**EMF Effects as Cited by Martin Pall, PhD.**

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PDF ‘Letter to Call’ California Legislators August 7, 2017

-link: https://bit.ly/3nNpKA9

90 page 5G EMF Hazards Paper

-link: https://tinyurl.com/8hy4bjk

**“EMFs act by activating channels in the membrane that surrounds each of our cells, called voltage-gated calcium channels (VGCCs). The EMFs put forces on the voltage sensor that controls the VGCCs of about 7.2 million times greater than the forces on other charged groups in our cells [4,6,7]. This is why weak EMFs have such large biological effects on the cells of our bodies! EMFs works this way not only on human and diverse animal cells [1-7] but also in plant cells [7] so that this is a universal or near universal mechanism of action. “**

**5G EMF Hazards Paper Summary**

1. Attack our nervous systems including our brains leading to widespread

neurological/neuropsychiatric effects and possibly many other effects.

2. Attack our endocrine (that is hormonal) systems. In this context, the main things that

make us functionally different from single celled creatures are our nervous system and

our endocrine systems

3. Produce oxidative stress and free radical damage, which have central roles in essentially

all chronic diseases.

4. Attack the DNA of our cells, producing single strand and double strand breaks in cellular

DNA and oxidized bases in our cellular DNA. These in turn produce cancer and also

mutations in germ line cells which produce mutations in future generations.

5. Produce elevated levels of apoptosis (programmed cell death), events especially

important in causing both neurodegenerative diseases and infertility.

6. Lower male and female fertility, lower sex hormones, lower libido and increased levels

of spontaneous abortion and, as already stated, attack the DNA in sperm cells.

7. Produce excessive intracellular calcium [Ca2+]i and excessive calcium signaling.

8. Attack the cells of our bodies to cause cancer. Such attacks are thought to act via 15

different mechanisms during cancer causation.

9) Therapeutic effects including stimulation of bone growth.

10) Cataract formation (previously thought to be thermal, now known not to be).

11) Breakdown of the blood-brain barrier.

12) Melatonin depletion and sleep disruption

**Chapters Outlined**

Chapter 1: Eight Extremely Well-Documented Effects of Non-Thermal EMF Exposures: Role of

Pulsations, Other Factors that Influence EMF Effects, pp. 4-17

Chapter 2: How Each Such EMF Effect Is Directly Produced via Voltage-Gated Calcium

Channel Activation: Role of the Voltage Sensor in Producing the Extraordinary Sensitivity to

EMF Effects, pp. 17-23

Chapter 3. Strong Evidence for Cumulative and Irreversible EMF Effects pp. 23-27

Chapter 4. EMFs Including Wi-Fi May Be Particularly Damaging to Young People pp. 27,28

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Chapter 5: The Importance of the SCENIHR 2015 Document and the Many Omissions, Flaws

and Falsehoods in That Document pp. 28-58

Chapter 6: The U.S. Early Role in Recognizing Non-Thermal EMF Effects and How This Was

Abandoned Starting in 1986: U.S. Failure to Research Health Impacts of Cell Phone Towers,

Cell Phones, Wi-Fi, Smart Meters and Now 5G. What Is the Current Position of U.S.

Government Agencies? pp. 58-78

Chapter 7: The Great Risks of 5G: What We Know and What We Don’t Know pp. 78-82