MOBILE RADIATION

By:
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This is the book in the bookstore. It’s an argument about how cell phone radiation has led to cancer.
Dr. Davis

- This is the Author. She’s not a lunatic. B.S. in physiological psychology and a M.A. in sociology from the University of Pittsburgh, 1967.
- She completed a Ph.D. in science studies at the University of Chicago as a Danforth Foundation Graduate Fellow, 1972.
- M.P.H. in epidemiology at the Johns Hopkins University as a Senior National Cancer Institute Post-Doctoral Fellow, 1982.
- She has also authored more than 190 publications in books and journals ranging from the Lancet and Journal of the American Medical Association to Scientific American and the New York Times and blogs in Freakonomics for the New York Times, Huffington Post and elsewhere.
Mobiles

- A device that can make and receive telephone calls over a radio link.
- It does so by connecting to a cellular network provided by a mobile phone operator, allowing access to the public telephone network.
Functioning

- A **transmitter** takes the sound of your **voice**
- **Encodes** it onto a continuous **sine wave**.
- The **encoded sound** has been placed on the sine wave
- The transmitter sends the **signal** to the **antenna**
- Which then sends the signal **out**.
Switching center figures out and keeps track of, the caller's number and the receiver's number.
• It was only 0.34 million mobiles in 1997, which has now grown to 919.18 million by 2012.
Mobile Radiation

• Cell phones emit signals via radio waves
• comprised of Mobile frequency (RF) energy, a form of electromagnetic radiation.
• Electromagnetic radiation is made up of waves of electric and magnetic energy moving at the speed of light.
• Most of the transmission signals are lost in space, as the signals are sent out 360 degrees from the cell's antenna. Only a small percentage hit the tower.

• Having a mobile tower within 50 mts is like being in a microwave oven for 24 hours
• Those living in a 50-300m radius face a high risk—much worse than smoking—as you cannot see or smell radiation.

• The **WHO** recently classified cell phone radiation with gasoline engine exhaust, lead and DDT.
SAR

• The Specific Absorption Rate is a measure of the amount of radio frequency (RF) energy absorbed by the body when using the handset. All cell phones emit RF energy and the SAR varies by handset model.

To sell a cell phone in the US, you must be under an SAR value of:

1.6 watts/kg

In Europe it’s: 2.0 watts/kg

The point is that YOU NEED TO BE UNDER 1.6 in order to be a cell phone in the United States. Be sure to read the highlighted text in the next slides VERY carefully.
entities of Japan, the European Union, and other countries. The exposure standard employs a unit of measurement known as the specific absorption rate, or SAR. The SAR limit applicable to iPhone set by the FCC is 1.6 watts per kilogram (W/kg), 1.6 W/kg by Industry Canada, and 2.0 W/kg by the Council of the European Union. Tests for SAR are conducted using standard operating positions (i.e., at the ear and worn on the body) specified by these agencies, with iPhone transmitting at its highest certified power level in all tested frequency bands. Although SAR is determined at the highest certified power level in each

connector pointed down toward your shoulder to increase separation from the antenna. When using iPhone near your body for voice calls or for wireless data transmission over a cellular network, keep iPhone at least 15 mm (5/8 inch) away from the body, and only use carrying cases, belt clips, or holders that do not have metal parts and that maintain at least 15 mm (5/8 inch) separation between iPhone and the body.

iPhone is designed and manufactured to comply with the limits for
...Even More Scary

From iPhone 4 Operations and Safety Manual

<table>
<thead>
<tr>
<th>Frequency Band</th>
<th>Body$^3$</th>
<th>Head</th>
<th>FCC &amp; IC 1g SAR Limit (W/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSM 850</td>
<td>1.11</td>
<td>1.00</td>
<td>1.6</td>
</tr>
<tr>
<td>GSM 1900</td>
<td>0.43</td>
<td>1.17</td>
<td>1.6</td>
</tr>
<tr>
<td>UMTS II 1900</td>
<td>0.43</td>
<td>1.17</td>
<td>1.6</td>
</tr>
<tr>
<td>UMTS V 850</td>
<td>1.11</td>
<td>1.00</td>
<td>1.6</td>
</tr>
<tr>
<td>Wi-Fi</td>
<td>0.07</td>
<td>0.88</td>
<td>1.6</td>
</tr>
</tbody>
</table>

But notice this footnote...

Everything looks good, it’s all under 1.6

<table>
<thead>
<tr>
<th>Frequency Band</th>
<th>Body$^3$</th>
<th>Head</th>
<th>EU 10g SAR Limit (W/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGSM 900</td>
<td>0.74</td>
<td>0.66</td>
<td>2.0</td>
</tr>
<tr>
<td>GSM 1800</td>
<td>0.28</td>
<td>0.59</td>
<td>2.0</td>
</tr>
<tr>
<td>UMTS I 2100</td>
<td>0.36</td>
<td>0.93</td>
<td>2.0</td>
</tr>
<tr>
<td>UMTS VIII 900</td>
<td>0.74</td>
<td>0.66</td>
<td>2.0</td>
</tr>
<tr>
<td>Wi-Fi</td>
<td>0.05</td>
<td>0.36</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Even More Scary

From iPhone 4 Operations and Safety Manual

iPhone's SAR measurement may exceed the FCC exposure guidelines for body-worn operation if positioned less than 15 mm (5/8 inch) from the body (e.g., when carrying iPhone in your pocket).

2 The device was tested by Compliance Certification Services, Fremont, CA according to measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01) and IEEE P1528.1, April 21 2003, and Canada RSS 102, Issue 4, March 2010. iPhone adheres to the European Council Recommendation of 12 July 1999 on the Limitation of Exposure of the General Public to Electromagnetic Fields [1999/519/EC].

3 iPhone positioned 15 mm (5/8 inch) away from the body.

Here’s the footnote to those numbers.

Which means...

• That there is a loop hole.

• All the SAR numbers were recorded AT a position OFF of the body.

• The manual explicitly states: the limit may be exceeded if it’s on your body. (read the entire previous slide again.)
Effects

Human

Environment
Effects on Human Health

- The case of a person using a cell phone, most of the heating effect will occur at the surface of the head, causing its temperature to increase by a fraction of a degree.
- The cornea of the eye when exposed to 2-3 hours can produce cataract as it does not have this temperature regulation mechanism.
1. Most common complaints:

- Memory loss, mental confusion
- Headaches
  - Induce extreme fatigue, sleep disorders.
- Create joint pain, muscle spasms, tremors

Depression, discomfort, irritation, nausea, appetite loss.
• palpitations of the heart, visual disorders, cardiovascular problems, respiratory problems.

• More severe reactions include seizures, paralysis, psychosis and stroke.

All these are related to changes in the electrical activity of the brain.
More Research

• Cell phones are proven to make sperm sluggish.

• Not recommended for Birth Control

Sailors on WWII ships used to stand in front of the radar beams on ships to stay warm. They also noticed that they became somewhat infertile for shore leave.

But sperm hit with normal cell phone radiation does become slow and almost defunct.
2. Cancer

Do cell phones cause brain cancer?

- There is an **increased** risk of tumors/cancer for long amounts of cell phone usage (1-hr) long conversations.

- Biological studies in rats. **Risk increases.**

- **Risk is tripled** in children and teenagers.

- Even a former Motorola engineer who worked on development of first portable cell phone (1983), found a brain tumor in him in 2002.
• Mobile phone use >10 years doubles risk of brain cancer.

• Cell phone use also increases risk of glioma, acoustic neuroma, salivary gland tumors, uveal melanoma, facial nerve tumors, skin, blood, testicular, and breast cancer.
3. Risk on Children

Children are more vulnerable as:

- Skulls are smaller & thinner - ↑’s radiation absorption
- ↑ rate of Cell division - more susceptible to genetic damage
- Myelin sheath not developed – brain wave activity
• **Bone marrow** in a child’s skull absorbs 10 times more microwave radiation than does an adult.

• Children and teenagers, before age of 20 - five times more likely to get brain cancer if they use cell phones.
Effect on Environment

• Effect on farm animals- Dairy cows that were kept in proximity to cell phone tower for two years had a reduction in milk production along with increased health problems and behavioral abnormalities.

• EMR from cell phone towers - diseases in plants & animals and is the reason for the vanishing butterflies, some insects and birds like sparrows.
• Vanishing Bees- A study showed that bees refused to return to their beehives.

• The cause was the recent increase in atmospheric electromagnetic radiation.

• The increased radiation given off by such devices interferes with bees’ ability to navigate.
Awareness Among People

Radiation and human
Citizens ensure warnings on cell
radiation are taken seriously

They feel govt needs to adopt more stringent factors for tower radiation and identify it as a problem

Mobile phones have become the 21st century version of cigarettes. Where the doctors were warning about its dangers, nobody listened

‘Mobile radiation ups cancer risk’

Solution Lies In Reducing Transmitted Power From Towers, Says Researcher

On this tower: Radio frequency fields near some antennas may exceed FCC rules for human exposure.

Persons climbing this tower should be trained for working in radio frequency environments and use a personal RF monitor.

Towers: “The high tech mobile towers in the cities are making the situation even more open microwaves,” warns Dr. Kuma.

Chary in the city of Shillong. Kuma has a reputation for his research on RF Health.

On this tower, where the national antenues on mobile phones and the co.

Dr. Kuma, the GMC’s director of occupational health and environmental studies, said that mobile communication systems have been identified as a significant source of cancer.

He opined that mobile communications were increasing the risk of cancer and advised the government to adopt stringent regulations.

‘Actor’s house vulnerable to radiation’

Illustration: A photo of a house with a radiation sign.

On this tower: Radiation levels are monitored to ensure safety.

A house in the city of Mumbai is identified as vulnerable to radiation from mobile towers.

The residents living near the towers, who are mostly children, are at high risk.

The government should take immediate action to protect the residents from harmful radiation.

Notice: Stay safe.

Radio frequency exposure may exceed exposure limits.

Before using your phone, please refer to the user manual.
Crazy?

Antonie van Leeuwenhoek 1676

Back in their days imagine scientists running around saying: “There are thousands/millions of invisible things all over you! And they may kill you!”

Well yeah, they’re called germs. But we don’t stop going outside...

WE WASH OUR HANDS
Wash Your Hands Digitally

• Don’t sleep with it under your pillow.
• Keep it away from your body (book bag front pocket).
• Don’t put it in your bra.
• Put keys facing you if in pocket. (antenna’s on back)
• Keep conversations short.
• Text more often.
• Use wired ear piece. Or BlueTooth (but turn off when not in use).
• **DO NOT** let kids use cell phones. +18
Radiation is strongest when the signal is very weak. In weak signal areas, the cell phone cranks up its power to connect to the base station.
Hold it at the bottom

By covering large areas of the phone with your hand, you reduce its ability to send and receive signals. The phone then increases its power and transmits stronger radiation to compensate this. So hold the phone as far down as possible, so it can operate at low power.

Tilting the phone away from your ear as you speak will help reduce radiation zapping your head when the cell is transmitting to the tower.
• Always hold the phone 2 inches from your ear and you will dramatically reduce the amount of radiation penetrating into your head.

• Keep the phone at least a foot away from your body and use the speakerphone setting.
• Use a headset. A wired headset may still transmit radiation through the wire – but it is at a reduced level.

• Best, is to purchase a ferrite bead, which is a clip you put on the wire of a headset. The bead absorbs the radiation and none reaches your head.
• Use a Bluetooth earpiece, which still emits radiation, but some models reduce the radiation by 100 times.

• Due to the constant low radiation of the blue tooth near the ear and therefore really close to your brain, one should take it out of the ear when not in use.
• Buy a low radiation phone.

OR

• Don’t Talk or Text!!!!!!
If you are cleaver......

Don’t call the other
Thank you ...
References

- http://www.disconnectbook.com/
- library.gatech.edu (Research Journal Database)
- Google. Read Articles.