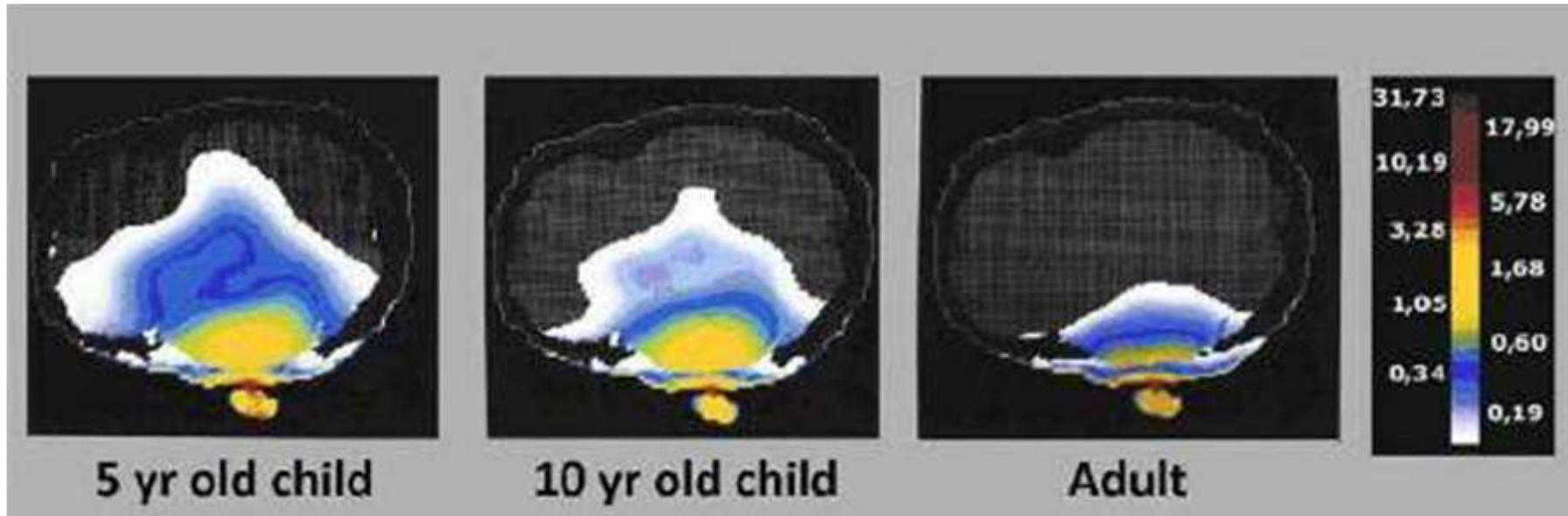


Wireless Technology and Our Children's Health: What Industry Isn't Telling Us



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



1960-1990

Debating the Microwave Danger

Some scientists believe the threat is small; others, including the Russians, believe it may be grave. Do they know something we don't?

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.

THE STANDARDS (1960) FOR EXPOSURE TO RADIO-FREQUENCY AND MICROWAVE RADIATION

US Air Force	10 mW/cm ²
General Electric	1 mW/cm ²
Bell Laboratories	0.1 mW/cm ²
Soviets	0.01 mW/cm ²

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?



IEEE

*Advancing Technology
for Humanity*

The world's largest professional association
for the advancement of technology



BioInitiative 2012

A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation

BioInitiative Working Group 2012

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BioInitiative Report: A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Radiation at
www.bioinitiative.org, December 31, 2012

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

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.

SMITH WARNS US ABOUT LETTING THE MERCHANTS MAKE THE RULES



The Nation.

SPECIAL REPORT BY JAMIE LINCOLN RITMAN

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.

THE SECRET HISTORY OF

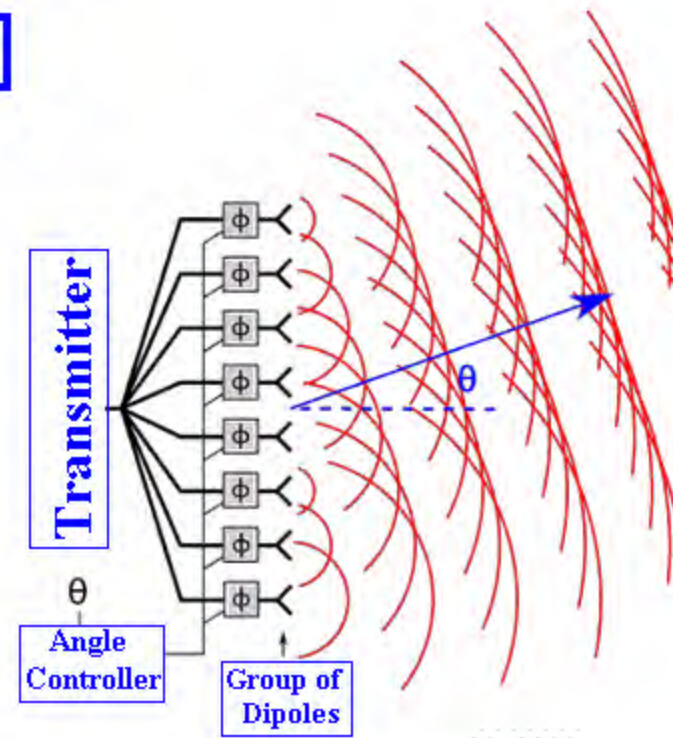
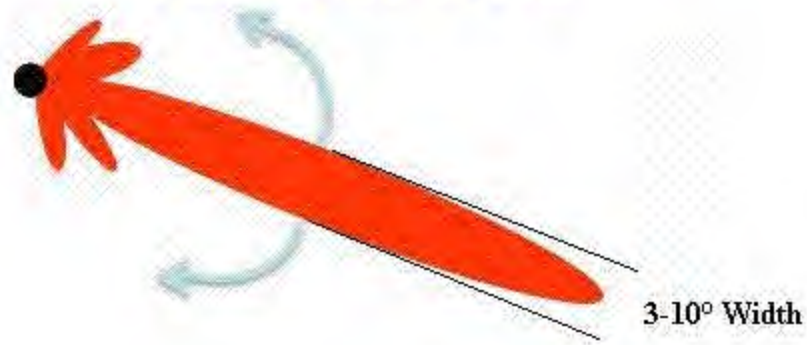
LEAD



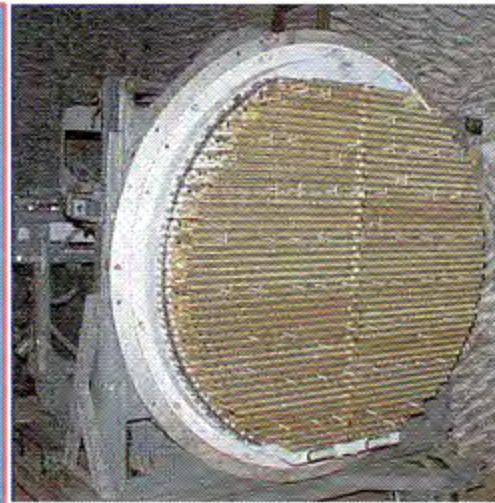
5G

ANTENNAS

DIRECTIONAL, STEERABLE BEAM FORMING



MIG-31 FIGHTER



1981

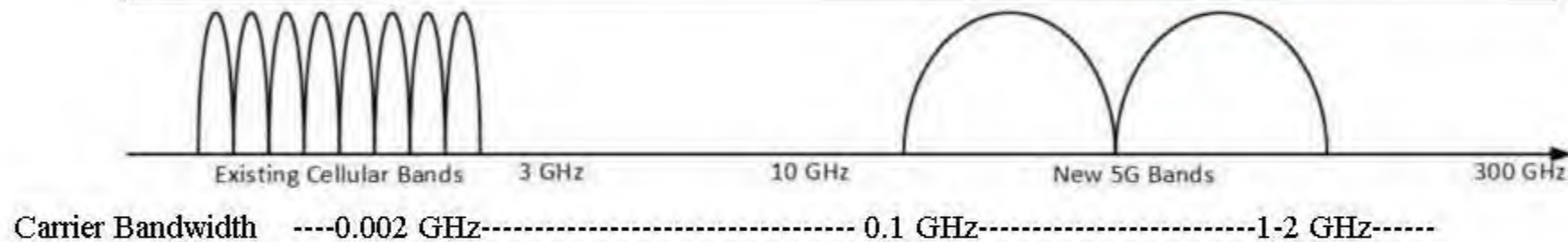
ZASLON N007

5G

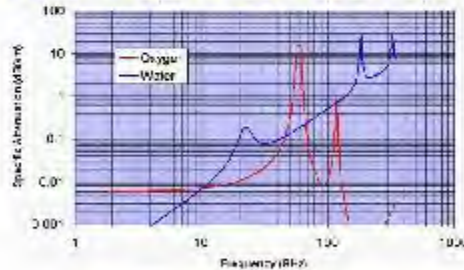
DATA TRANSMISSION RATE

Shannon-Hartley Equation

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



AIR TRANSPARENCY



ANTENNA APERTURE

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

d in m, *f* in Hz, Gains in dB, *c* 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

EMF presentation by Dr. Tit, Metsis 2017

Vehicle Sensors

Lane departure system

Night vision

Front object CCD camera

Front airbag sensors

ASCD

Nighttime pedestrian warning

Drowsiness sensors

Front object laser radar

Nighttime pedestrian warning IR sensor

Active park assist

Tire pressure sensor

SENSORS ARE DESIGNED AND LOCATED

WITHOUT THINKING OF HUMAN EXPOSURES

Rear object monitor CCD camera

Rear camera

Side curtain sensor

Blind spot detection

Cross traffic alert

Central computer

Rear object laser radar

Wheel speed sensor

Tire pressure sensor

Collision sensor

Side airbag SRS

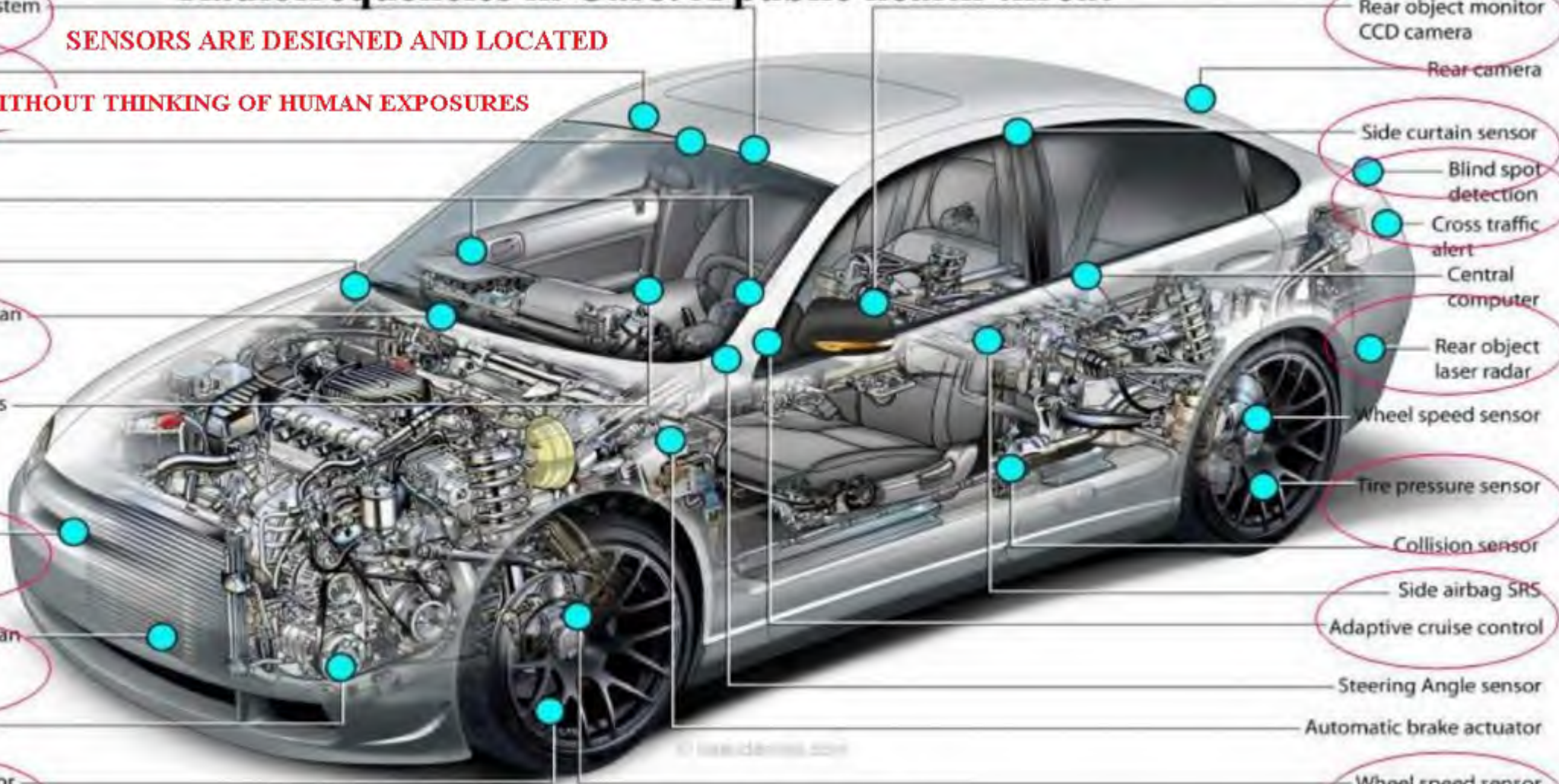
Adaptive cruise control

Steering Angle sensor

Automatic brake actuator

Wheel speed sensor

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.

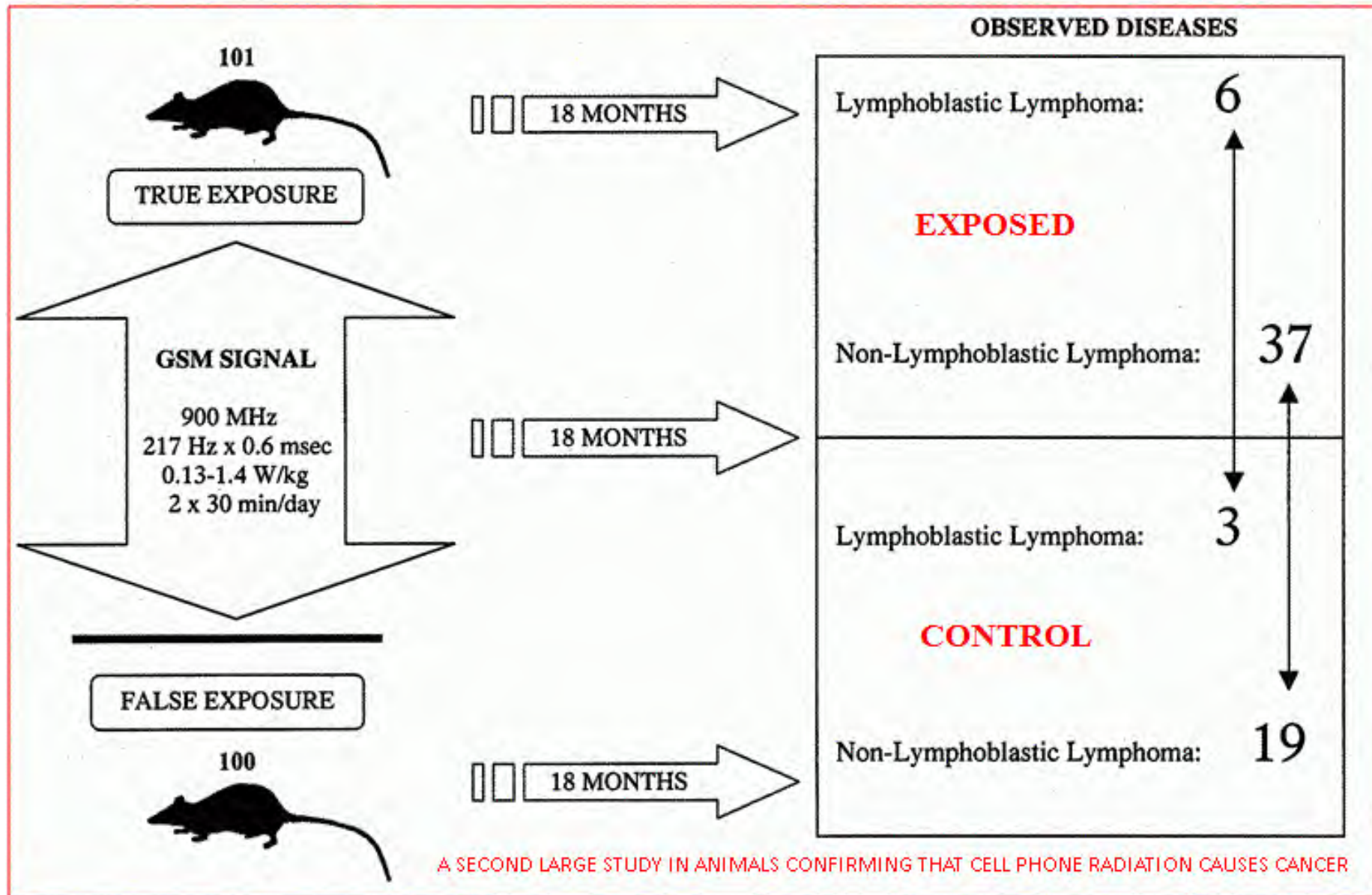
Chou, 1992

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.

ONE OF THE FIRST LARGE STUDIES IN ANIMALS CONFIRMING THAT CELL PHONE RADIATION CAUSES CANCER

Repacholi, 1997





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

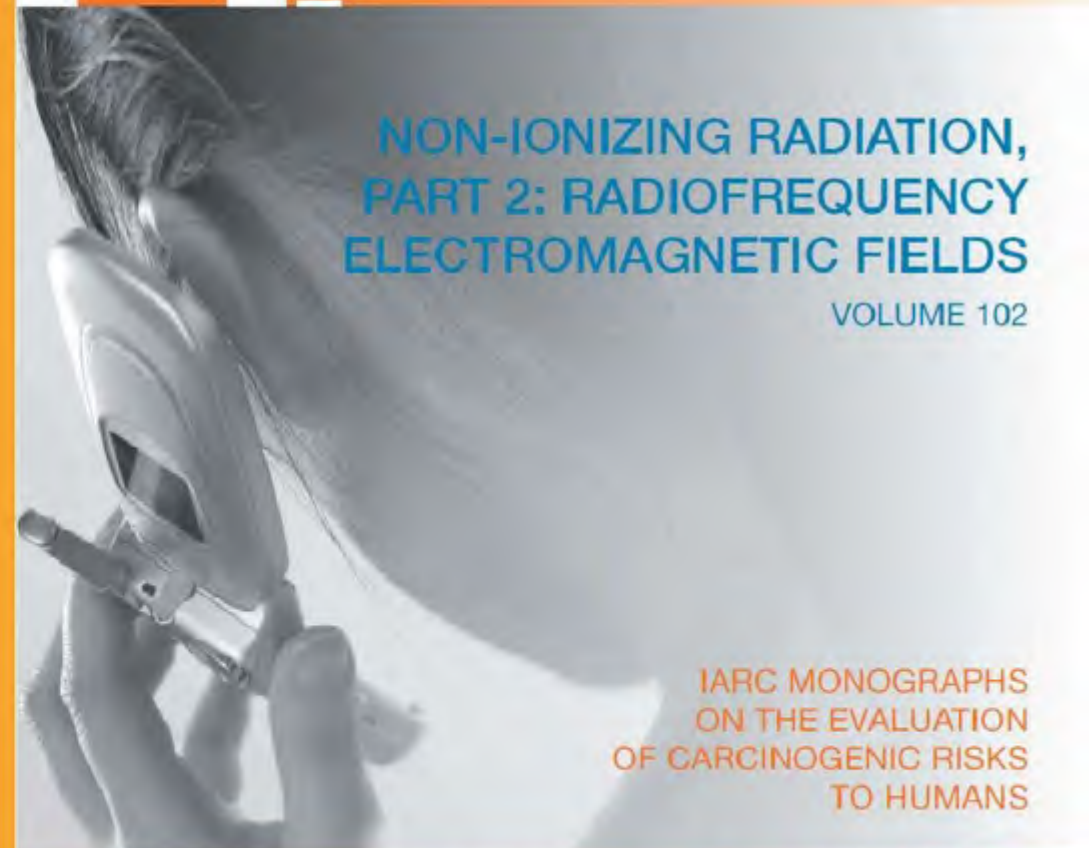
WORLD HEALTH ORGANIZATION
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER



IARC MONOGRAPHS ON THE EVALUATION OF CARCINOGENIC RISKS TO HUMANS

VOLUME 80
NON-IONIZING RADIATION, PART 1:
STATIC AND EXTREMELY LOW-FREQUENCY
(ELF) ELECTRIC AND MAGNETIC FIELDS

2002
IARC Press
L Y O N
F R A N C E



NON-IONIZING RADIATION, PART 2: RADIOFREQUENCY ELECTROMAGNETIC FIELDS

VOLUME 102

IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC RISKS
TO HUMANS

TWO MAJOR WORLD REPORTS ON CANCERS CAUSED BY ELECTROMAGNETIC RADIATION

International Agency for Research on Cancer
World Health Organization



INTRODUCING

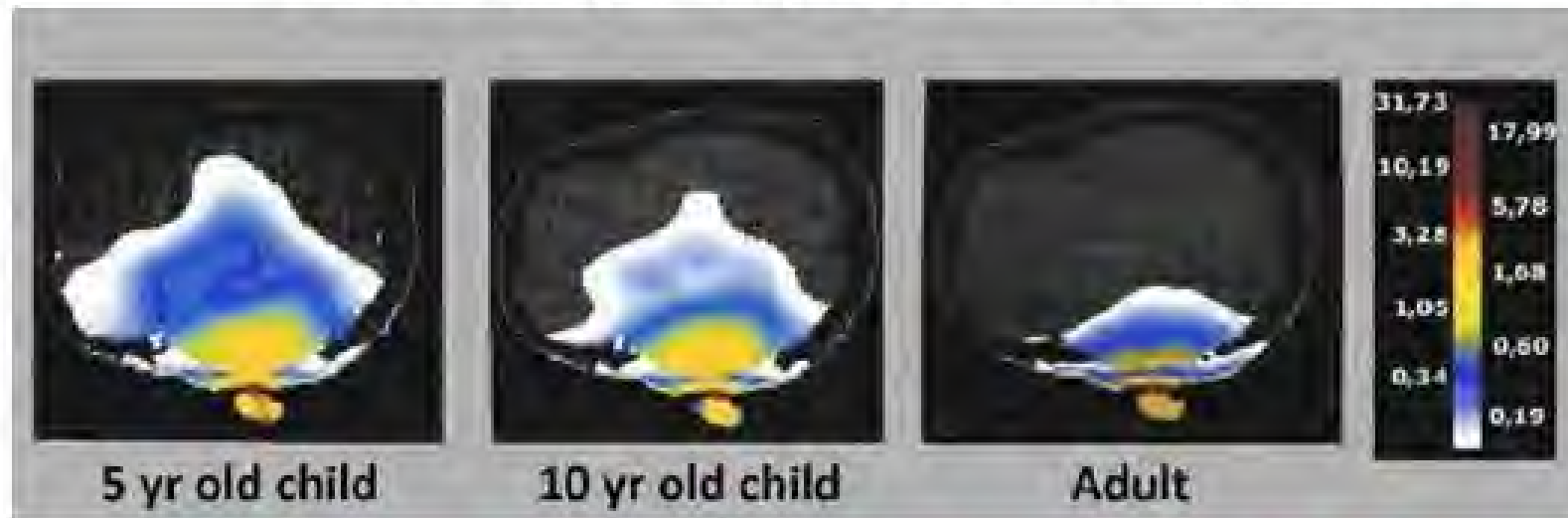
Anthony Miller, MD, FRCP, FRCP (C), FFPH, FACE,
University of Toronto School of Public Health
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Dr. Miller is an eminent epidemiologist who supports the reclassification of Electromagnetic Radiation as International Agency for Research on Cancer Class 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).

IEEE C95.1



A STRONG TELECOMMUNICATIONS SYSTEM THAT MINIMIZES HUMAN EXPOSURES TO ELECTROMAGNETIC RADIATION

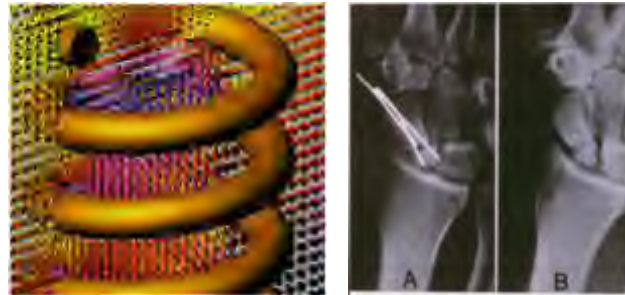
- Re-Design Cell Phone hardware
- Improve Cell Phone use habits and accessories
- Use Cellular Phones as intended, rather than as mobile entertainment centers
- Heavily favor Optical Fiber to the home (10 MGB/s)
- Use LiFi

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



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January 2019

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<http://www.invitroplus.mcgill.ca>