Dialogue with the Doctors

Cell Phones, Wireless and Your Health: A Scientific Update with Practical Recommendations

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www.ehtrust.org
Expert Panel

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Anthony Miller, MD

Annie J. Sasco MD, DrPH

Iris Udasin, MD and Moe Mellion MD

Marc Arazi, MD

Theodora Scarato LCSW-C
Devra Davis, PhD, MPH

- President and Founder of the Environmental Health Trust
- Director of Grant from Israel Institute for Advanced Study for Expert Forum on Wireless Radiation and Health, supported by the U.S National Institute of Environmental Health Sciences
- Visiting Professor at the Hebrew University Hadassah Medical Center and the Ondokuz Mayis University Medical School
- Associate Editor of Frontiers in Radiation 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.
FCC Standards for Testing Cell Phones Unchanged Since 1996
Exposure to RF is proportionally greater and deeper in a child’s brain vs. an adult brain

Fernandez, Personal Communication (2017)
These findings appear to support the International Agency for Research on Cancer (IARC) conclusions regarding the possible carcinogenic potential of RFR.

- National Toxicology Program, June 2016
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.
Microwave Radiation Impairs Male Reproduction

Mice exposed to non-thermal radiation (2.45-GHz 2h/d x 30 d)
↓ Testicular Cell Walls disrupted
↓ Lowered viable sperm

Shahin et al. 2014
Prenatal Cell Phone Exposure Leads to Fewer Brain Cells in Offspring

Granular cells show intact shape

Granular cells are condensed, show downsizing and deterioration

Dentate gyrus in the control (A) and EMF (B) exposed group in photomicrographs

Repeated Calls for Research on Infants, Toddlers, Young Children, Pregnancy
FDA Approved Uses of Electromagnetic Fields in Medicine

Other medical applications to treat cancer are based on interactions of EMF/RF with chemicals (Kostoff and Lau, 2015)
Importance of Experiments on Animals

1. Because animals and humans have similar biological processes of disease induction, we study animals in order to develop and test drugs.

2. It is unethical to intentionally expose humans to known hazardous agents.

3. Almost one-third of human carcinogens were first identified in well-conducted animal studies.

4. Every agent that is known to cause cancer in humans is carcinogenic in animals when adequately tested (IARC, preamble).
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
The IARC program of Monographs on the evaluation of carcinogenic risks to humans

• Initiated in 1969 at IARC, by Dr. Tomatis and with support of the NCI (United States of America) and the European Commission

• **Objective:** To prepare, with the help of international working groups of experts, and to publish in the form of monographs:
  – Critical reviews of the literature
  – Evaluation of evidence on the carcinogenicity of a wide range of human exposures
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

Group 4 - Probably not carcinogenic to humans
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
2A / 2B – Why do we care?

• 2A: Probable human carcinogen
• 2B: Possible human carcinogen
• Almost the same words
• BUT
• Very different implications:
• For several countries, 2A automatically leads to action being taken: listing as carcinogen, legislation or regulation, compensation, warnings, etc
• For 2B: usually nothing
Cell Phone Campaign Lyons France, 2008
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
CERENAT: French National Study
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)
Brain tumors are now the highest incidence cancers in US adolescents.

Source: Ostrom et al. CBTRUS 2016
Conclusions

✓ 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.
Iris Udasin, MD, FACOM

- Professor and Medical Director of the Clinical Center at Rutgers University Environmental and Occupational Health Sciences Institute.
- Director of studies of the 9/11 survivors from the World Trade Center disasters and holds a multi-year NIOSH grant that has linked WTC exposure and cancer.

Moe Mellion, MD, DABFP

- Board Chair, Environmental Health Trust
- Past President, American Academy of Family Physicians
- Associate Medical Director, National Blue Cross Blue Sheild Association
- Chairman, National Council of Physician Executives
Experimental Studies Show Synergistic Effects Between EMF and Known Toxins

- Lerchll et al 2015 found that animals exposed to both a known cancer-causing agent and RF developed more liver and lung tumors than animals exposed only to either agent alone.
- Byun et al 2013 found that among children exposed to lead, those with higher cell phone exposure had higher ADHD symptoms.

48 year old man, coordinated operations at 9-11 disaster site for ~ 2 years

• Exposure History:
  – Arrived at WTC site shortly after planes crashed into towers, coordinated interagency response, drove from place to place in various vehicles for ~ 2 years
  – Typically drove with right hand and held cellular phone against his ear with his left hand
  – Had almost constant exposure to RF during the 2 years of WTC supervision
Case Study: Clinical History

- Presented with memory loss in early 2015
- 3 months later – abnormal MRI demonstrated glioblastoma multiforme in left frontal temporal lobe
- Underwent surgery in May 2015 followed by chemotherapy and radiation
- Died December 27, 2016
Case Study: Possible Interactions

• Multiple toxin exposures to materials at WTC
• Complex exposures to microwave radiation from phones and various communication devices
• Besides Bill, 2 other temporal lobe glioblastoma and 1 temporal lobe astrocytoma in the 2800 people who came to the NJ Clinical Center of WTC, 1 other brain tumor under investigation
• Need for further studies
Marc Arazi, MD

- French physician whose work led to the release of French government documents that found cell phones emit radiation levels which surpass government limits. This scandal has received worldwide attention and been dubbed “Phonegate.”
# Dieselgate Scandal  Now #Phonegate Scandal
Phonegate: French Government Data Indicates Cell Phones Expose
French National Agency (ANFR) Radiation Testing of 379 Cell Phones

2012: Began testing cell phone 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

## Body Cell Phone Radiation Measurements

<table>
<thead>
<tr>
<th>Cell Phone</th>
<th>Manufacturer separation distance</th>
<th>0 mm Body Contact simulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polaroid, PRO 881A</td>
<td>1.05 W/kg</td>
<td>7.42 W/kg</td>
</tr>
<tr>
<td>HTC, ONE SV</td>
<td>0.366 W/kg</td>
<td>7.18 W/kg</td>
</tr>
<tr>
<td>Blackberry Z10</td>
<td>0.934 W/kg</td>
<td>6.80 W/kg</td>
</tr>
<tr>
<td>NOKIA, Lumina 530</td>
<td>0.86 W/kg</td>
<td>6.57 W/kg</td>
</tr>
<tr>
<td>Apple, IPHONE 5C</td>
<td>1.11 W/kg</td>
<td>3.11 W/kg</td>
</tr>
<tr>
<td>Apple IPHONE 7</td>
<td>1.34 W/kg</td>
<td>?</td>
</tr>
</tbody>
</table>

**CELL PHONE LIMIT**

2 W/kg

European Limit 2 w/kg
US FCC 1.6 W/kg

The equivalent US FCC SAR for body contact is higher.

### France Data on Cell Phone SAR Radiation at Body Contact Positions

Examples of Some Phones That Exceed Regulatory Limits When Tested at Body Contact Positions

<table>
<thead>
<tr>
<th>Cell Phone</th>
<th>Manufacturer test separation distance</th>
<th>0 mm Distance body contact simulation European test 10 gram average</th>
<th>0 mm Distance body contact simulation Estimated for US FCC test 1 gram average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polaroid, PRO 881A</td>
<td>1.050 W/kg at 15 mm</td>
<td>7.42 W/kg</td>
<td>14.84 W/kg</td>
</tr>
<tr>
<td>HTC, ONE SV</td>
<td>0.366 W/kg at 15 mm</td>
<td>7.18 W/kg</td>
<td>14.36 W/kg</td>
</tr>
<tr>
<td>Blackberry Z10</td>
<td>0.934 W/kg at 15 mm</td>
<td>6.80 W/kg</td>
<td>13.60 W/kg</td>
</tr>
<tr>
<td>NOKIA, Lumina 530</td>
<td>0.86 W/kg at 15 mm</td>
<td>6.57 W/kg</td>
<td>13.14 W/kg</td>
</tr>
<tr>
<td>Apple, iPhone 5</td>
<td>.825 W/kg at 10 mm</td>
<td>5.32 W/kg</td>
<td>10.64 W/kg</td>
</tr>
</tbody>
</table>

Most of the cell phones tested by France exceeded regulatory SAR limits


Compare cell phone SAR test results with government regulatory SAR limits.

**USA SAR LIMIT**: 1.6 W/kg

**Europe SAR LIMIT**: 2.0 W/kg
June 2016: The New European Directive issued to reduce separation distance in testing to “a few millimeters” is inadequate.

However, We need all cell phones tested at body contact position for all body parts. Testing needs to include children.
Theodora Scarato LCSW-C

- Executive Director, Environmental Health Trust.
- Licensed Clinical Social Worker
- Psychotherapist with children, teens, ADHD, learning issues, depression,
- Previous Director Intensive Therapy Program in Special Education School.
- Research focused on Worldwide Legislative Policy
Bill Gates didn't let his kids have mobile phones until they turned 14

By Ariyanna Norman, Komando.com

Older photo of Bill Gates and his family (L to R) daughter Jennifer, wife Melinda, daughter Phoebe, and son Rory.
Why Steve Jobs Didn’t Let His Kids Use iPads (And Why You Shouldn’t Either)

By Sarah Lesnar  

Posted on September 18, 2014
iPads:
“The One Thing Prince William and Kate Middleton Ban From Their Home”
Children, Screens and Social Media

Sleep
Bullying
Depression
Suicide
Disconnection
Eyes
Memory
Text Neck
Learning
Attention
Addiction,

Dopamine, neurotransmitter released because “reward” center of brain stimulated from return responses, video gaming, nonstop exciting content, flashing lights.
World Wide Action

**France**: Cell Phone Radiation Labeling, No advertising to children. Wi-Fi Banned in Kindergarten. Elementary: Wi-Fi off when not in use.

**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.

**India**: Phone 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

**French Polynesia**: Banned advertising cell phones to children under 14. Children should not use phones under 14. Awareness Campaign. And I'm going to show you...
French Polynesia Law & Public Awareness Campaign Launched

Children under 14 should not use cell phones- Place baby monitors at 2m distance-Keep Wi-Fi router at a distance

Governments Advise Reducing Cell Phone Radiation

United Kingdom  Russia  Switzerland  Finland  Ireland  Germany  
Belgium  Greece  Israel  Turkey  Austria  
Singapore  France  Denmark  India  Australia

https://ehtrust.org/policy/international-policy-actions-on-wireless/
United States

Massachusetts: 7 Bills on EMF Radiation
ADA Court Case Child with EHS
Ashland Public Schools: Wi-Fi Off devices when not in use.
Worcester Public Schools “How to Reduce RF Exposure” Webpage

Maryland: Council on Children and Environmental Health
Recommendations on Reducing RF in Schools
Recommends Developing Medical Guidelines For Device Use in Classroom

California: Berkeley Cell Phone Right To Know
San Francisco Webpage Reducing Cell Phone Radiation
CA Department of Public Health Cell Phone Advice (Court ordered release)

New York: Onteora Public Schools Wi-Fi Off devices when not in use.
NYSTU Teachers Union “Guidelines For Safer Use of Technology”
United Federation of Teachers Resources on How To Reduce Exposure

US Private Schools Removing/Reducing Wi-Fi in Classrooms
Public Schools: Device policies include keeping devices off laps, Wi-Fi OFF

“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.
"If you carry or use your phone in a pants or shirt pocket or tucked into a bra when the phone is ON and connected to a wireless network, you may exceed the federal guidelines for exposure to RF radiation. This potential risk is greater for children."

https://ehtrust.org/policy/the-berkeley-cell-phone-right-to-know-ordinance/
NOW THEREFORE, I, Mark Barron, Mayor of the Town of Jackson do hereby declare the month of October, 2012 as Cell Phone Awareness Month and, in so doing, urge citizens to become aware of the risks associated with prolonged cell phone use and to take steps necessary to mitigate these risks to themselves and the children in their care.

Original Proclamation
10 WAYS TO HELP REDUCE YOUR EXPOSURE.

The BabySafe Project

• 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.

http://www.babysafeproject.org