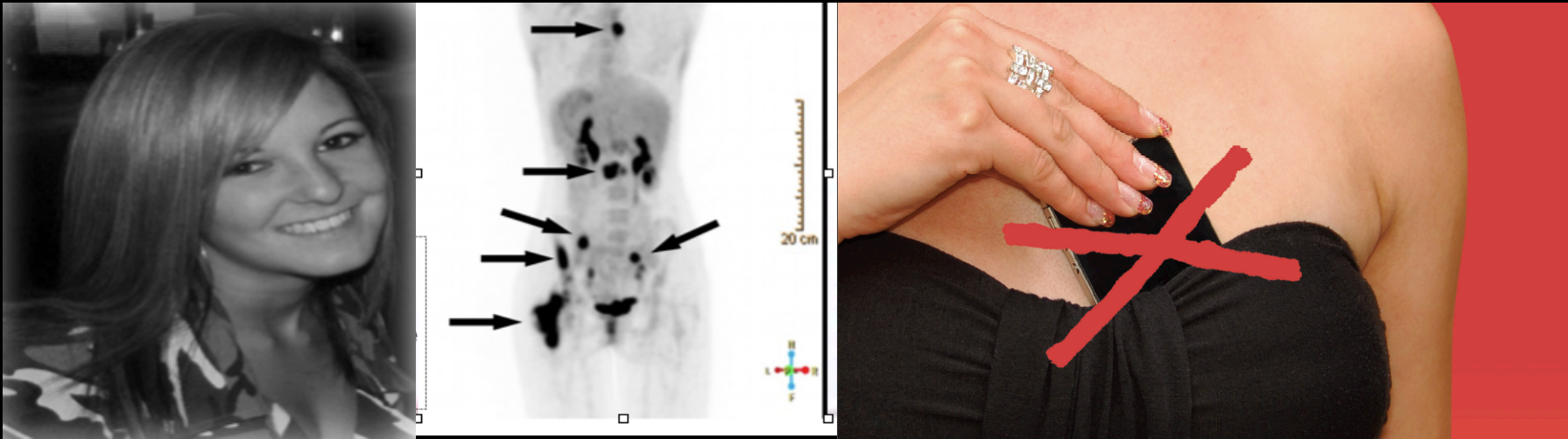
Unusual tumors located directly under cell phone antennae.

“These cases raise awareness to the lack of safety data of prolonged direct contact with cellular phones.”

West et al, 2013

[Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones](#)

Breast Cancer From Cell Phones in Bra



[Frantz No Cell Phone in the Bra Presentation Slides](#)

Tiffany Frantz

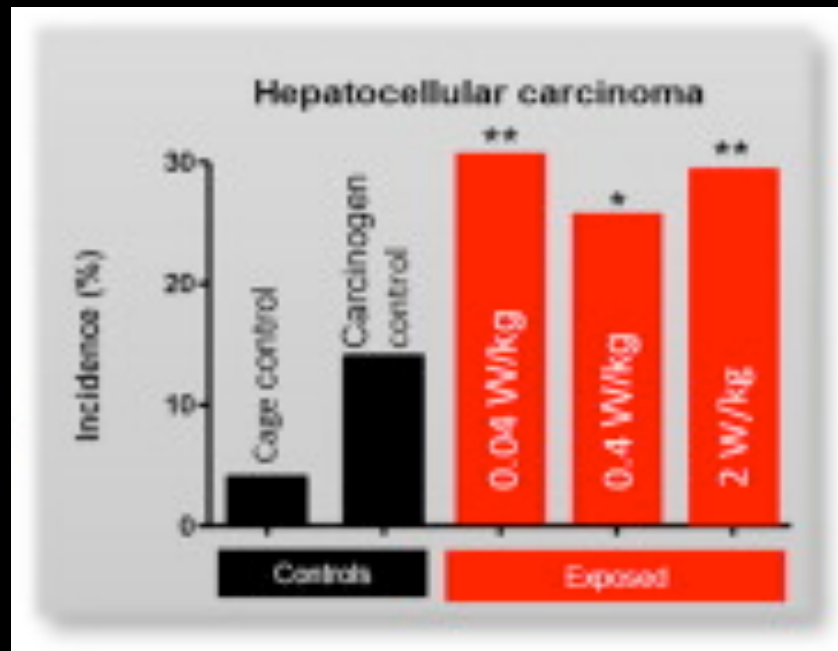
- Tumors found directly under the antennas of the cell phone that she kept in bra 12 hours a day for 5+ years.
- Diagnosed at age 21
- Her breast cancer metastasized to her bones and liver.
- The younger the breast the greater fluid and fat which equals greater microwave absorption.
- Published Case Reports, Currently 38 + cases under investigation.

[West et al 2013](#)

Replicated Research: RF Below Safety Limits Promotes Tumors (Lerchl 2015)

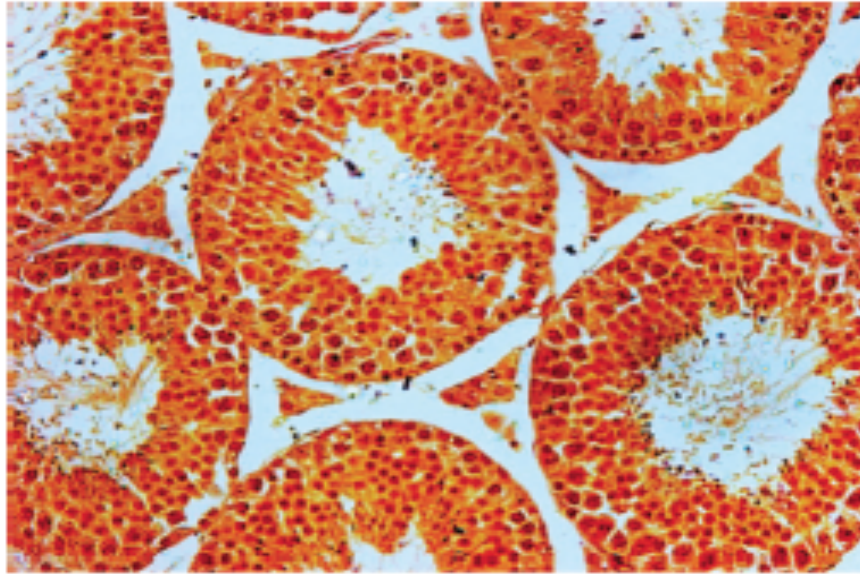
24/7 RF Exposure, in utero ENU

RF Exposures:
0.04 W/kg
0.4 W/kg
2 W/kg



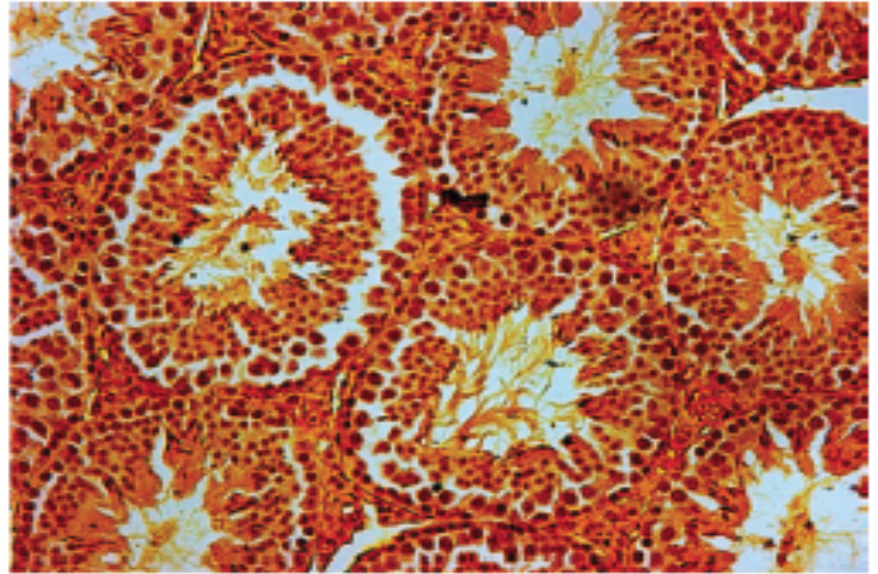
- Results: Higher liver and lung tumors in exposed animals.
- 2.5 fold increases in Lymphoma
- Replication of Tillman 2010 study

Microwave radiation impairs male reproduction



Shahin et al 2014

Control



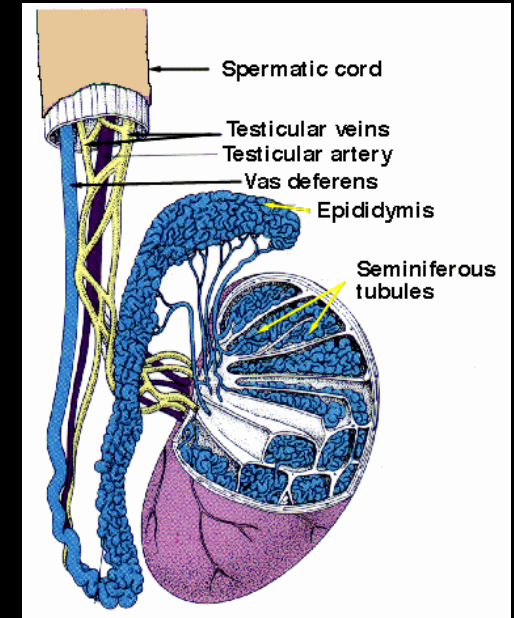
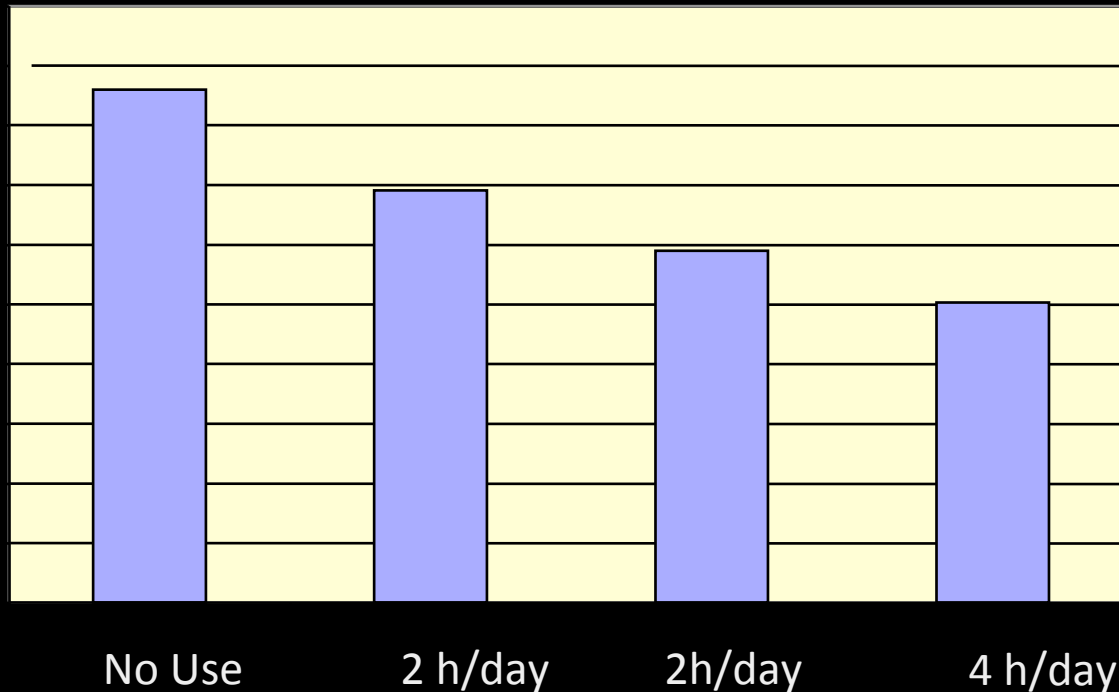
Exposed

Testis slides show significantly increased i-NOS immunostaining in the spermatogonial cells

Mice exposed to nonthermal Wi-Fi 2.45-GHz 2h/d x 30 d

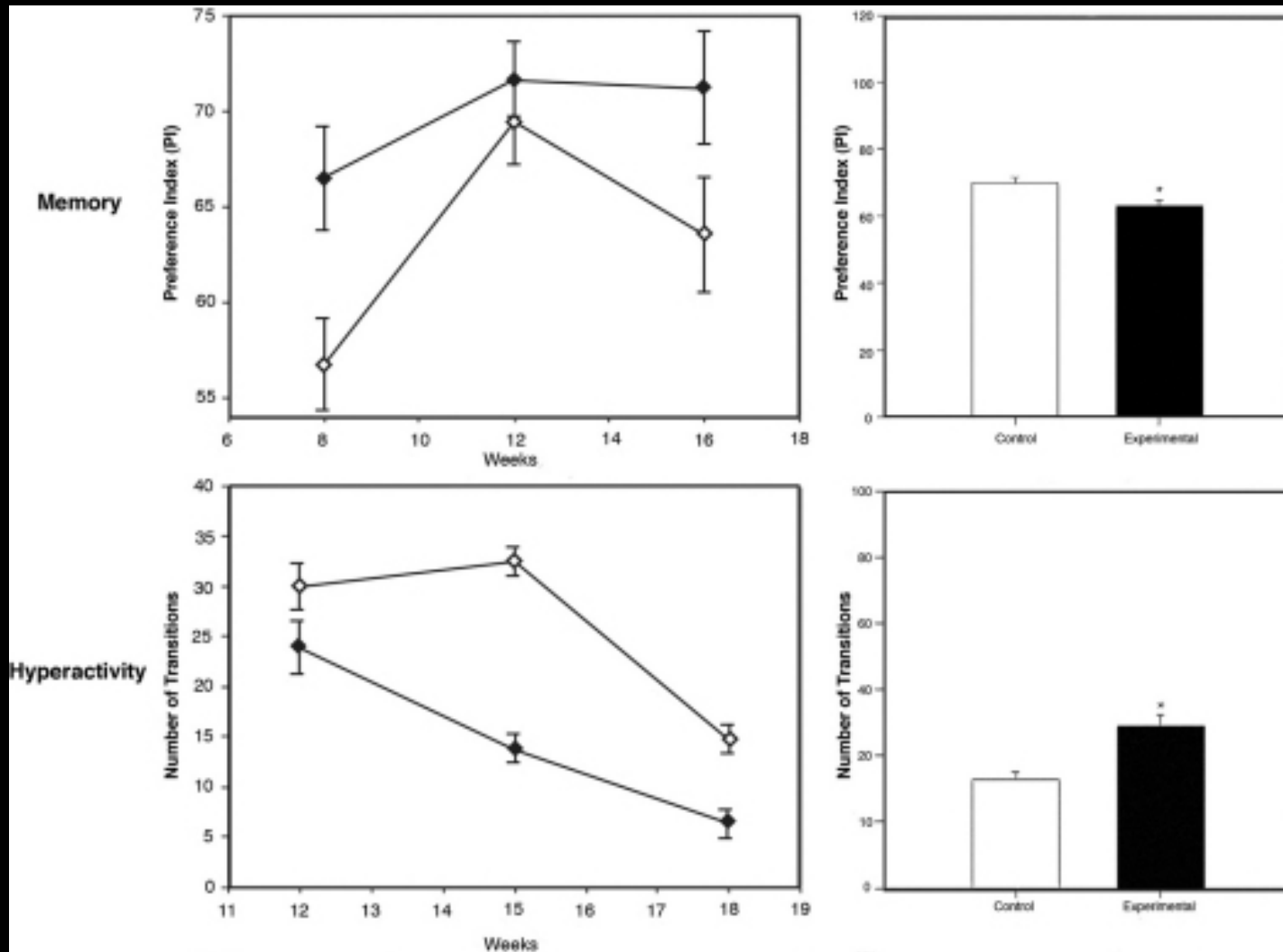
- ↑ ROS in liver, kidney, hypothalamus, and testis
- ↑ RNS, lipid peroxidation
- ↑ Antioxidant capacity, % viable sperm

Heavier Cell Phone Users Have Reduced Sperm Count



Ashok Agarwal MD PhD, Cleveland Clinic, 2008; and
seven other studies

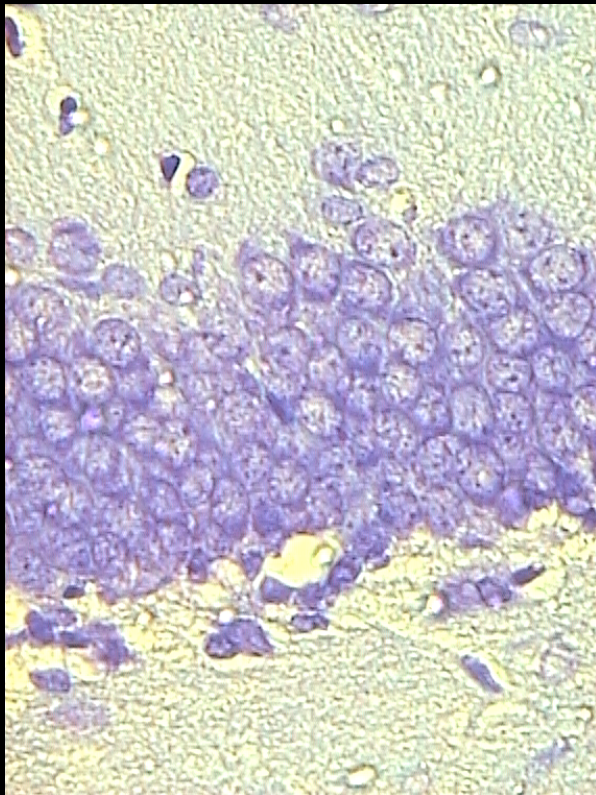
Decreased Memory and Increased Hyperactivity



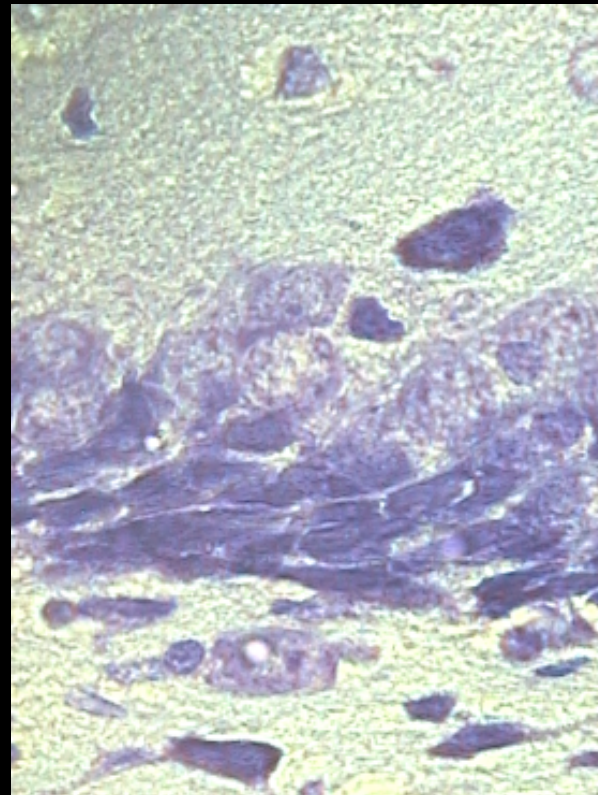
Aldad et al, 2012

Multiple Published Studies: Neurological Development Damaged by Radiofrequency Radiation:

Control



EMF exposed



Odaci et al, 2009

Prenatal 900 MHz EMF exposure decreased hippocampal granular cell number in the dentate gyrus of newborn rats

Impact of RFR on DNA damage & antioxidants in peripheral blood lymphocytes of humans residing in the vicinity of mobile phone base stations.

Zothansيامa et al. 2017



- Study evaluated the effect of radiofrequency radiation from mobile phone base stations.
- The study groups matched for various demographic data including age, gender, dietary pattern, smoking habit, alcohol consumption, duration of mobile phone use and average daily mobile phone use.

Compared objective and subjective symptoms of residents in close and far proximity from base station

- Exposed group: Within 80 meters
- Control group: Over 300 meters

RF measurements ensured all RF levels were below India's limits (1/10 of ICNIRP)

Significant Biological Effects on Individuals Living in Close Proximity to Cell Tower at RF Levels Below FCC Limits

Significant biological effects found on individuals closer to mobile base stations (within 80 meters).

- Alteration in antioxidant status in the plasma of exposed individuals
- Decreased glutathione concentration, activities of catalase, superoxide dismutase
- Increase in lipid peroxidation

DNA damage was assessed by cytokinesis blocked micronucleus (MN) assay in the binucleate lymphocytes.

- Significant DNA damage in exposed individuals (as measured by micronuclei assay)

The RF power density of exposed was significantly higher when compared to the control group

- Exposed individuals who lived within 80 meters of cell antennae average of 5.00 mW/m² of RFR in their bedrooms.
- Highest recorded value 7.52 mW/m² of RFR.
- Sampling addressed other EMF exposures.
- Measurements showed a highly significant decrease in RF density with increased distance from antennas.

[Zothansيامa et al. 2017](#)

Authors Conclusion

“The present study demonstrated that staying near the mobile base stations and continuous use of mobile phones damage the DNA, and it may have an adverse effect in the long run.

The persistence of DNA unrepaired damage leads to genomic instability which may lead to several health disorders including the induction of cancer.”

[Zothansيامa et al. 2017](#)

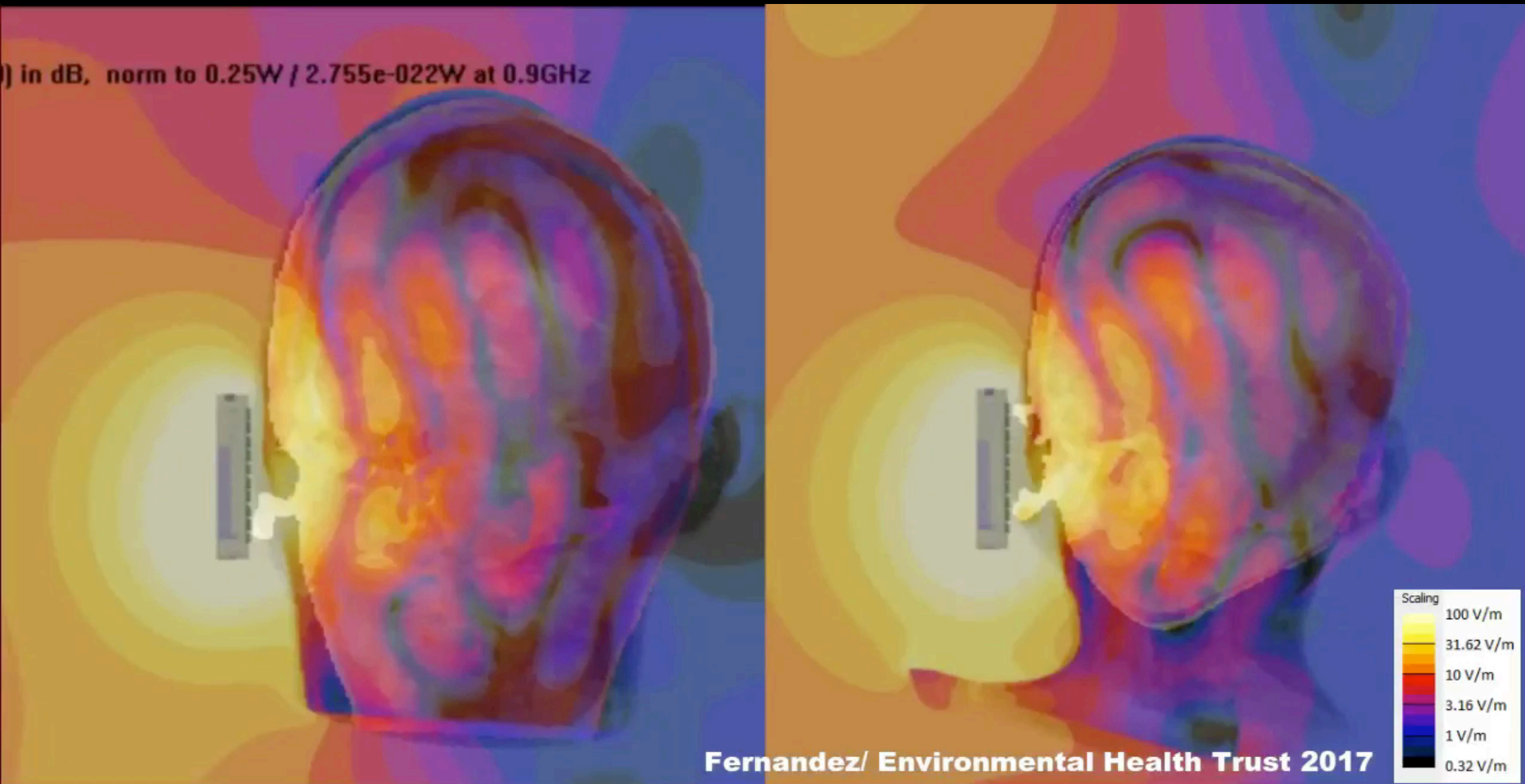
Relatively Greater Absorption Into Faster Growing Brain Tissues of Children

- Thinner skulls
- Smaller heads (shorter distance to brain centers)
- Different dielectric properties (higher liquid content)
- Their brains are less myelinated and still developing.

“The average RF radiation energy deposition for children exposed to mobile phone RF is two times higher in the brain and 10 times higher in the bone marrow of the skull compared with mobile phone use by adults.”

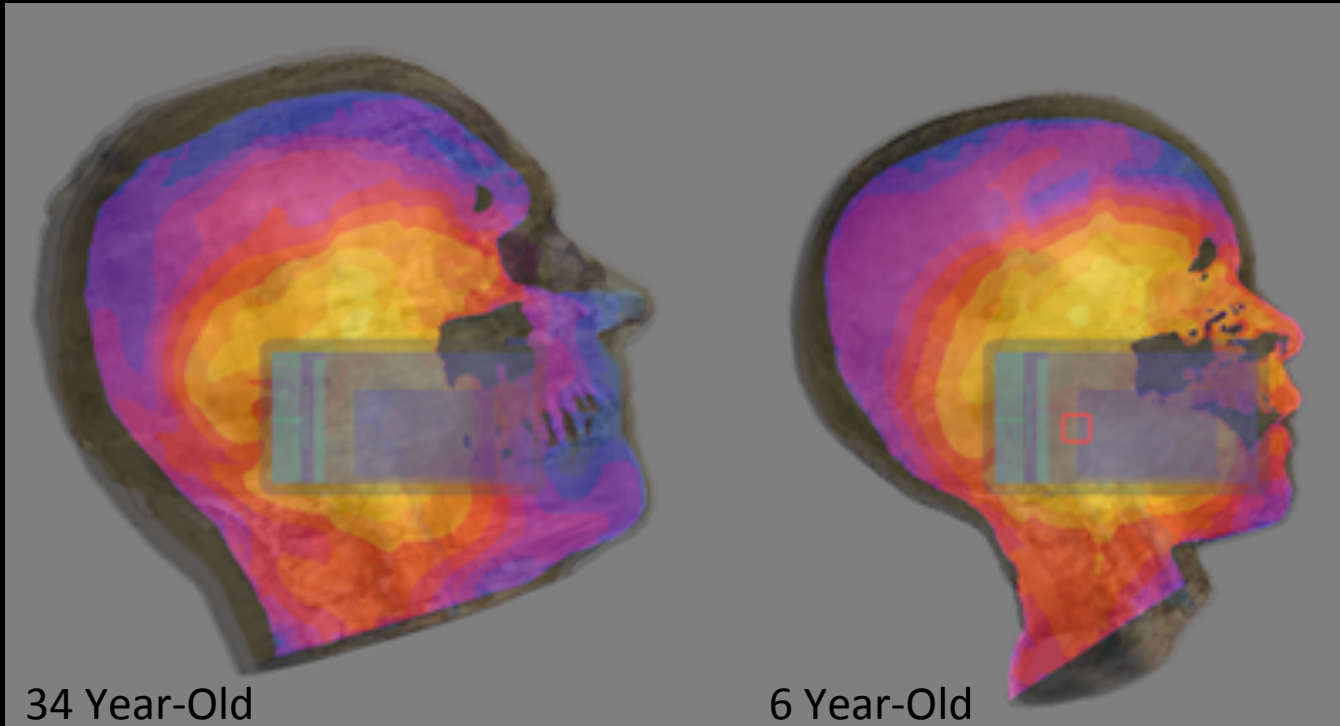
- International Agency for the Research on Cancer Monograph on Radio Frequency Fields as a Class 2 B Carcinogen

Anatomically Correct Models Simulate Absorption Rate



Cell Phone Radiation into Adult Male and 6 Year Old Child

Exposure to RF is proportionally greater and deeper in a child's brain vs. an adult brain



Fernandez, Personal Communication (2017)

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

Degradation of Brain Tissue and Function:

Parallels between EMF effects and Autism findings

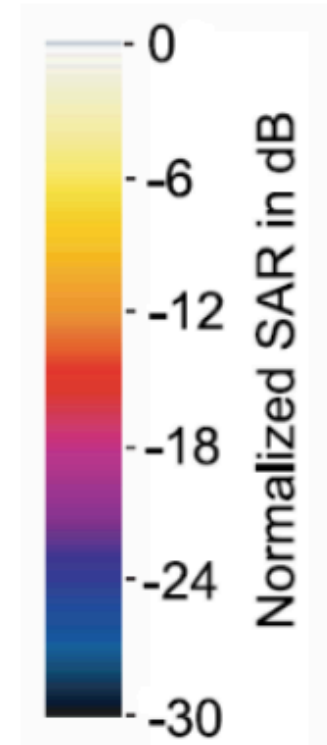
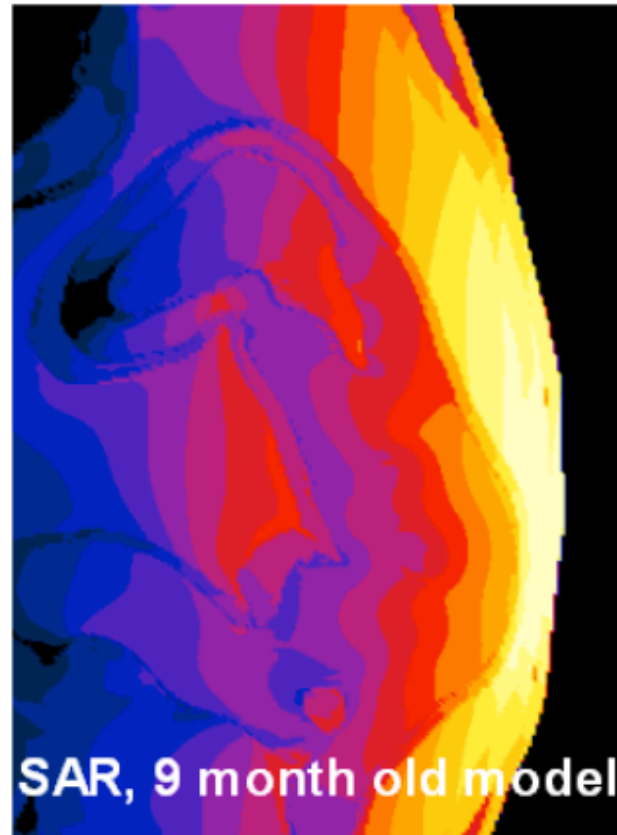


- Challenges to health of brain cells documented in brain tissue studies
- Some evidence for increased stress response
- Melatonin depletion
- Altered sleep architecture
- Altered brain waves
- More brainwave “entropy” (disorganization)
- Can increase seizure risk
- Suspect creation of brain noise that interferes with signal and information

Dr. Martha Herbert

Greatest exposure occurs to fetal head/spinal cord

Normalized SAR when 7 and 9 month fetus exposed to a dipole antenna in front of abdomen



(courtesy Andreas Christ, IT'IS, 2013)

Yale University Study: Fetal Radiofrequency Radiation Exposure Affects Neurodevelopment and Behavior in Mice

- A muted and silenced 800–1900Mhz cellular phones with a SAR of 1.6W/kg was used.
- The phones were positioned above each cage over the feeding bottle area at a distance of 4.5–22.3cm from each pregnant mouse.
- Mice exposed as a fetus were tested as adults.

Aldad et al, 2012.

IARC 2011 Classification of Radiofrequency Radiation as a Possible Carcinogen (Group 2B)

Annie J. Sasco, MD, MPH, MS, DrPH

- Emerita Director of Research, Epidemiology for Cancer Prevention, Inserm U 1219 (French NIH – National Institute of Health and Medical Research), Bordeaux University, France
- Past IARC-WHO Unit Chief, with international teaching responsibilities, and international expert on EMF and Cancer

IARC Classifies Cell Phone Radiation and other wireless radiation as a Possible Human Carcinogen, 2011

Annie J. Sasco, MD, MPH, MS, DrPH

Emerita Director of Research, Epidemiology for Cancer Prevention, Inserm U 1219 (French NIH – National Institute of Health and Medical Research),
Bordeaux University, France

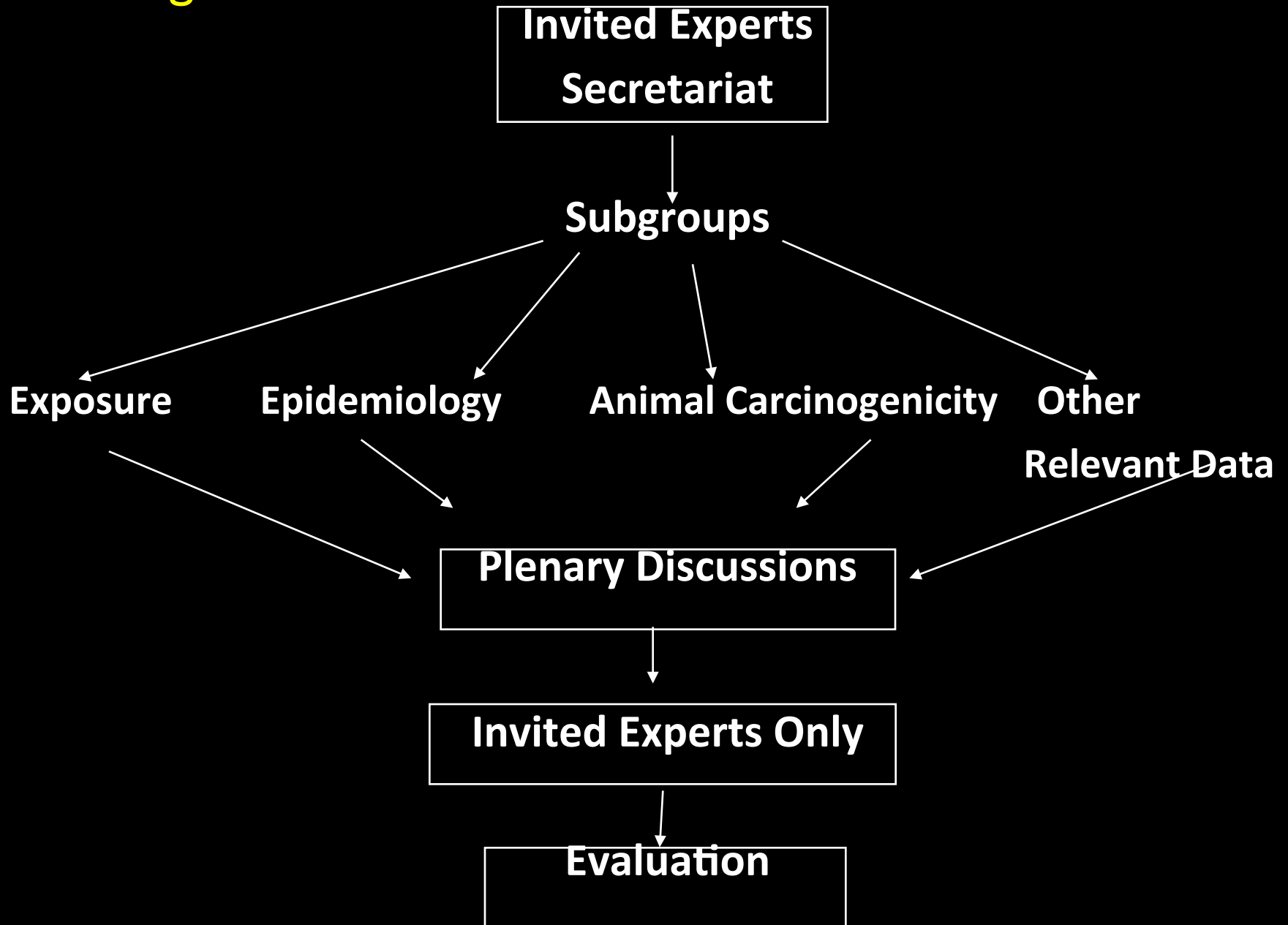
Past IARC-WHO Unit Chief, with international teaching responsibilities, and
international expert on EMF and Cancer

The opinions expressed in this talk are solely those of the speaker (AJS) and should not be considered as official positions of the Inserm, IARC-WHO or the University



International Agency for Research on Cancer (IARC)

- Part of the World Health Organization (WHO) as the specialized cancer agency
- Coordinates and conducts both epidemiological and laboratory research into the causes of human cancer.
- Goal: study cancer with an aim at prevention



Summary of Reported Data

a. Exposure data

b. Carcinogenicity for humans data

- results from epidemiological data
- sometimes, case reports and correlation studies

c. Carcinogenicity from experimental animal data

d. Other data which can be used for the evaluation of carcinogenicity and its mechanism

Summary of evidence required for classification

Group 1- Carcinogenic to humans

Sufficient evidence in humans

Group 2A - Probably carcinogenic to humans

Limited evidence in humans and sufficient evidence in animals

Group 2B - Possibly carcinogenic to humans

Limited evidence in humans, less than sufficient evidence in animals or inadequate evidence in humans, sufficient evidence in animals or inadequate evidence in humans, limited evidence in animals, with other relevant supporting data

Group 3 - Not classifiable

Inadequate evidence in humans and less than sufficient evidence in experimental animals

2011 IARC Classified Cell Phones and Other Radiofrequency Radiation as *Possibly Carcinogenic*

Interphone Study: Increased glioma risk occurred with the heaviest phone users (at least 1640 hours). This increase is clearer for tumors on the side of the head where the phone was usually held, *i.e.* the risk is found exactly where it was expected.

Swedish Studies: Pooled analysis showed increased risk for malignant brain tumors and use of cell or cordless phones. The risk increased with latency time and cumulative use. Highest risks found in those that first used a wireless phone before 20 years of age.

What does it mean ?

- There is an increased risk for the heaviest cell phone users (at least 1640 hours). This increase is clearer for gliomas on the side of the head where phone was usually held, *i.e.* the risk is found exactly where it was expected
- Further analyses confirm an increased risk (around 2) for the most exposed as Dr Miller will now show us.

Results for EMF – May 2011

Group 2B

Anthony B. Miller, MD, FRCP

- Professor Emeritus, Dalla Lana School of Public Health, University of Toronto
- He has served as:
 - Advisor to the World Health Organization.
 - Director of the Epidemiology Unit of the National Cancer Institute of Canada
 - Chair of the Department of Preventive Medicine and Biostatistics, University of Toronto
 - Senior Epidemiologist, International Agency for Research on Cancer
 - Head of the Division of Cancer Epidemiology, German Cancer Research Centre
 - Consultant to the Division of Cancer Prevention, U.S. National Cancer Institute.

Human Evidence that Cell Phones Probably Cause Brain Cancer

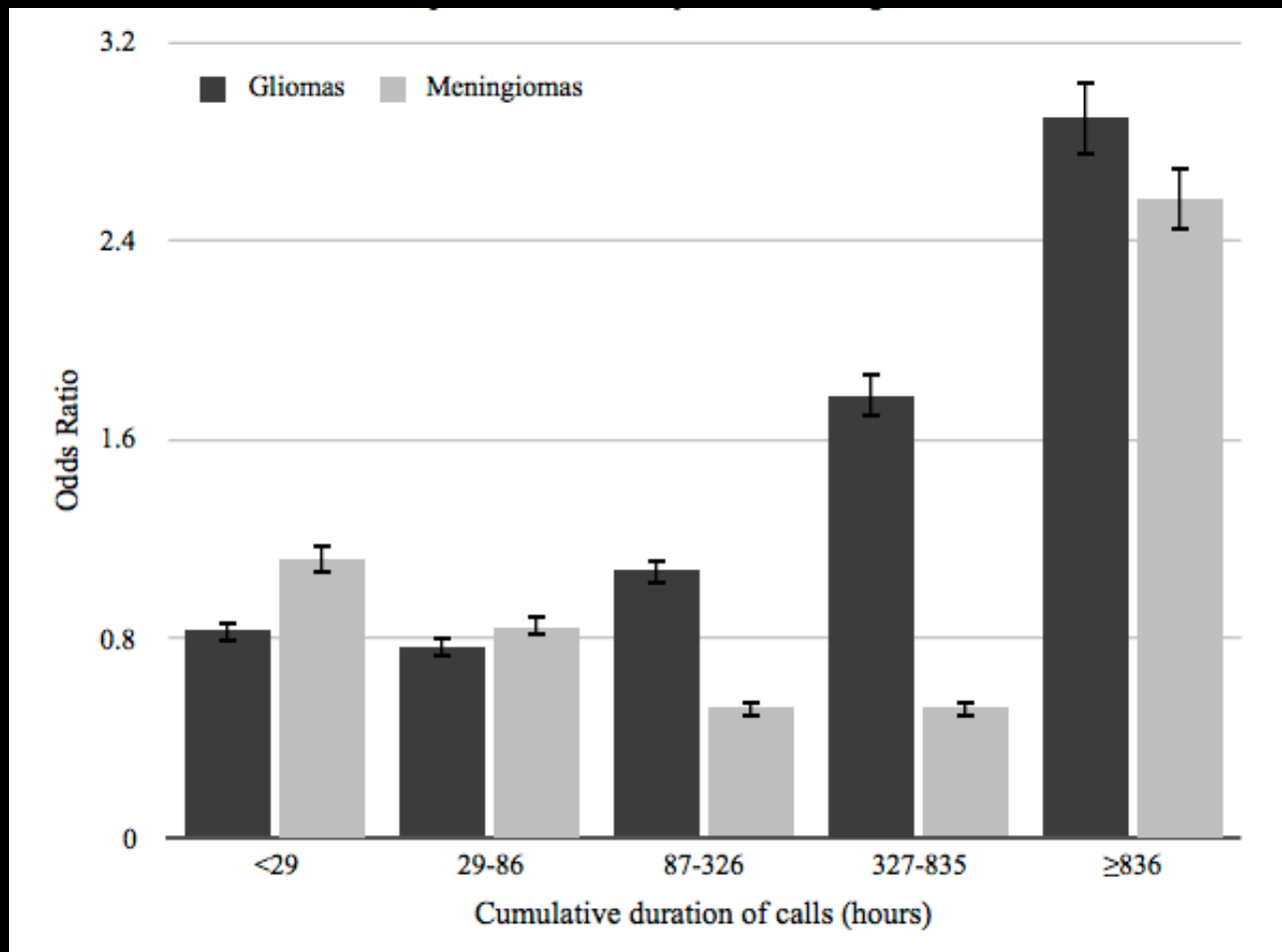
Three important sets of studies:

- Interphone (2010, 2014) ~2-fold increased risk for 10+ years use of cell phones
- Hardell in Sweden (2012 and earlier) 2-5-fold increased risk after prolonged use of cell and cordless phones
- Cerenat France (2014), ~5-fold increased risk for 5+ years use of cell phones

-Dr. Anthony B. Miller

CERENAT: French National Study, 2014

Increased risk of brain tumors with heaviest users



Why Is There No Overall Increase in Brain Cancer Incidence?

- Expectation: Change will be slow, and small
- Potential confounding: Trends in diagnosis
- Latent period: Likely to be prolonged
- Younger cases are increasing in US, UK, Australia, Israel (parotid gland tumors)

Slide courtesy of Dr. Anthony B. Miller

Conclusions of Dr. Anthony Miller

- ✓ From epidemiology: Radiofrequency Radiation is a Probable Human Carcinogen (IARC Category 2A)
- ✓ With NTP: There is *Sufficient evidence* that Radiofrequency radiation is carcinogenic to humans (IARC Category 1)

Implications

- ✓ Radiofrequency radiation is now ubiquitous
- ✓ Although the risk per individual is low, the radiation is widely distributed and could result in major public health problems
- ✓ The Precautionary Principle must be applied now and exposure reduced to As Low a level As Reasonably Achievable.

Slide courtesy of Dr. Anthony B. Miller

Emerging 5G Technologies

5G Small Cell Roll Out

- Requires massive infrastructure build out
- This exposure (frequencies , modulations) will be *additive* to current technologies.
- Millimeter waves: Frequencies currently used as crowd control weapons.
- Millimeter waves uniquely interact with skin.
- "Streamlining Bills" to install small cells near homes meeting fierce opposition in California and USA.

5G Millimeter Waves Uniquely Interact With Skin

Sweat glands act as helical antennas when exposed.

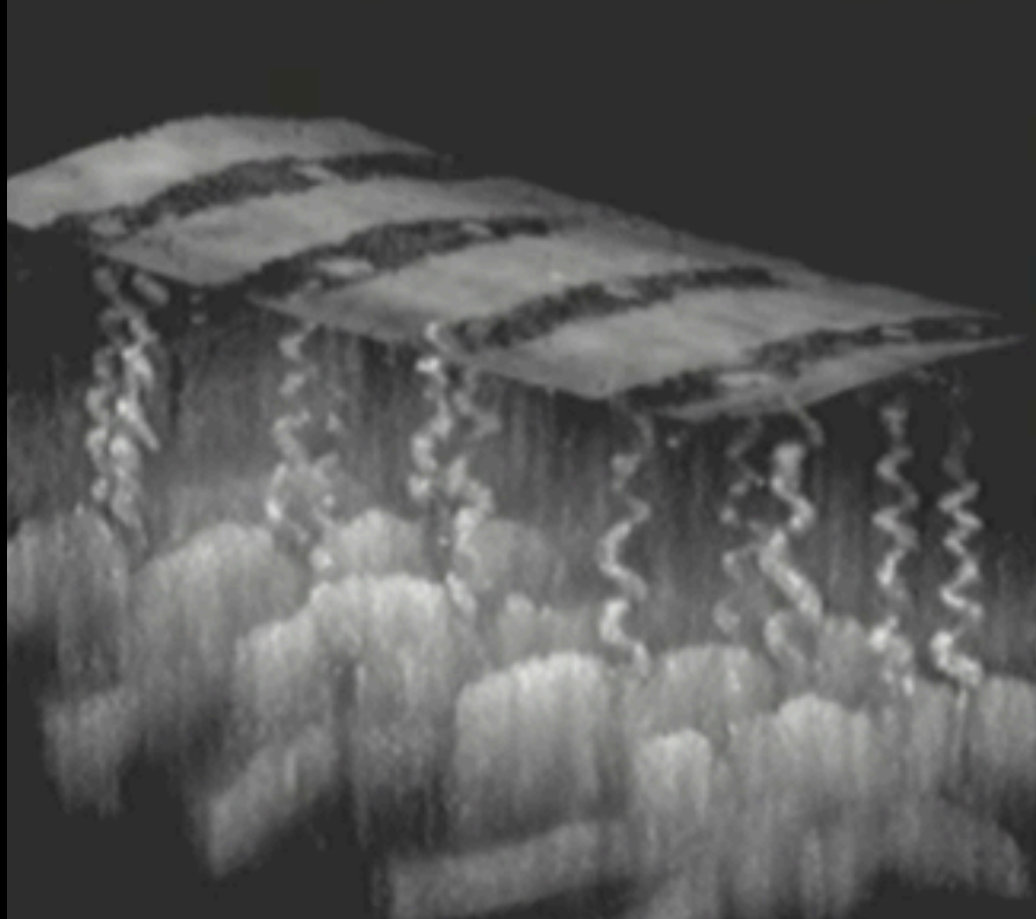


Image From Lecture by Dr. Ben-Ishai and Dr. Yuri Feldman of the Spectroscopy Laboratory of the Department of Applied Physics, Hebrew University of Jerusalem


Active Denial System Crowd Control Weapon

Millimeter waves are used in US Government weapons at higher power to cause pain on contact and disperse crowds.



Images from videos on Active Denial System [and History Channel Report](#) on US Government Active Denial System
[US Department of Defense Non-Lethal Weapons Program FAQs](#)
[A Narrative Summary and Independent Assessment of the Active Denial System The Human Effects Advisory Panel](#)

Santa Clara Medical Association Bulletin Article on 5G Health Effects by Dr. Cindy Russell



A 5G WIRELESS FUTURE

WILL IT GIVE US A SMART NATION OR CONTRIBUTE TO AN UNHEALTHY ONE?

Dr. Cindy Russell
SCCMA V.P. Community Health

It would greatly extend FCC's current policy of the mandatory irradiation of the public without adequate prior study of the potential health impact and assurance of safety. It would irradiate everyone, including the most vulnerable to harm from radiofrequency radiation: pregnant women, unborn children, young children, teenagers, men of reproductive age, the elderly, the disabled, and the chronically ill." —Ronald Powell, PhD, Letter to FCC on 5G expansion (7)

BRAVE NEW WORLD OF COMMUNICATION

The use of mobile wireless technologies continues to increase worldwide. A new faster 5th generation (5G) telecommunication system has recently been approved by the Federal Communications Commission (FCC) with new antennas already being installed and tested in Palo Alto and Mountain

ARRYTHMIAS
HEART RATE VARIABILITY
TERATOGENIC EFFECTS
BACTERIAL AFFECTS AND
ANTIBIOTIC RESISTANCE
CATARACTS
IMMUNE SUPPRESSION
DNA DAMAGE

"Do not proceed to roll out 5G technologies pending pre-market studies on health effects"

[Click for article online.](#)

International Actions & Recommendations

Governments Who Recommend Reducing RF Radiation

Official Public Information from Health Authorities



United Kingdom



Russia



Switzerland



Finland



Ireland



Germany



Belgium



Greece



Israel



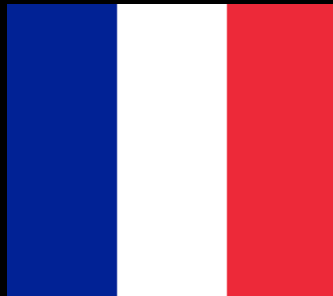
Turkey



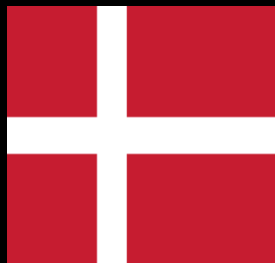
Austria



Singapore



France



Denmark



India



Australia

REVIEW ARTICLE

International policy and advisory response regarding children's exposure to radio frequency electromagnetic fields (RF-EMF)

Mary Redmayne^{1,2}

¹Population Health Research on Electromagnetic Energy (PRESEE), Monash University, Melbourne, VIC, Australia and ²School of Geography, Environment and Earth Sciences, Victoria University of Wellington, Wellington, New Zealand

Abstract

Radiofrequency electromagnetic field (RF-EMF) exposure regulations/guidelines generally only consider acute effects, and not chronic, low exposures. Concerns for children's exposure are warranted due to the amazingly rapid uptake of many wireless devices by increasingly younger children. This review of policy and advice regarding children's RF-EMF exposure draws material from a wide variety of sources focusing on the current situation. This is not a systematic review, but aims to provide a representative cross-section of policy and advisory responses within set boundaries. There are a wide variety of approaches which I have categorized and tabulated ranging from ICNIRP/IEEE guidelines and "no extra precautions needed" to precautionary or scientific much lower maxima and extensive advice to minimize RF-EMF exposure, ban advertising/sale to children, and add exposure information to packaging. Precautionary standards use what I term an exclusion principle. The wide range of policy approaches can be confusing for parents/carers of children. Some consensus among advisory organizations would be helpful acknowledging that, despite extensive research, the highly complex nature of both RF-EMF and the human body, and frequent technological updates, means simple assurance of long-term safety cannot be guaranteed. Therefore, minimum exposure of children to RF-EMF is recommended. This does not indicate need for alarm, but mirrors routine health-and-safety precautions. Simple steps are suggested. ICNIRP guidelines need to urgently publish how the head, torso, and limbs' exposure limits were calculated and what safety margin was applied since this exposure, especially to the abdomen, is now dominant in many children.

Keywords

Radiofrequency guidelines, children, precautionary approach, ICNIRP, WHO International EMF Project

History

Received 4 January 2015
Accepted 28 March 2015
Published online 19 June 2015

Countries with Precautionary RF Standard For Locations Where Children Spend Time

Table 2. Countries with a precautionary Standard for locations where children spend time (Approaches 3 and 4), year of implementation, and where specified zones to which they apply.

Year	Country	Max. $\mu\text{W}/\text{cm}^2$ (power density) or V/m (E-Field) (at 900 MHz except as specified)	Area it applies
1980	Poland	6 V/m; 10 $\mu\text{W}/\text{cm}^2$	
1996	Ukraine	3 V/m; 10 $\mu\text{W}/\text{cm}^2$	
2000	Salzburg	1 $\mu\text{W}/\text{cm}^2$	
	Switzerland	4 V/m	Sensitive areas, e.g., playgrounds
	THB, Canada	4.5 $\mu\text{W}/\text{cm}^2$	Areas accessible to public
2001	Turkey	15 V/m; 250 $\mu\text{W}/\text{cm}^2$	
2003	Italy	6 V/m; 10 $\mu\text{W}/\text{cm}^2$	Precautionary
2004	Paris	1–10 $\mu\text{W}/\text{cm}^2$	
2005	Peru	30 V/m (2 GHz)	Sensitive sites inc. schools
	Monaco	6 V/m; 10 $\mu\text{W}/\text{cm}^2$	
	Lithuania	1 $\mu\text{W}/\text{cm}^2$	Work & living places (special restriction in child zones and school internet rooms)
2006	Greece	600 $\mu\text{W}/\text{cm}^2$	<300 m of “Child” zone perimeters
2008	Slovenia	6 V/m; 10 $\mu\text{W}/\text{cm}^2$	Sensitive areas, e.g., school, day care, playgrounds, housing
2009	Brazil (regional)	6 V/m; 10 $\mu\text{W}/\text{cm}^2$	
	Israel	4 V/m	
	Spain (Plenum)		ALARA in sensitive/child zones
2010	Brussels reg., Belgium	3 V/m	All accessible places
	Wallonia reg., Belgium	3 V/m per antenna	All residential areas
	Flanders reg., Belgium	3 V/m	Sensitive areas, e.g., schools
2011	Bulgaria	10 $\mu\text{W}/\text{cm}^2$	Zones
2012	India	10 $\mu\text{W}/\text{cm}^2$	All base stations
	Luxembourg	3 V/m per antenna	Extended human presence areas
	Greece	450 $\mu\text{W}/\text{cm}^2$	Existing base stations <300 m of school perimeter. New BS at pre/school perimeter banned

Sources include WHO International EMF project, listed representatives, EC Report (European Commission, May 2008).

Chile 2012 "Antennae Law"

Law Prohibits cell antennae/towers in “sensitive areas.” Sensitive areas are those areas that demand special protection due to the presence of educational institutions, nurseries, kindergartens, hospitals, clinics, nursing homes or other institutions of similar nature.

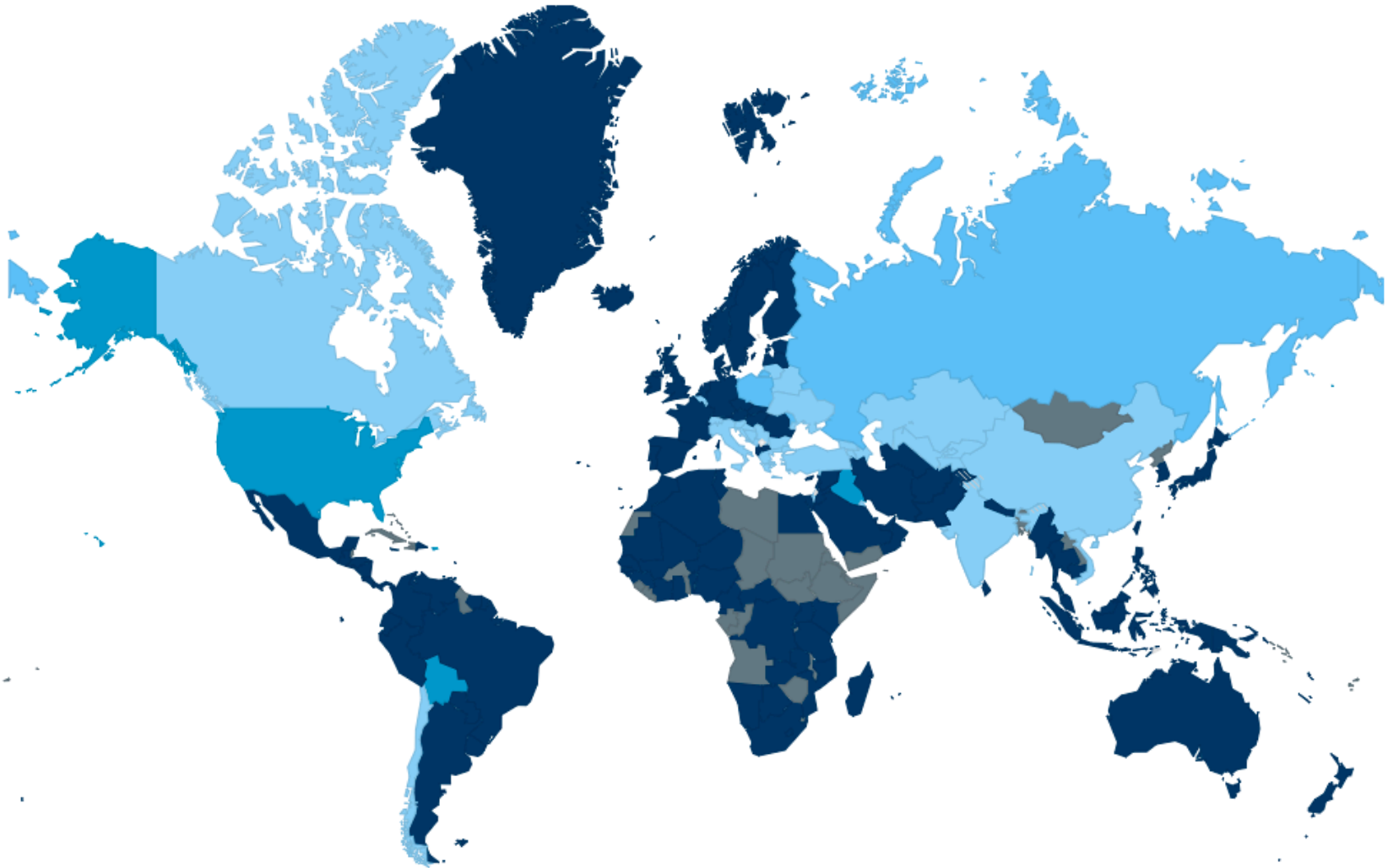
Chile’s Minister of Transportation and Telecommunications Pedro Pablo Kuczynski stated, “...in addition to protecting the urban landscape and the goodwill of the neighborhoods, the new law takes care of the most important: the health of people in a precautionary manner as recommended by the World Health Organization, setting strict limits on the powers of the antennas. Chile is setting standards in this regard.”

Cell Towers banned at schools:

Los Angeles Unified School District
Rajasthan, India
Zilla Parishad India
Brihanmumbai India
Cities would not even consider antennas near schools.

Effective Radiofrequency Exposure Limits for Mobile Networks

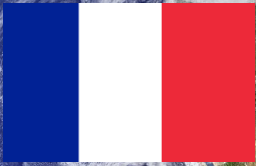
Many countries are more restrictive than ICNIRP



ICNIRP 1998 ■ FCC 1996 ■ other ■ unknown ■

Last updated 11/2016 Source: GSMA

World Wide Action



France: Cell Phone Radiation Labeling, No advertising to children under 14, Wi-Fi Banned in Kindergarten. Elementary : Wi-Fi off when not in use. Children's cell phones banned for sale. Educational Campaign to reduce exposure.



Belgium: Ban on sale of cell phones for children. Wi-Fi banned in Ghent nursery schools.



Israel: Wi-Fi banned in nurseries. Wi-fi removed/ minimized Haifa schools as of April 2016, Cell phones banned for classwork in schools. Cell Phone SAR labeling.



India: Phone SAR Radiation labeling, Recommendations to reduce cell phone exposure, Exposure limits lowered to 1/10 of the ICNIRP level, some municipalities ban towers near schools.

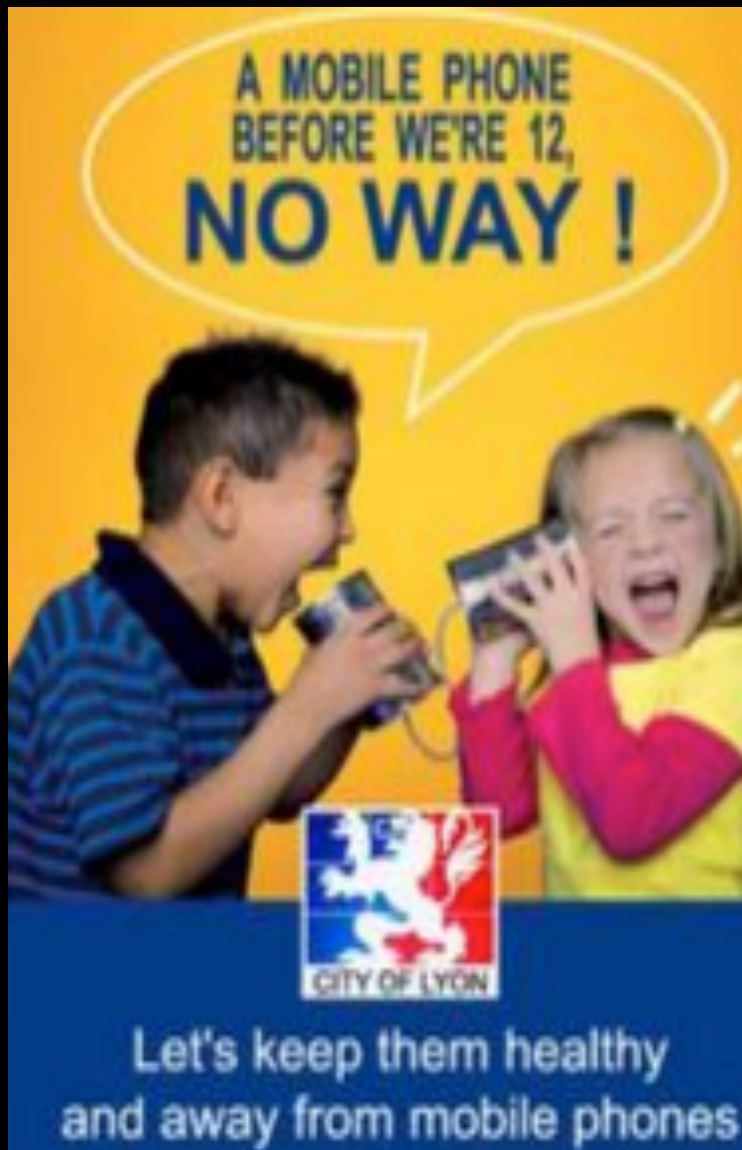


Cyprus: Wi-Fi removed from elementary classrooms in 2017, Public education campaign.



French Polynesia: Banned advertising cell phones to children under 14. Children should not use phones under 14. Awareness Campaign.

Cell Phone Campaign Lyons France, 2008



Policy/Government Recommendations To Reduce Children/Public Exposure

Take steps to minimize RF-EMF Exposure Official government advice	United Kingdom, Russia, Switzerland, Finland, Ireland, Germany, Belgium, Greece, Israel, Turkey, Singapore, France, Denmark, India, Australia, Austria, Canada, Italy Decree of Environment Minister 2017, Connecticut, Maryland USA,
Ban on mobile phone advertising to children	France, Belgium, French Polynesia, Russia
Ban on sale of children's cell phones	Belgium, France
SAR labeling (on device, packaging, point of sale)	France, Israel, India, Belgium, Russia
Educational Programs (schools/ professionals)	France, French Polynesia, Israel, Cyprus, <u>Tunesia</u> ,
Prefer wired over Wi-Fi LAN in schools	France, Israel, Germany, French Polynesia, <u>Salzberg</u> Austria, Maryland <u>CEHPAC</u> USA,
WiFi ban in pre school/ kindergartens	France, Israel, Ghent Belgium,
Wi-Fi Off/Minimized in elementary	France, Israel, Cyprus, Growing list of schools worldwide

2016: France's National Health & Safety Agency Reduce Children's Wireless Exposures

2016: ANSES Report Recommendations:

- Exposure limits for radiofrequency electromagnetic fields should be tightened.
- “reconsider the regulatory exposure limits” to ensure “sufficiently large safety margins” to protect the health of young children.
- **Reliance on the specific absorption rate (SAR) to set human exposure limits should be re-evaluated and replaced.**

[ANSES 2016 Report Radiofrequency Exposure and the Health of Children](#)

[ANSES 2016 Report Press Release](#)

Medical organizations, expert groups and governments recommend reducing radiofrequency exposure to children.

- American Academy of Pediatrics
- Vienna Medical Association
- Athens Medical Association
- American Academy of Environmental Medicine
- EMF Scientists: Over 200 scientific experts
- The Russian National Committee on Non-Ionizing Radiation Protection
- The French National Agency of Health, Food, Environment and Labour
- The Council of Europe
- Maryland State Children's Environmental Health and Protection Advisory Council
- Swiss Physicians Association of Doctors for Environmental Protection
- International Society of Doctors for the Environment
- Irish Doctors Environmental Association
- New Jersey Education Association
- Over a dozen governments

[See links to Medical Recommendations](#)



American Academy Of Pediatrics (AAP) Recommends *Reducing* Exposure to RF Radiation

The AAP lists 10 ways **to reduce cell phone radiation exposure** to children and has urged US government for review of RF.

AAP website states:

“A study confirmed concerns that living nearby mobile phone base stations increased the risk for developing: Headaches, Memory problems, Dizziness, Depression, Sleep problems

[-American Academy of Pediatrics Website on Electromagnetic Fields](#)

Doctors Recommend Reducing Wireless Exposure to Pregnant Women To Protect the Baby Brain

10 WAYS TO HELP REDUCE YOUR EXPOSURE.

The BabySafe Project



www.BabySafeProject.org
#KnowYourExposure

- Avoid carrying your cell phone on your body (e.g. in a pocket or bra).
- Avoid holding any wireless device against your body when in use.
- Use your cell phone on speaker setting or with an “air tube” headset.
- Avoid using your wireless device in cars, trains or elevators.
- Avoid cordless phones, especially where you sleep.
- Whenever possible, connect to the Internet with wired cables.
- When using Wi-Fi, connect only to download, then disconnect.
- Avoid prolonged or direct exposure to Wi-Fi routers.
- Unplug your home Wi-Fi router when not in use (e.g. at bedtime).
- Sleep as far away from wireless utility meters (i.e. “smart” meters) as possible.

The BabySafe Project Appeal is signed by over 140 Doctors and medical experts .

New Jersey Educational Association

2016 Published Recommendations to Reduce Radiation Exposure

HEALTH & SAFETY

Minimize health risks from electronic devices

By Adrienne Markowitz and Eileen Senn

Desktops, laptops, tablets, eBook readers, printers, projectors, smart boards, smart TVs, cellphones, cordless phones and wireless networks (WiFi) have become ubiquitous in schools. At their best, they are powerful tools for education. At their worst, they threaten the physical and mental health of teachers, paraeducators, secretaries, librarians and other school staff members and students who spend numerous hours using the devices.

Physical health risks from electronic devices include pain and tingling from repetitive strain injuries to the hands and wrists; pain in the neck, shoulders and back; dry, burning, itchy eyes, blurred vision and headaches; altered sleep patterns and next-day fatigue from exposure to blue screen light; distracted driving; and various health problems from exposure to radiation.

Mental health risks arise from stress due to raised expectations for multitasking, productivity and proficiency with devices; dealing with malfunctioning devices; student and colleague distraction from and addiction to devices; and intrusion of devices into

Local associations should work with their UniServ field representative to negotiate solutions that are in the control of district administrators such as providing training and ergonomic equipment and hard-wiring devices. Individuals should take steps within their control, such as:

For repetitive strain injuries

- Use voice control/speech recognition.
- Use ergonomic alternatives to traditional mice and keyboards.
- Use as many fingers as possible when typing and both thumbs when texting.

For neck, shoulder and back pain

- Ensure an ergonomic workstation.
- When using a hand-held device, support it and the forearms.
- Avoid bending the head down or jutting it forward.
- Take frequent, short breaks from the device.
- Ensure good posture and change positions frequently.
- Stand and do stretching exercises.

For eye pain, blurred vision and headaches

- Use sufficient, but not excessive, lighting.
- Use assistive technology built into Apple, Android and Windows devices.
- Enlarge and darken the cursor and pointer.
- Enlarge the font; magnify the text.
- Use text-to-speech instead of reading.
- Use special computer glasses.
- Relax the eyes on a minibreak.

For altered sleep patterns and next-day fatigue

- Stop using devices at least one hour before bedtime.

For distracted driving

- Use hands-free devices, preferably speakerphones.
- Pull over and park.
- Let someone else drive.

For radiation exposure

- Keep devices away from the body and bedroom.
- Carry phones in briefcases, etc., not on the body.
- Put devices on desks, not laps.
- Hard wire all devices that connect to the internet.
- Hard wire all fixed devices such as printers, projectors and boards.
- Use hard-wired phones instead of cell or cordless phones.
- Text rather than call.

For radiation exposure

- Keep devices away from the body and bedroom.
- Carry phones in briefcases, etc., not on the body.
- Put devices on desks, not laps.
- Hard wire all devices that connect to the internet.
- Hard wire all fixed devices such as printers, projectors and boards.
- Use hard-wired phones instead of cell or cordless phones.
- Text rather than call.
- Keep conversations short or talk in person.
- Put devices in airplane mode, which suspends EMF transmission by the device, thereby disabling Bluetooth, GPS, phone calls, and WiFi.
- Use speaker phone or ear buds instead of holding the phone next your head.
- Take off Bluetooth devices when not using them.



Maryland State Children's Environmental Health and Protection Advisory Council, 19 Members (pediatricians & public health)

“The Council recommends limiting exposures as much as feasibly practical.”

The Maryland State Department of Education

- “Should consider using wired devices in classrooms”
- “If a new classroom is to be built... network cables can be added at the same time, providing wired network access.”

“The Maryland Department of Health and Mental Hygiene should provide suggestions to the public on ways to reduce exposure.”

ALARA Recommendations

- Reduce Children's Exposure: Ban Sale of Phones for young children, Ban advertising for children, Reduce RF in nursery schools/schools/parks
- Cell Tower RF Limits Should be a fraction of ICNIRP.
- Nationwide Monitoring of RF levels.
- Public Education: Government Department of Health recommendations on how to reduce cell phone and wireless radiation.
- Initiatives to reduce exposure to head and body.
- Install wired fiberoptic infrastructure for internet connections.
- Install and maintain landline telephone connections.

Policy Issue: Wireless devices are tested for SAR compliance at 20 cm separation distance.

- Tablets
- Laptops
- Baby Monitor Base
- Home cordless phone base
- Wi-Fi Routers
- Wi-Fi Printers
- Wi-Fi Speakers
- Gaming consoles
- Smartmeters



However, for many people, the standard operating position of tablets, laptops, and even smartphones is on the lap against the abdomen or stomach area. Children cluster around devices. Office desks have printers, speakers and routers next to the body. Gaming consoles are placed near beds and children sit next to them.

Laptop Instructions Warn the User To Keep an 8 Inch Distance from the Body



"This device should be used more than 20 cm (8 inches) from the body when wireless devices are on.

Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting."

-Samsung Chromebook Computer
Manual

[Safety Instructions](#)

TEAMBCPS creating a culture of deliberate excellence



Enter Search Term



OUR SCHOOLS

STUDENTS

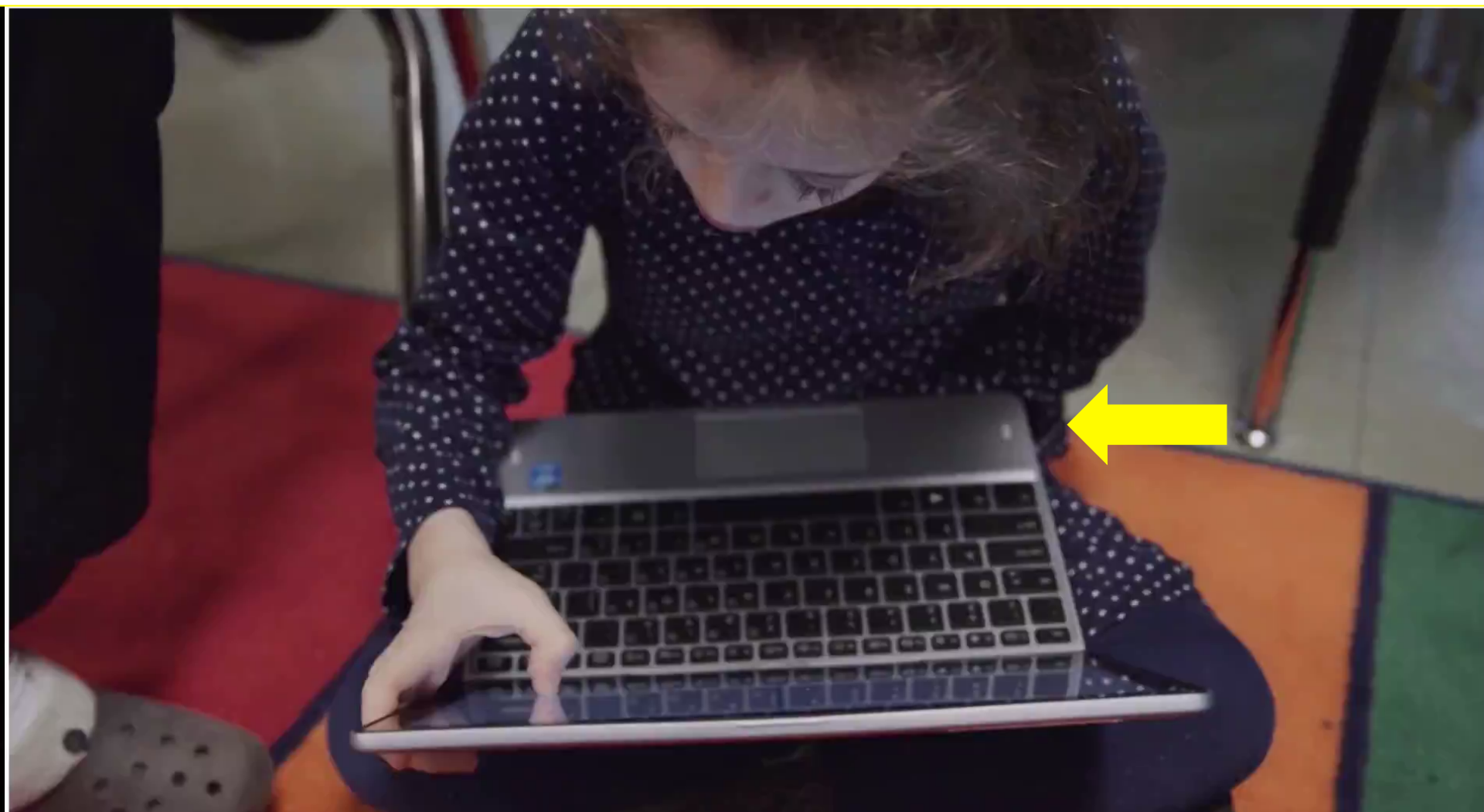
PARENTS

COMMUNITY

CALENDAR

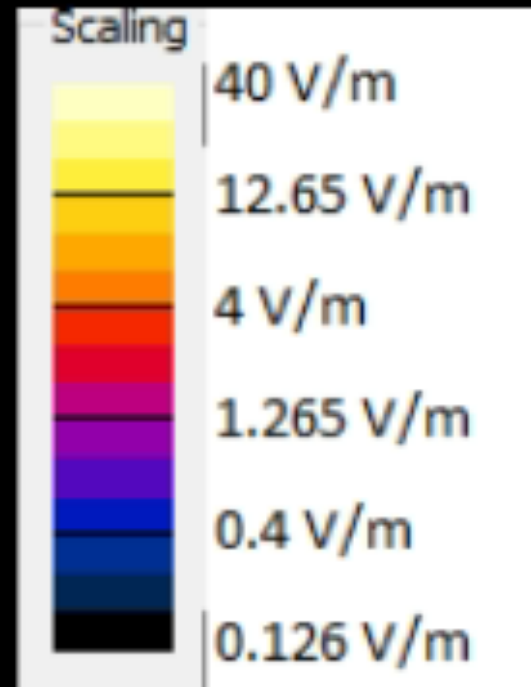
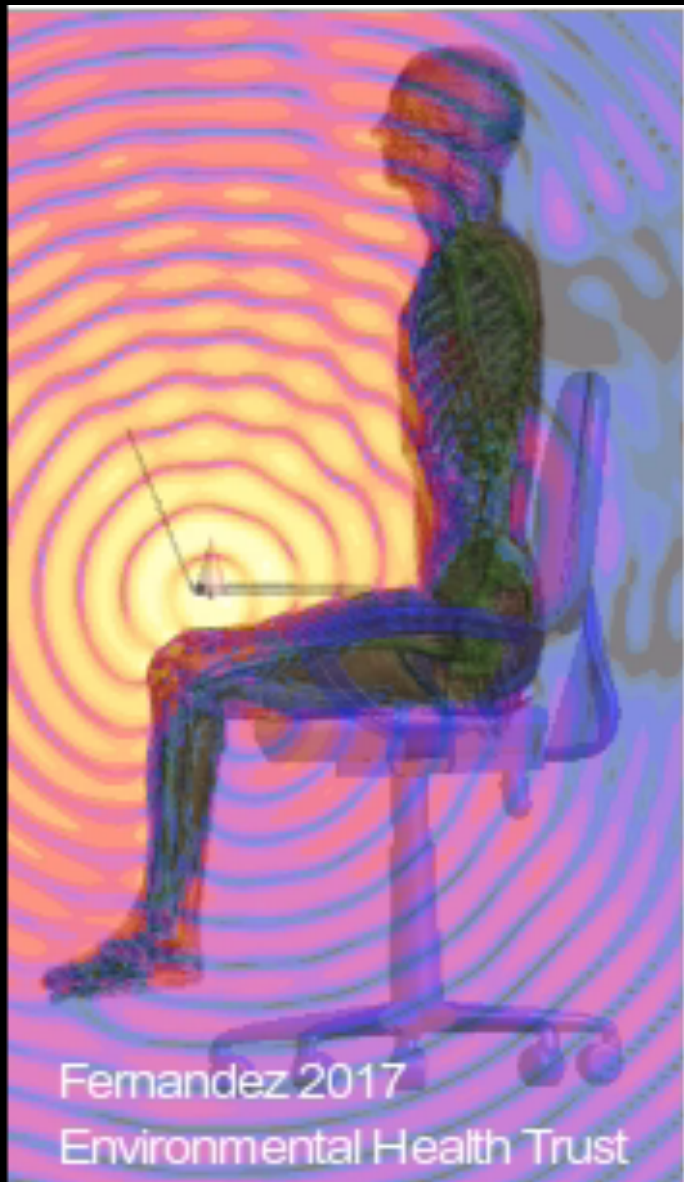
LEADERSHIP

OUR SYSTEM



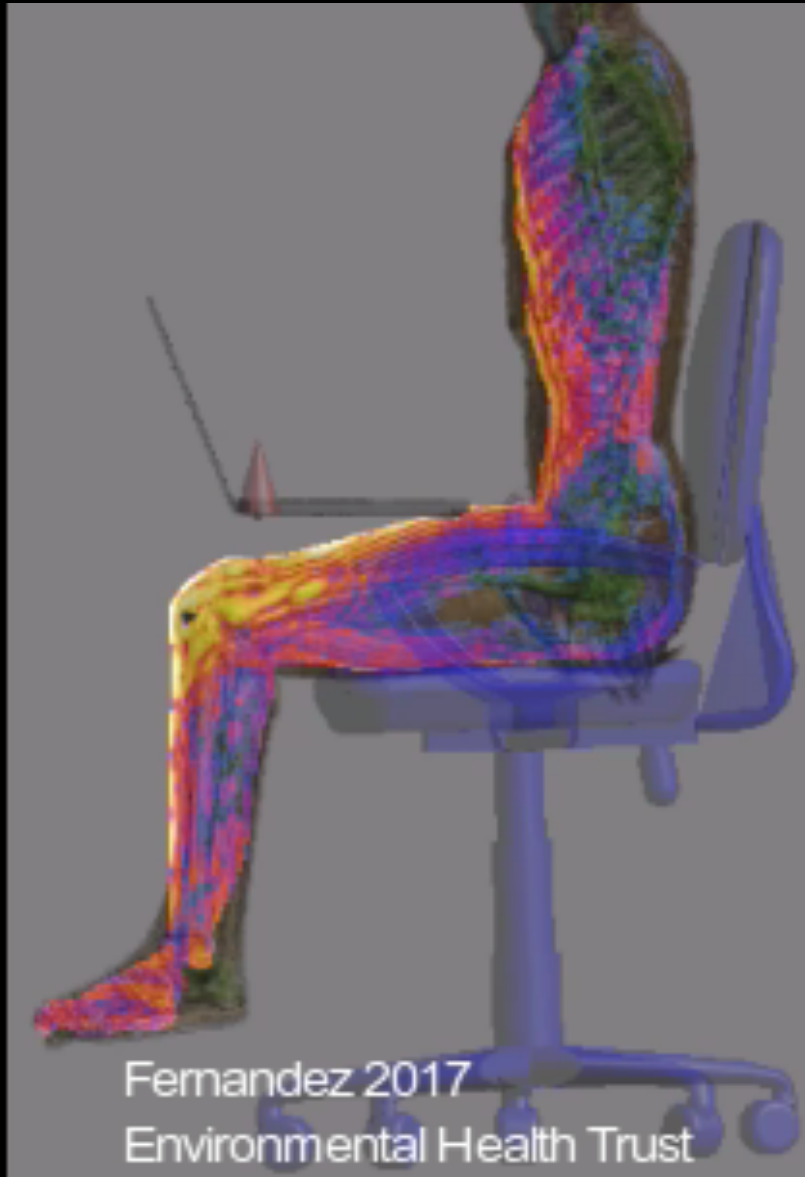
Wi-Fi Radiation From A Laptop

Simulation of Peak Exposures from 2.45 GHZ Wi-Fi Laptop

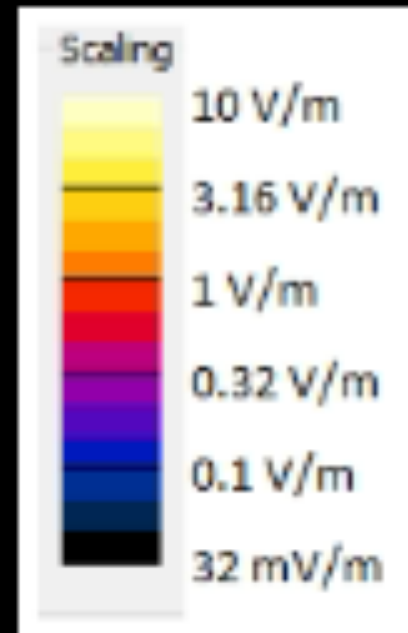


Wi-Fi Radiation From A Laptop

Simulation of Peak Exposures from 2.45 GHZ Wi-Fi Laptop



This scale allows a visual understanding of the penetration into the tissues of torso and legs.



Insurance & Liability Issues

AT&T Inc.

[2016 Annual Report](#)

“Unfavorable litigation or governmental investigation results could require us to pay significant amounts or lead to onerous operating procedures”

“We are subject to a number of lawsuits both in the United States and in foreign countries, including, at any particular time, claims relating to antitrust; patent infringement; wage and hour; personal injury; customer privacy violations; regulatory proceedings; and selling and collection practices.”

“We also spend substantial resources complying with various government standards, which may entail related investigations and litigation. In the wireless area, we also face current and potential litigation relating to alleged adverse health effects on customers or employees who use such technologies including, for example, wireless devices. We may incur significant expenses defending such suits or government charges and may be required to pay amounts or otherwise change our operations in ways that could materially adversely affect our operations or financial results.”

Wireless Companies do not have insurance for EMF damages from their products.

All Cell Phone Companies and Wireless Have Similar Statements
in Annual Reports and 10K filings

[Read Full Documentation](#)



2012 & 2017 Italian Court Rulings: Monetary Compensation Phones Can Cause Tumors

2012: Supreme Court of Italy upheld a lower court ruling that a businessman's brain tumor *was caused by cell phone radiation*.

- Neuroma developed after cell phone use ~6 hours a day for 12 years.
- The Italian Supreme Court relied heavily on Lennart Hardell's studies characterized as "independent" and "not co-financed by the same companies that produce mobile telephones".

2017: The Italian Court of Ivrea: recognized a causal link

- Telecom employee, awarded lifetime monies of 500 euros a month after he developed a brain tumor from fifteen years of cell phone use.
- The court's expert refused to accept into evidence studies that were funded by the telecom industry.

[Cell Phone Radiation Lawsuits May Get a Boost from Italian Supreme Court Ruling](#)

[ICFMS Position Paper on Cerebral Tumor Court Case.pdf](#)

<http://www.reuters.com/article/2012/10/19/us-italy-phones-idUSBRE89I0V320121019>

[Read the printed judgement here.](#)

[The Guardian: Italian court rules mobile phone use caused brain tumour](#)

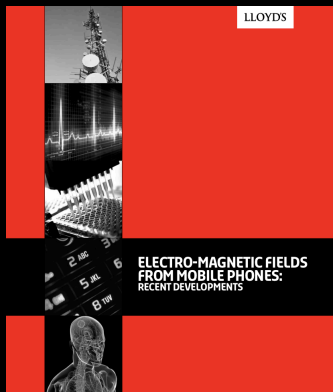
[Italian court rules cell phone use linked to tumor](#)

[Historical Judgment of the Tribunal of Ivrea: Using the Cellular Cause of Tumors April 20, 2017](#)



Conflict of Interest at WHO EMF Project Hardell 2017

- 2011: International Agency for the Research WHO/IARC : Experts evaluated cancer risks from RF radiation.
- WHO/IARC *is not the same* as the WHO EMF Project
- 2014 the WHO EMF Project launched a draft of a Monograph on RF fields and health for public comments.
- Five of the six members of the Core Group in charge of the draft are affiliated with International Commission on Non-Ionizing Radiation Protection (ICNIRP)
- ICNIRP is an industry loyal NGO “a serious conflict of interest.”
- Evidence has been published which indicated that members of ICNIRP have written scientifically incorrect and misleading information.
- Non-thermal biological effects from RF radiation are dismissed as scientific evidence of adverse health effects in the Monograph.
- [“World Health Organization, radiofrequency radiation and health – a hard nut to crack \(Review\).”](#)



Insurance Reports Warn of Risk

Swiss Re: 2013 and 2014 Report

- Unforeseen consequences of electromagnetic fields are categorized as having HIGH potential impacts.

2011 *Business Insurance* White Paper “The Next Asbestos: Five Emerging Risks”

- “research, meanwhile, also has shown biological effects from lower-level “nonthermal” exposure, and people exposed at lower levels have reported headache, dizziness, nausea, mood disorders, mental slowing and memory loss.”

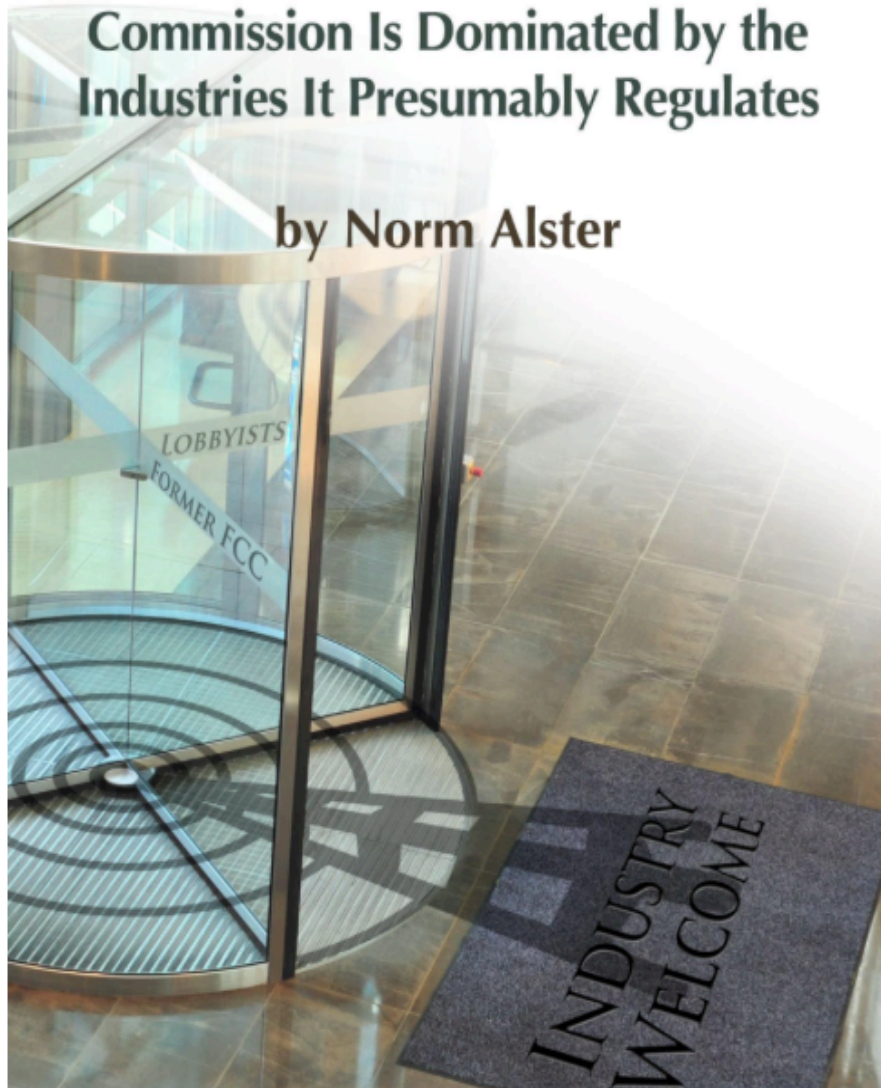
2010: Lloyds of London Report on Electromagnetic Fields

- “The danger with EMF is that, like asbestos, the exposure insurers face is underestimated and could grow exponentially and be with us for many years.”

Captured Agency:

How the Federal Communications Commission Is Dominated by the Industries It Presumably Regulates

by Norm Alster



www.ethics.harvard.edu

Industry Influence

“...consumer safety, health, and privacy, along with consumer wallets, have all been overlooked, sacrificed, or raided due to unchecked industry influence.”



HARVARD UNIVERSITY
Edmond J. Safra
Center for Ethics

["Captured Agency: How the Federal Communications Commission is Dominated by the Industries It Presumably Regulates."](http://www.ethics.harvard.edu)

The Cost of Inaction

- Public Health Impacts
- Medical Costs especially in the Long Term
- Lawsuits
- Children's Brain Development and Healthy Future
- "Given the widespread global usage of mobile communications among users of all ages, even a very small increase in the incidence of disease resulting from exposure to RFR could have broad implications for public health."
 - -USA National Toxicology Program

Thank you

Discussion Slides

Synergistic effects of electromagnetic fields and chemicals

Medical applications to treat cancer are relying on interactions

- (Kostoff and Lau, 2015)
- “Substantial credible scientific evidence” supports that RF results in synergistic effects-beneficial *and* adverse.
- RF changes biochemical markers of inflammation
- RF enhances carcinogenesis, cellular or genetic mutations, and teratogenicity.

Research *needed* on real world conditions: EMF + multiple exposures

[Technological Forecasting and Social Change \(2015\)](#)

Manufacturers' Fine Print Safety Advice On All Cell Phones and Wi-Fi Devices



“To maintain compliance with FCC’s exposure guideline, place the child unit at least 20 cm (8 inches) from nearby person’s”

- First Years Baby Monitor Manual

Berkeley Cell Phone Right to Know Law Upheld by despite industry challenge, 2015

- For iPhone go to Settings/General/About/Legal/ Rfexposure
- For other phones go to Showthefineprint.org and for devices go to EHT Fine Print Webpage

Cell Phone Calls and ADHD

Potential of Lead Toxicity in Korean Children



“combined or cooperative toxic action of RF and lead on the developing brain.”

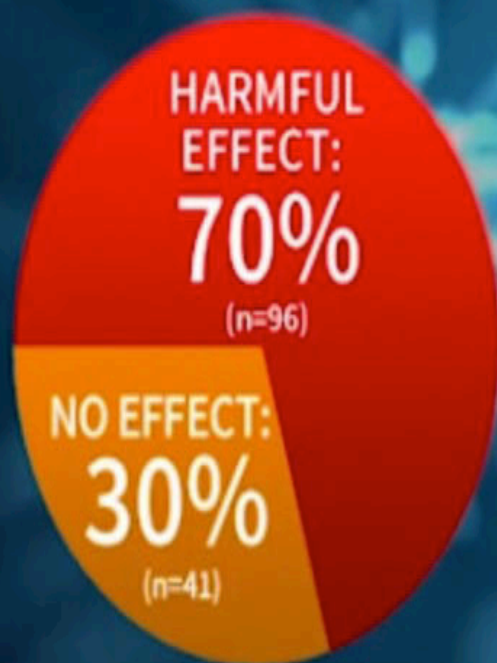
Byun et al. 2013 PLoS

2,422 children - 27 schools - 10 Korean cities - 2 y follow up
ADHD symptoms associated with voice calls, *only among children with higher blood lead values ($>2.35\mu\text{g}/\text{dL}$; comparable to U.S. BLLs)*

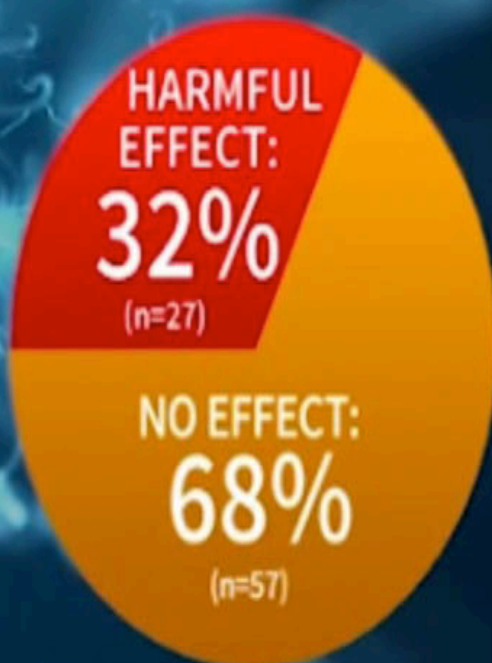
[Byun et al. 2013](#)

Radiofrequency Research: Does Funding Matter?

Non-industry studies



Industry studies



Data Compiled by Dr. Henry Lai, University of Washington

United Nations International Appeal on EMFs

Over 220 Scientists from 42 Nations

“Numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines.



EMFScientist.org

- “Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans.”

CELL PHONE INFORMATION

The microwave radiation given off by cell or mobile phones is possibly not as safe as cell phone service providers would like to have us believe. Therefore the Vienna Medical Association

has decided to show responsibility and inform the people of Austria about the potential negative effects of cell phone radiation from a medical perspective.



Vienna Medical Association

10 MEDICAL RULES FOR CELL PHONE USE

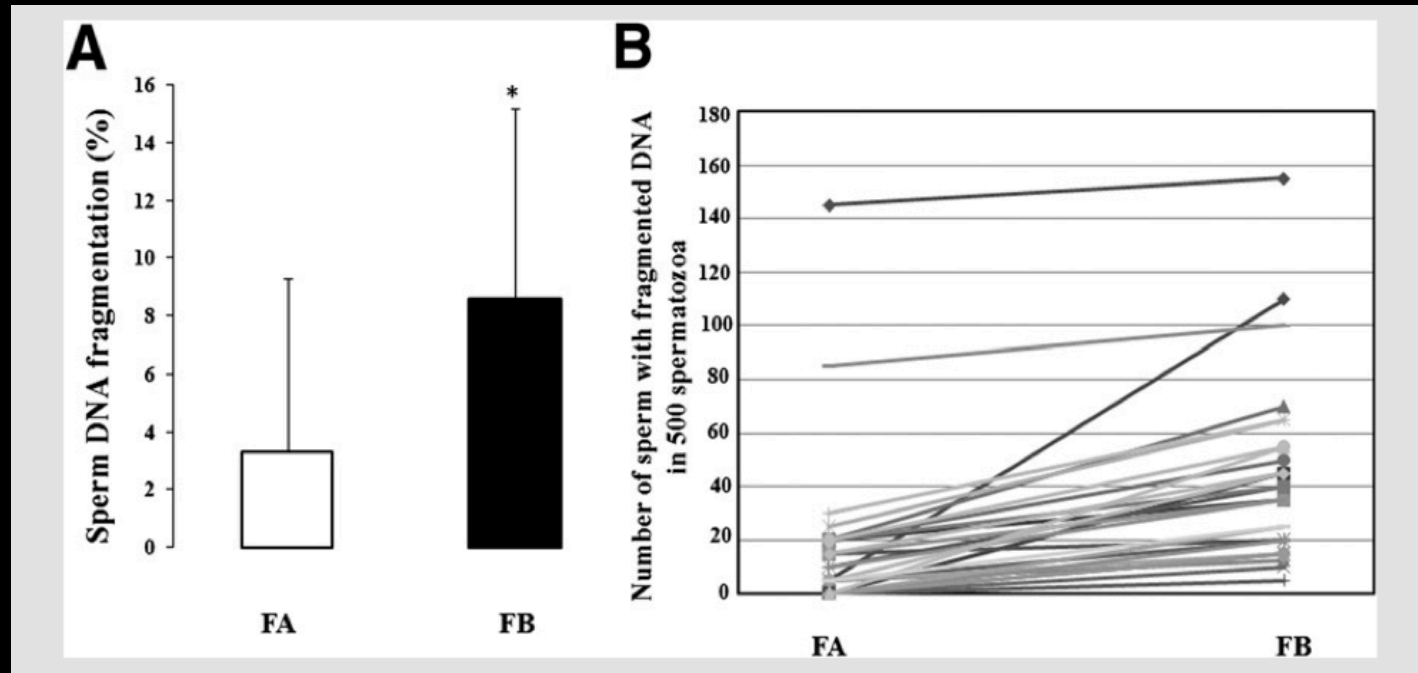
- Use a cell phone as little and as short as possible. Children and teenagers under the age of 16 should not use a cell phone at all.
- Never place a cell phone next to your head while establishing a connection.
- Do not use cell phones in vehicles such as cars, buses or railways because the microwave radiation is higher.
- While sending SMS messages, keep the cell phone as far away from your body as possible.
- While using a cell phone, always keep a few meters courtesy distance from other persons – otherwise they will be radiated too.
- Never put cell phones in your pocket. The microwave radiation can interfere with male fertility.
- At night always shut off your cell phone and never place it next to your head.
- Do not play games on a cell phone.
- Headsets are misleading because the connection cable also radiates.
- Wireless LAN or UMTS also lead to high microwave radiation exposure.



HINT!
CELL PHONES HAVE NO
PLACE IN WAITING ROOMS.
THEY RADIATE AND DISTURB!

YOUR MEDICAL DOCTORS FROM VIENNA
A PARTNERSHIP FOR LIFE!

Laptop Connected to Wi-Fi Damages Sperm



Avendano et al. 2012

Exposure to Wi-Fi connected laptop for 4 hours showed decrease in sperm motility and increase in sperm DNA fragmentation compared to control

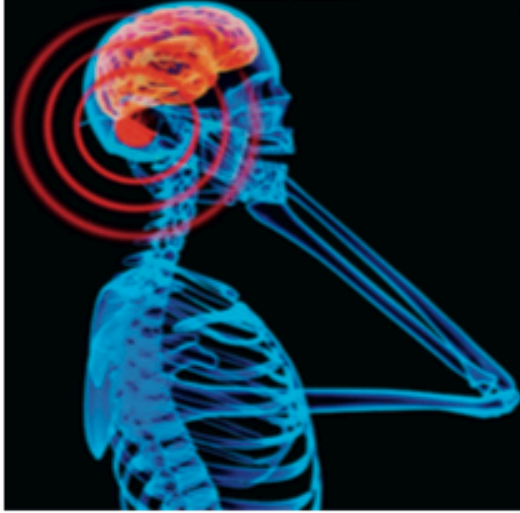
Turkey Ministry Of Health “Reduce Exposure” Brochure

CEP TELEFONLARI ve SAĞLIĞA ETKİLERİ



CEP TELEFONLARI; İKİ DURUMLU HABERLEŞME (KONUŞMA VE DİNLEME) YAPABİLEN, ÇOK DÜŞÜK GÜÇLÜ ELEKTRONİK CİHAZLARDIR.

Cep telefonları; konuşma konumunda bilgileri radyofrekans (RF) dalgalar ile gönderir ve dinleme konumunda da bilgileri yine RF dalgalar ile alır.



CEP TELEFONLARI ve KANSER

Günümüze dek yapılmış çalışmalar bir arada değerlendirildiğinde cep telefonları dâhil düşük frekanslı elektromanyetik alana sahip cihazların kanser riskini arttırdığını günümüz verileriyle söylemek mümkün değildir.

1990'LI YILLARDAN İTİBAREN TOPLUMUMUZDA KULLANIMI HIZLA YAYGINLAŞAN CEP TELEFONU, kısa zamanda hayatın bir parçası olmuş ve ülkemizdeki abone sayısı 2012 yılı Haziran ayı itibarıyla yaklaşık 67 milyona, baz istasyonu sayısı 81 bine ulaşmıştır.



Mobil Abone Sayısı
67,16 Milyon



Baz İstasyonu Sayısı
81 Bin

ELEKTROMANYETİK ALANLAR ve TÜRKİYE'DEKİ SAĞLIK POLİTİKALARI

Her geçen gün, daha etkin ve daha az elektromanyetik dalga yayımlı cihazlar üretilmekle beraber bu konuda yapılan uluslararası çalışmalar halen devam etmektedir. Sağlık Bakanlığı Kanser Dairesi tüm bu gelişmelerin yakın takipçisi olmaya devam etmekte ve 24 aktif IARC üyesi ülkeden birisi olarak bu konuda güncel gelişmeleri ve olası sağlık etkilerini takip ederek kamuoyunu bilgilendirmektedir.



www.kanser.gov.tr



Kanser Daire Başkanlığı

**CEP TELEFONLARI
VE SAĞLIĞA ETKİLERİ**

Belgium bans sale of mobile phones designed for children

by Andy Furniere, journalist

Recent articles: *Environment minister wants to ban plastic shopping bags, Valentine's campaign raises awareness of sexual violence, VUB professor has not been sentenced to death, says ambassador*



SUMMARY

From 1 March, mobile phones designed to attract young children can no longer be sold in Belgium because of radiation levels considered dangerous

"Increases the risk of brain cancer," says radiation expert

From 1 March, it will be illegal in Belgium to sell mobile phones designed specifically for children below the age of seven. The government is banning the sale of and advertisements for mobile phones in the form of a toy, such as a cuddly bear, meant for children younger than seven.



Guy Vandenbosch, radiation expert at the University of Leuven (KU Leuven) supports the measure. "Using a cell phone increases the risk of brain cancer for young children because of the radiation that is released," he told *De Morgen*.

The law also stipulates that the radiation value (SAR) of each mobile phone has to be mentioned when it is sold or being advertised. Each mobile phone will come with the statement: "Think about your health, use your mobile phone moderately, call

City and State Actions To Reduce Exposure



Italy

Turin Mayor Chiara Appendino “Cut back on Wi-Fi”

Borgofranco d'Ivrea Mayor ordered Wi-Fi to be turned off in schools.

South Tyrol State Parliament Vote to Allow Precautionary Principle

Piemonte Region Resolution to limit EMF exposure.

Italian Supreme Court ruled man's brain tumor caused by mobile phone use.



Spain

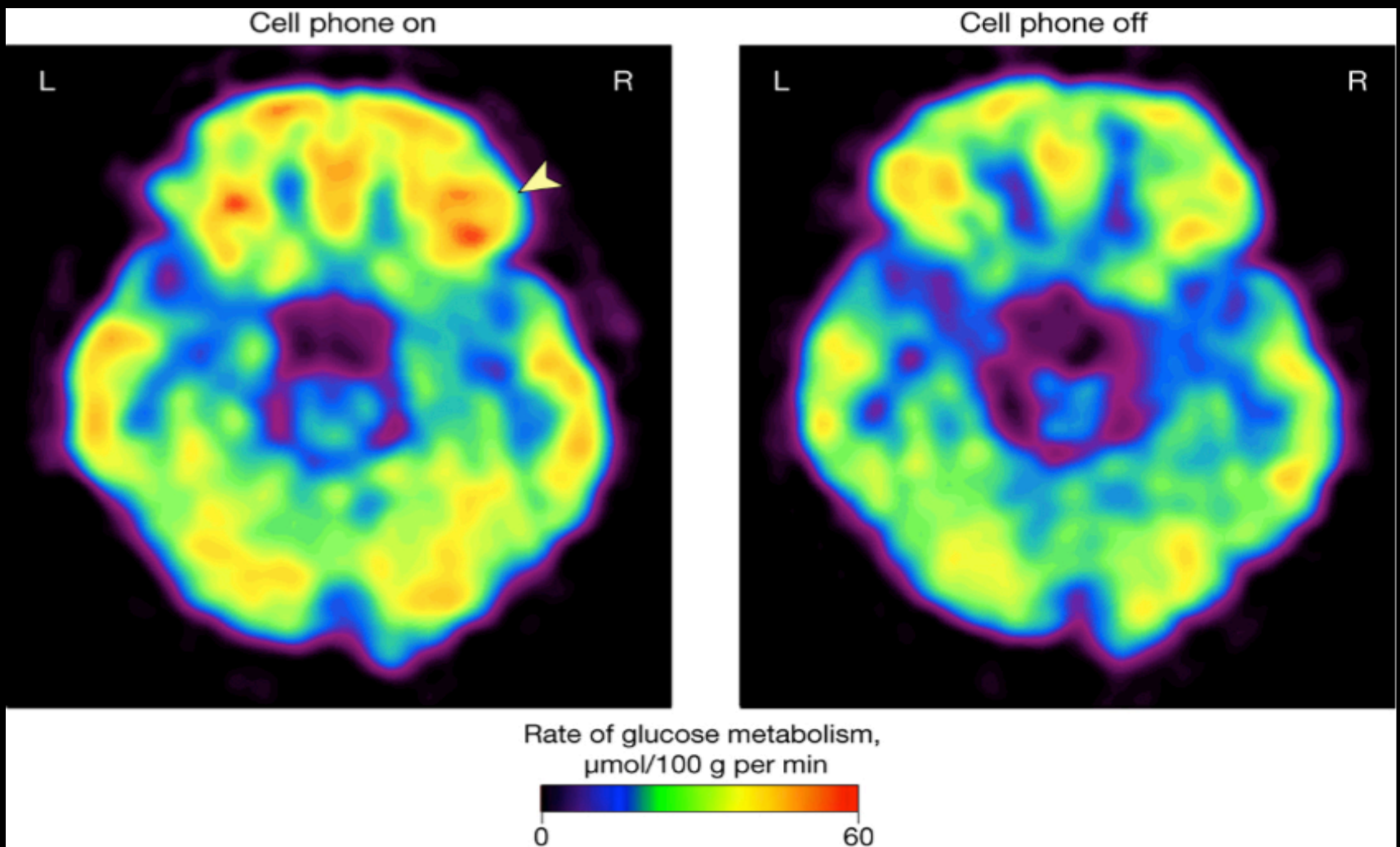
The Parliament of Navarra: Vote to apply precautionary principle.

The Vitoria City Council: Approved Precautionary Principle

Basque Parliament: Resolution joining European Council, called for awareness

High Court of Madrid recognized “Electrosensitivity” as grounds for disability-

City of Tarragona Municipal Government “Institutional Declaration of support for people with Central Sensitivity Syndromes”



Spending 50 minutes with a cellphone turned on against the ear significantly alters cerebral glucose metabolism

France Website to the Public on RF



lesondesmobiles.fr



Tout savoir sur
le bon usage du portable



✧ Cliquez ici pour en savoir plus ✧



Protect children and youth even more



Telephoning with a headset



Prefer SMS



Keep the phone away from electronic implants



Do not call in areas of poor reception



Move the phone away just after dialing



Avoid high-speed calls



Information about your equipment

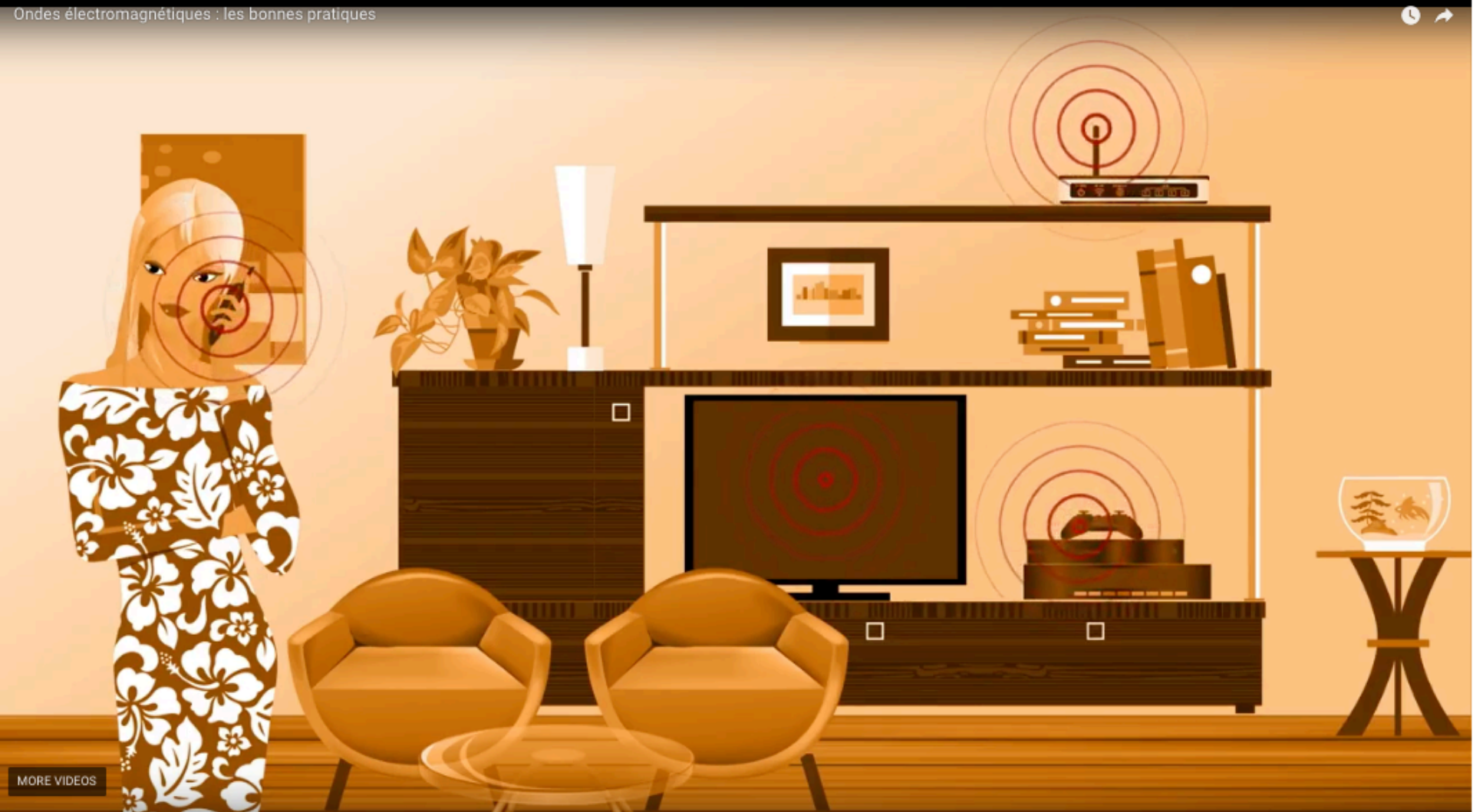
French Polynesia EMF Campaign



Poster for Nationwide Educational Campaign

Video on EMF French Polynesia

Ondes électromagnétiques : les bonnes pratiques



Public Education Youtube Video

French Polynesia EMF Brochure

Ne pas téléphoner dans les zones de mauvaise réception

Plus la couverture du réseau est mauvaise, plus votre téléphone émet des ondes pour maintenir la connexion. Il est donc recommandé de ne pas téléphoner dans les zones où la réception n'est pas bonne : parkings souterrains, ascenseurs, lieux confinés,... Vérifiez le nombre de barrettes affichées sur votre téléphone, il indique la qualité de couverture du réseau.

Éloigner le téléphone de la tête juste après la numérotation



Pour limiter l'exposition aux ondes au niveau de la tête, vous pouvez prendre l'habitude de ne pas approcher le téléphone de votre oreille dans les secondes qui suivent la numérotation.

En effet, c'est lors de ces premières secondes que l'émission d'ondes est la plus forte pour rechercher l'antenne relais la plus proche. Le niveau d'émission d'ondes se stabilise ensuite.

Pour éviter les ondes les plus fortes : éloigner le téléphone de soi au lancement de l'appel et le rapprocher que lorsque l'interlocuteur décroche.



Éviter les appels en déplacement

En déplacement à grande vitesse, le téléphone doit se connecter successivement à différentes antennes relais pour maintenir la connexion.

À chaque recherche d'antenne relais, le téléphone émet à pleine puissance, le niveau d'émission d'ondes est donc régulièrement plus élevé.

Eviter de transporter le téléphone à proximité du corps

Plutôt que de le transporter dans la poche de son pantalon, tout contre soi, il est préférable de mettre son téléphone dans un sac. Si le téléphone est placé à proximité du corps, la face côté clavier doit être orientée vers soi.



Utiliser avec modération la 3G et la 4G

Pour surfer sur Internet et échanger des données (mail, TV mobile etc.), il est préférable d'utiliser un poste informatique, en 3G un téléphone émet plus d'ondes électromagnétiques pour le surf sur Internet que lors d'un appel vocal.

BIEN UTILISER SON MOBILE

Protéger en priorité les enfants et les jeunes



L'usage du téléphone mobile par les enfants est déconseillé avant l'âge de 15 ans : leur cerveau n'est pas arrivé à maturité et reste plus sensible aux ondes électromagnétiques.

Il est recommandé aux parents de conseiller à leurs enfants ou adolescents de n'utiliser leur téléphone que pour les appels indispensables.

L'usage du SMS et de l'oreillette doit également être encouragé. En plus de ces conseils spécifiques, les autres bons gestes ci-dessous doivent également être adoptés.

Téléphoner avec une oreillette

En téléphonant avec une oreillette (filaire), le téléphone reste éloigné de la tête. C'est un moyen efficace pour réduire l'exposition de son cerveau aux ondes.



Privilégier les SMS

En utilisant les SMS pour communiquer, on réduit l'émission d'ondes de son téléphone. En effet, pour l'envoi d'un SMS, le téléphone se connecte à l'antenne relais la plus proche uniquement le temps d'envoyer le message.

Pendant une conversation, le téléphone se connecte à l'antenne relais la plus proche et renouvelle régulièrement la connexion, surtout en déplacement. Le temps d'exposition aux ondes est donc plus important. Par ailleurs, lors d'un envoi de SMS, le portable est éloigné de la tête.



Éloigner le téléphone des implants électroniques



Si vous portez un implant électronique (pacemaker, pompe à insuline, neuro-stimulateur...), éloignez votre téléphone portable de la zone d'implantation. Il peut perturber le fonctionnement de votre appareil médical.