

[http://www.electromagnetic-pollution.com/main/page\\_biological\\_effects\\_exposure\\_tables.html](http://www.electromagnetic-pollution.com/main/page_biological_effects_exposure_tables.html)

## **BIOLOGICAL EFFECTS OF MICROWAVES BELOW U.S. & CANADA'S REGULATORY LIMIT**

### **(microW/cm<sup>2</sup>) Reported Biological Effects References**

- 0.00000000000001 Altered genetic structure in *E. Coli* Belyaev 1996
- 0.0000000001 Threshold of human sensitivity Kositsky 2001
- 0.000000001 Altered EEG in human subjects Bise 1978
- 0.0000000027 Growth stimulation in *Vicius fabus* Brauer 1950
- 0.00000001 Effects on immune system in mice Bundyuk 1994
- 0.00000002 Stimulation of ovulation in chickens Kondra 1970
- 0.000005 Effect on cell growth in yeast Grundler 1992
- 0.00001 Conditioned "avoidance" reflex in rats Kositsky 2001
- 0.000027 Premature aging of pine needles Selga 1996

### **0.001 100 Yards / metres from Cell Phone**

- 0.002 Sleep disorders, abnormal blood pressure, nervousness, weakness, fatigue, limb and joint pain, digestive problems, fewer schoolchildren promoted Altpeter 1995, 1997
- 0.0027 Growth inhibition in *Vicius fabus* Brauer 1950
- 0.0027 to 0.065 Smaller tree growth rings Balodis 1996

### **0.007 50 Feet from a Cordless Phone**

- 0.01 Human sensation Kolbun 1987

### **0.016 1 Mile (1.6Km) from a Cellular Tower**

- 0.06 Altered EEG, disturbed carbohydrate metabolism, enlarged adrenals, altered adrenal hormone levels, structural changes in liver, spleen, testes, and brain in white rats and rabbits Dumanskij 1974
- 0.06 Slowing of the heart, change in EEG in rabbits Serkyuk, reported in McRee 1980

### **0.05 10 Feet /3 meters from a Wireless Computer**

- 0.1 Increase in melatonin in cows Stark 1997
- 0.1 to 1.8 Decreased life span, impaired reproduction, structural and developmental abnormalities in duckweed plants Magone 1996
- 0.13 Decreased cell growth (human epithelial amnion cells) Kwee 1997
- 0.168 Irreversible sterility in mice Magras 1997
- 0.2 to 8.0 Childhood leukemia near transmitters Hocking 1996

- 0.3 Impaired motor function, reaction time, memory and attention of school children, and altered sex ratio of children (fewer boys) Kolodynski 1996
- 0.6 Change in calcium ion efflux from brain tissue Dutta 1986
- 0.6 Cardiac arrhythmias and sometimes cardiac arrest (frogs) Frey 1968
- 0–4 Altered white blood cell activity in schoolchildren Chiang 1989
- 1.0 Headache, dizziness, irritability, fatigue, weakness, insomnia, chest pain, difficulty breathing, indigestion (humans—occupational exposure) Simonenko 1998
- 1.0 Stimulation of white cells in guinea pigs Shandala 1978
- 2.5 Breakdown of blood-brain barrier (used a digital cell phone to radiate) Salford 1997
- 5.0 Leukemia, skin melanoma and bladder cancer near TV and FM transmitter Dolk 1997
- 2.0 (lower “Microwave hearing” - clicking, buzzing, chirping, hissing, or high-pitched threshold note tones known) Frey 1963, 1969, 1971, 1973, 1988, Justeson 1979, Olsen 1980, Wieske 1963, Lin 1978
- 5.0 Biochemical and histological changes in liver, heart, kidney, and brain tissue Belokrinitskiy 1982
- 10.0 Damaged mitochondria, nucleus of cells in hippocampus of brain Belokrinitskiy 1982a
- 10.0 Impaired memory and visual reaction time in people living near transmitters Chiang 1989
- 10.0 Decreased size of litter, increased number of stillborns in mice Il’Chevich (reported in McRee 1980)
- 10.0 Redistribution of metals in the lungs, brain, heart, liver, kidney, muscles, spleen, bones, skin, blood Shutenko 1981
- **1000.0 United States FCC Exposure Limit, Safety Code 6 Canada limit**

Used by Meg Sears, *Medical Perspective on Environmental Sensitivities*, Canadian Human Rights Commission, 2007.

Source: Arthur Firstenberg

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