Wireless Technology and Our Children’s Health: What Industry Isn’t Telling Us

March 26th, 2019
Eugene, Oregon, USA.

Ghandi et al, 1996

Paul Héroux, PhD
International expert in Electrobiology and Toxicology
McGill University Faculty of Medicine
Biologist Allan Frey
- Microwave hearing
- Blood-brain barrier leakage
- Chronic 24/7 exposure in focus
- Biology-based guidelines

Biophysicist Herman Schwan
- Heating experiments
- Field-force calculations
  Short, max 30 min exposure
  Physics-Thermal guidelines
In 1960, at a meeting between the American National Standards Institute, the US Navy and the Institute of Electrical and Electronics Engineers, it was found that a number of RF-MW limits were being used since 1953 by various groups.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>US Air Force</td>
<td>10 mW/cm²</td>
</tr>
<tr>
<td>General Electric</td>
<td>1 mW/cm²</td>
</tr>
<tr>
<td>Bell Laboratories</td>
<td>0.1 mW/cm²</td>
</tr>
<tr>
<td>Soviets</td>
<td>0.01 mW/cm²</td>
</tr>
</tbody>
</table>
1966 Health Standard on Electromagnetic Radiation developed by 15 people...

10 from the Armed Services,
1 from the Petroleum Institute,
1 from Space Administration,
1 from General Dynamics,
1 from the US Treasury, and
1 from the US Public Health Service.

This bias is maintained until today in the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the Federal Communications Commission (FCC).
Are exposures appropriate for a fighter pilot in his F-16 acceptable for your daughter in school?
A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation

BioInitiative Working Group 2012

Jitendra Behari, PhD, India
Pandulal Rajaraman, PhD, India
Carlo V. Bellina, MD, Italy
Igor Belinsky, Dr.Sc., Slovak Republic
Carl F. Blackman, PhD, USA
Martin Blank, PhD, USA
Michael Carberg, MSc, Sweden
David O. Carpenter, MD, USA
Zoreh Davanpour, DVM, PhD USA
Adnanmita F. Frangopoulou, PhD, Greece
David Gee, Denmark
Yuri Grigoriev, MD, Russia
Kjell Hansson Mild, PhD, Sweden
Lehnart Hardell, MD, PhD, Sweden
Martha Herbert, PhD, MD, USA
Paul Héroux, PhD, Canada
Michael Kundi, PhD, Austria
Henry Lai, PhD, USA
Yang Li, PhD, Canada
Abraham R. Liboff, PhD, USA
Lukas H. Margaritis, PhD, Greece
Henrietta Nitchy, MD, PhD, Sweden
Gerard Oberfeld, MD, Austria
Bertil R. Persson, MD, PhD, Sweden
Iole Pinto, PhD, Italy
Cindy Sage, MA, USA
Leif Salford, MD, PhD, Sweden
Eugene Sobel, PhD, USA
Amy Thomsen, MPH, MSPAS, USA
To widen the market and to narrow the competition, is always the interest of the dealers...
The proposal of any new law or regulation of commerce which comes from this order, ought always to be listened to with great precaution, and ought never to be adopted till after having been long and carefully examined, not only with the most scrupulous, but with the most suspicious attention.

It comes from an order of men, whose interest is never exactly the same with that of the public, who have generally an interest to deceive and even oppress the public, and who accordingly have, upon many occasions, both deceived and oppressed it.

Adam Smith
The Wealth Of Nations (1776)
Book IV, Chapter VIII, p. 145, paragraphs c29-30.

SMITH WARNS US ABOUT LETTING THE MERCHANTS MAKE THE RULES
How General Motors, Standard Oil and Du Pont colluded to make and market gasoline containing lead—a deadly poison—although there were safe alternatives. Abetted by the US government, they suppressed scientific knowledge that lead kills. Still sold in countries all over the world, leaded gasoline continues to poison the planet.
5G

ANTENNAS

DIRECTIONAL, STEERABLE BEAM FORMING

3-10° Width

Transmitter

Angle Controller

Group of Dipoles

MIG-31 FIGHTER 1981 ZASLON N007
**5G**

**DATA TRANSMISSION RATE**

**Shannon-Hartley Equation**

\[
\text{Capacity} \left( \frac{\text{Bits}}{\text{second}} \right) = \text{Bandwidth (Hz)} \times \frac{\text{Signal (Watts)}}{\text{Noise (Watts)}}
\]

![Diagram of existing cellular bands and new 5G bands](image)

Carrier Bandwidth: 0.002 GHz to 0.1 GHz to 1-2 GHz

**AIR TRANSPARENCY**

**ANTENNA APERTURE**

**Free Space Path Loss**

\[
\text{Free Space Path Loss (dB)} = 20 \log_{10}(d) + 20 \log_{10}(f) + 20 \log_{10} \left( \frac{4\pi}{c} \right)
\]

\(d \text{ in m, } f \text{ in Hz, Gains in dB, } c \text{ is speed of light in m/sec}

**RADIATION PENETRATION DEPTH**

At 10 GHz, penetration depth (37% of energy remains) is 5 mm, and at 50 GHz, it is 1 mm. All energy is concentrated in this region. Within the first mm of skin, cells are dividing, and the nervous system extends very superficially in human skin. Ultraviolet light, known to cause cancer, has a penetration depth less than 0.1 mm.
Radiofrequencies in Cars: A public health threat

SENSORS ARE DESIGNED AND LOCATED WITHOUT THINKING OF HUMAN EXPOSURES

RADARS AND WIRELESS SENSORS IN MODERN CARS
CANCER

Using laboratory experiments on cells, it has been obvious for years that the FCC limits do not protect us. Now, we have a succession of experiments on animals (rats and mice) that is entirely convincing.

Chou (1992)
Repacholi (1997)
Lerchl (2015)
NTP (2019)
Ramazzini (2019)

Experimenting on animals is the best method we have of predicting impacts on human populations. Take advice from 4,288 rats and 2,180 mice...or are they biased?

Not only is there overwhelming cell and animal evidence, but there is also human evidence from epidemiology.
The finding of a near fourfold increase of primary malignancies in the exposed animals is provocative. These data cannot be considered as an artifact because different statistical analyses led to similar results. Although the overall difference in numbers of primary malignancies is statistically significant, the biological significance of this difference is open to question. First, detection of this difference required the collapsing of sparse data without regard for the specific type of malignancy or tissue of origin. Also, when the incidence of the specific primary malignancies in exposed animals was compared with specific tumor incidence reported in the literature, the exposed animals had an incidence similar to that of untreated control rats of the same strain maintained under similar SPF conditions. It is important to note that no single type of primary malignancy was enhanced in the exposed animals.

From the standpoint of carcinogenesis and under the assumption that the initiation process is similar for both benign and malignant tumors, benign neoplasms have considerable significance. That treatment groups showed no difference in incidence of benign tumors is an important element in defining the promotion and induction potential of microwave radiation for carcinogenesis.
A second large study in animals confirming that cell phone radiation causes cancer.
National Toxicology Program
National Institutes of Health Public Health Service
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

LABORATORY TESTS (25 M$) CONFIRMING THE ABILITY OF CELL PHONE RADIATION TO CAUSE CANCER
A LARGE STUDY FROM ITALY RELEASED IN 2018 SHOWING THAT BASESTATION RADIATION CAN CAUSE CANCER
INTRODUCING
Anthony Miller, MD, FRCP, FRCP (C), FFPH, FACE,
University of Toronto School of Public Health
ab.miller@utoronto.ca

Dr. Miller is an eminent epidemiologist who supports the reclassification of Electromagnetic Radiation as International Agency for Research on Cancer Class 1, and is deeply concerned about brain cancer becoming the most frequent cancer among young Americans.

The American Brain Tumor Association has found that brain cancer is the highest cause of cancer deaths in ages 15-39, and the most common cancer among 15-19 year olds. There's also been an increase in Malignant Brain and Central Nervous System Tumors in American children. For ages 0-14 between 2000-2010, it has increased annually 0.6%/year. In ages 15-19, between 2000-2008, it has increased annually 1.0%/year.
Why we are particularly concerned with Children

1. They will be exposed longer to digital ElectroMagnetic Radiation over their lifetime.
2. Their developing tissues are more vulnerable.
3. Micro-Waves penetrate young brains more deeply (below).

Claudio.Fernandez@canoas.ifrs.edu.br

- In rat models, permanent changes have been recorded in the brain, and in practically every other important tissue structures for exposures of 2 h/day over one month to 20% of FCC limits (Chatham, 2016).
- Evidence of morphologically altered brain structure with mobile phone overuse in college students (Wang, 2016), and incidence of headache (Wang, 2017).
A STRONG TELECOMMUNICATIONS SYSTEM THAT MINIMIZES HUMAN EXPOSURES TO ELECTROMAGNETIC RADIATION

- Re-Design Cell Phone hardware
- Improve Cell Phone use habits and accessories
- Use Cellular Phones as intended, rather than as mobile entertainment centers
- Heavily favor Optical Fiber to the home (10 MGBy/s)
- Use LiFi

You are free to use WiFi in your home, if you wish, in the same way that you can smoke if you want. But you should not impose the exposure on others, many of which cannot tolerate it, and would need to escape society to survive.
Health Effects of Electromagnetism

McGill Course OCCH-605

Paul Héroux, PhD
Faculty of Medicine
McGill University
January 2019
paul.heroux@mcgill.ca

©2019 Paul Héroux
This text can be freely copied, distributed and used for formal and informal educational purposes.
http://www.invitroplus.mcgill.ca