# 5G - An Undeniable Risk

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ctia™

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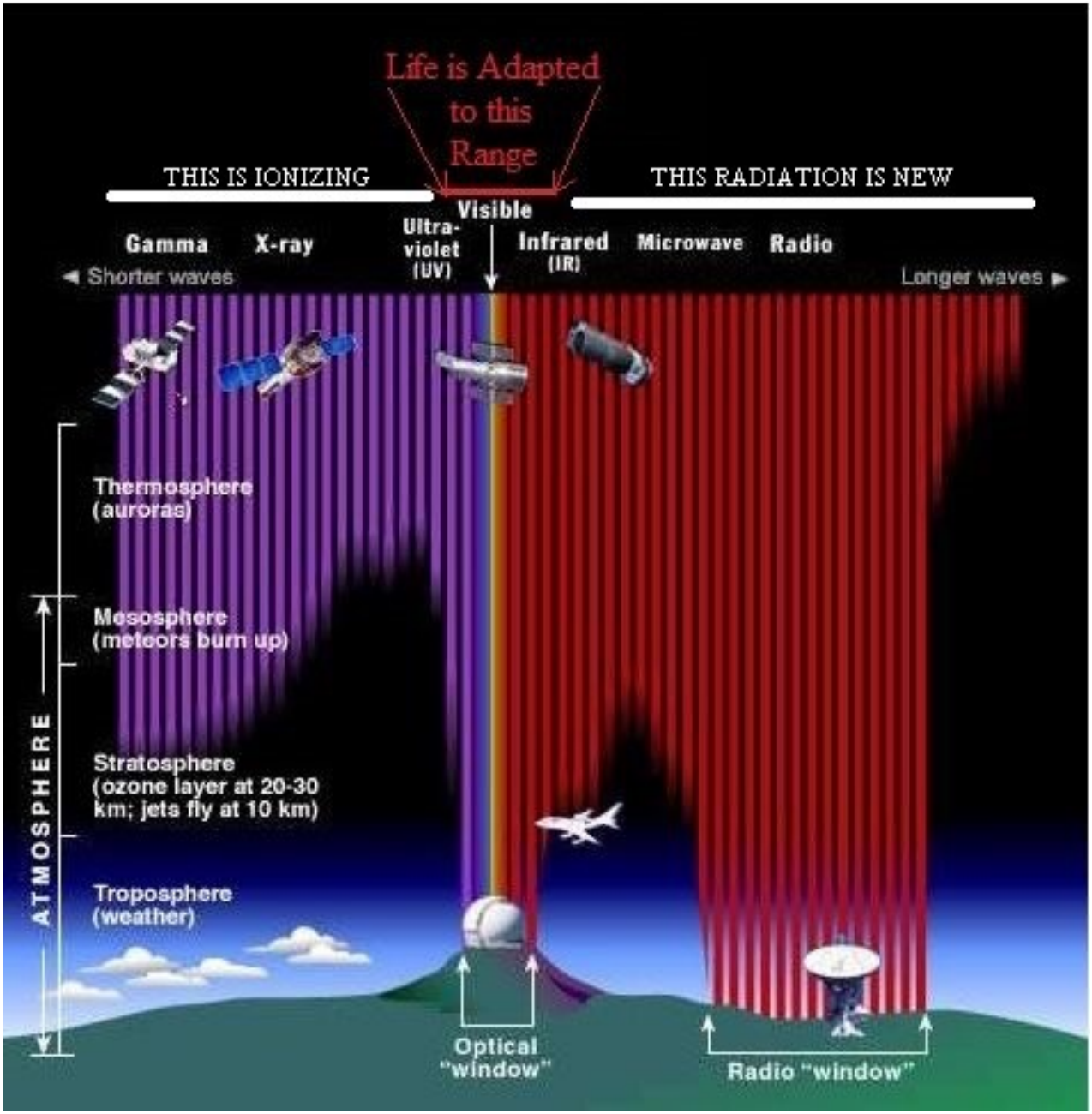
"… there is no convincing scientific evidence that the weak RF signals from base stations [cell towers] and wireless networks cause adverse health effects."

Industry will never be convinced and *always* deny any health impacts of RF.

This industry's discourse never changes:

"its non-ionizing", and
its "too weak".

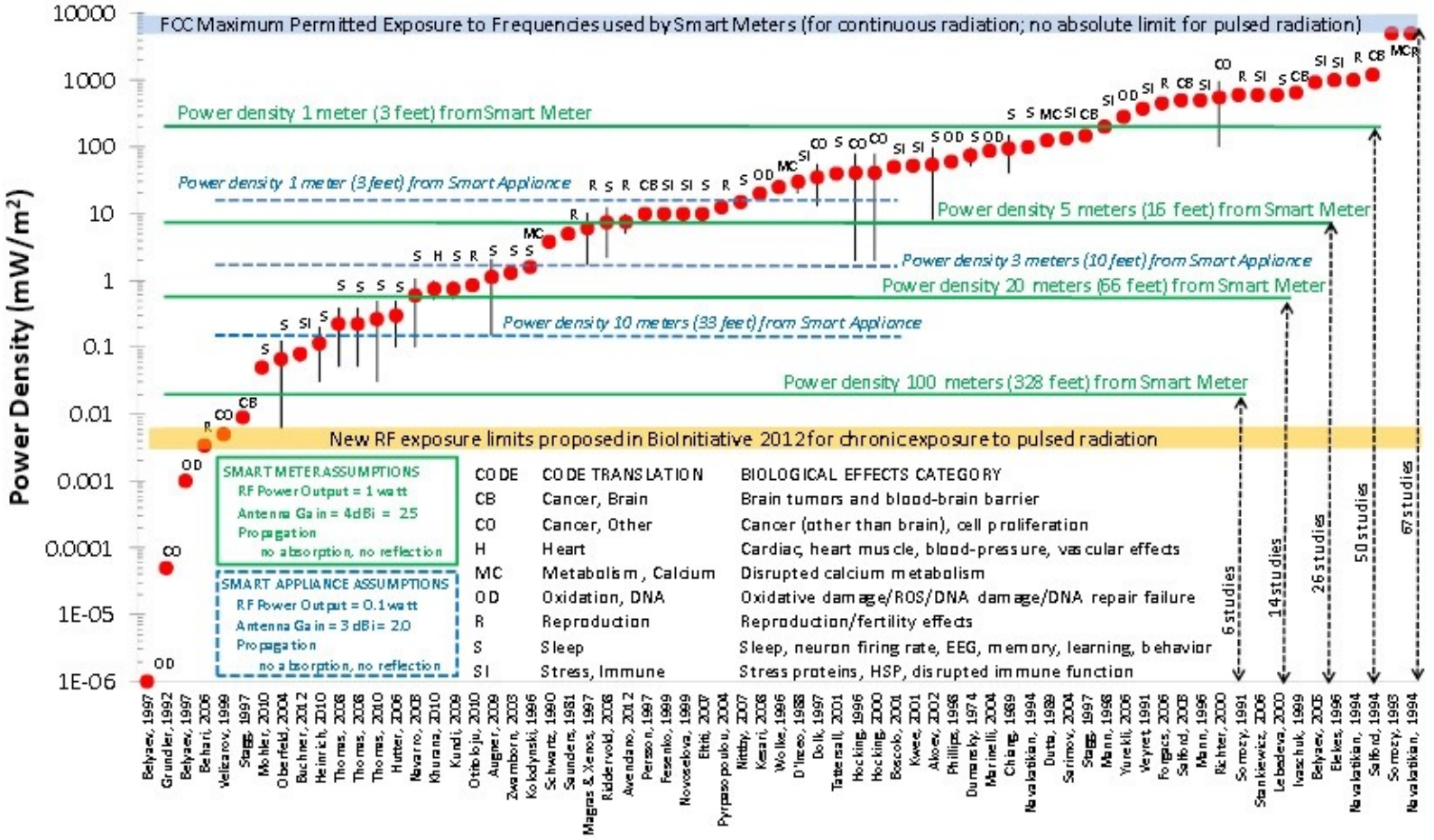

Life is Adapted to this Range
THIS IS IONIZING
THIS RADIATION IS NEW
Visible
Gamma
X-ray
Ultra-violet (UV)
Infrared (IR)
Microwave
Radio
Shorter waves
Longer waves
Thermosphere (auroras)
Mesosphere (meteors burn up)
Stratosphere (ozone layer at 20-30 km; jets fly at 10 km)
Troposphere (weather)
ATMOSPHERE
Optical "window"
Radio "window"

June 11, 2013

# Reported Biological Effects from RF Radiation at Low-Intensity Exposure in Each of the 67 Studies Referenced in the "BioInitiative 2012" Report (Cell Tower, Wi-Fi, Wireless Laptop, and Smart Meter Power Densities)

Ronald M. Powell, Ph.D.

Reference for data dots (red), data range indicators (vertical black lines through red dots), biological effects categories for the red dots, and new proposed limits (yellow line): BioInitiative Working Group, Cindy Sage and David O. Carpenter, Editors. BioInitiative Report: A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Radiation at www.bioinitiative.org, December 31, 2012. For references for other information on this chart, including the FCC Maximum Permitted Exposure limits, and the power densities of Smart Meters and Smart Appliances, see accompanying paper.



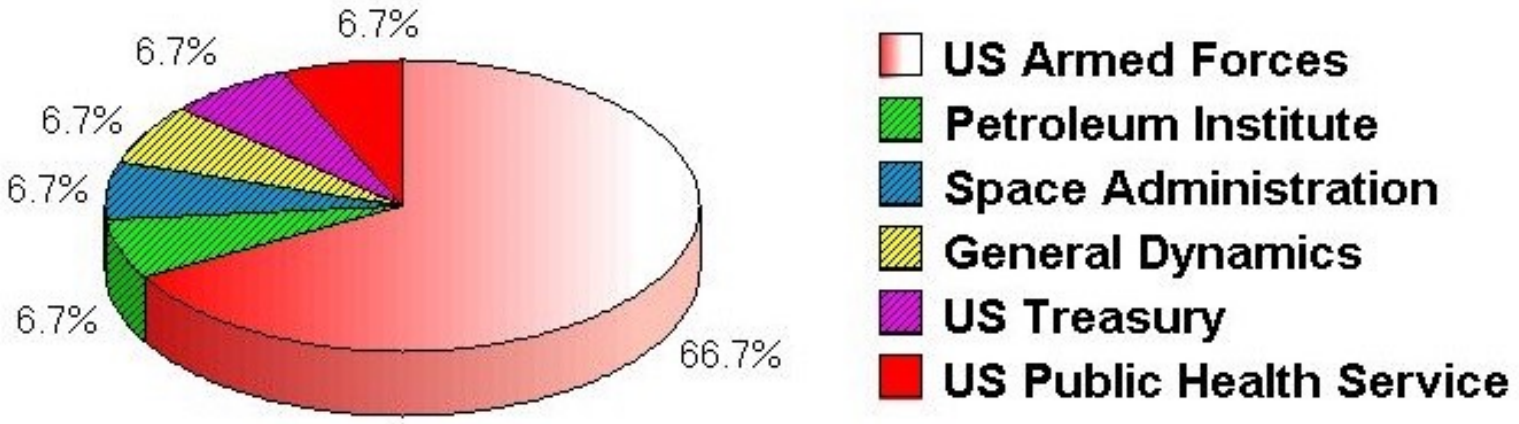
In 1960, at at a meeting between
the American National Standards Institute,
the US Navy and
the Institute of Electrical and Electronics Engineers,
it was found that a number of RF-MW limits were being used since 1953 by various groups.

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

| | |
|---|---|
| US Air Force | 10 mW/cm² |
| General Electric | 1 mW/cm² |
| Bell Laboratories | 0.1 mW/cm² |
| Soviets | 0.01 mW/cm² |

# Establishing High (thermal) Safety Limits

US IEEE C95.1-1966



These limits were later confirmed by the Institue of Electrical and Electronics Engineers using experiments on monkeys conducted by the US Navy (De Lorge 1984):

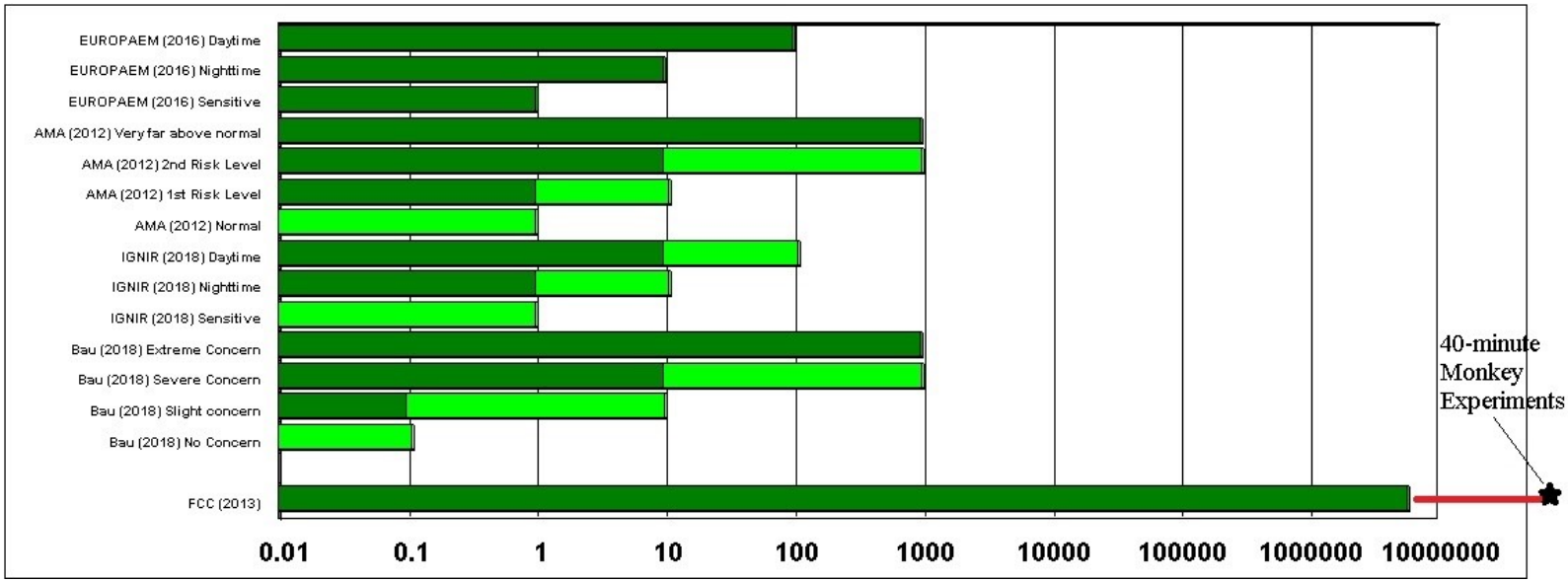
5 monkeys were irradiated for 40 minutes in 3 sessions at intensities so high that facial burns were produced on 3 of the 5 monkeys.
de Lorge measured the RF heat necessary for hungry monkeys to stop demanding food.

The FCC limits intended to protect you from RF are based on heating effects and are meaningless in terms of the long-term effects of the RF radiation.

# Animal Experiments on Cancer and Cellular Phones

Five large experiments with a total of
4,288 rats and 2,180 mice
show "clear evidence of carcinogenicity"…

-Chou (1992), US Air Force School Aerospace Medicine
-Repacholi (1997), Royal Adelaide Hospital, Australia
-Lerchl (2015), Life Sciences and Chemistry, Germany
-National Toxicology Program, USA (2019)
-Ramazzini Institute (2019), Italy


EUROPAEM (2016) Daytime
EUROPAEM (2016) Nighttime
EUROPAEM (2016) Sensitive
AMA (2012) Very far above normal
AMA (2012) 2nd Risk Level
AMA (2012) 1st Risk Level
AMA (2012) Normal
IGNIR (2018) Daytime
IGNIR (2018) Nighttime
IGNIR (2018) Sensitive
Bau (2018) Extreme Concern
Bau (2018) Severe Concern
Bau (2018) Slight concern
Bau (2018) No Concern
FCC (2013)
0.01
0.1
1
10
100
1000
10000
100000
1000000
10000000
40-minute
Monkey
Experiments

2,000 to 100,000 Gb/sec
2 km reach by single mode optical fiber
< 1 pJ/bit
5 G promises 10 Gb/sec

5G/*Internet of Things*

is obviously great to expand the semiconductor market,

BUT IS AN INFERIOR TECHNOLOGICAL CHOICE, AS

- it would increase human exposures to RF,
- new 5G radiation would be more intense and impulsive because of decreased penetration depth, beam-forming and MIMO,
- would have health impacts not only in electro hypersensitive people but in rates of cancer, diabetes, fertility and neurological diseases,
- is bad for global warming, as it is energy inefficient,
- is bad for privacy because radiation can be hacked.