

Some Biological Effects of Radio Waves

(Excerpted from "Radio Wave Packet" by Arthur Firstenberg, President, Cellular Phone Task Force, September 2001, also titled "Some Biological Effects of Radio Waves").

Power Density in <u>$\mu\text{W}/\text{cm}^2$ / $\mu\text{W}/\text{m}^2$</u>		Biological Effect	Study
0.00001	0.1	Conditioned avoidance response in rats.	Kositsky, 2001
0.000027	0.27	Premature aging of pine needles.	Selga, 1996
0.001	10.0	Roughly 100 yards from a cellular phone.	
0.002	20.0	Sleep disorders, abnormal BP, nervousness, weakness, fatigue, limb & joint pain, digestive problems (human children).	Altpeter, 1995, 97
0.01	100.0	Limit of human sensation.	Kolbun, 1987
0.016	160.0	Around 1 mile from a cellular phone tower	.
0.05	500.0	About 10 feet from a wireless computer.	
0.06	600.0	Altered EEG & carbohydrate metabolism, enlarged adrenals & adrenal hormone levels, structural changes in liver, spleen, testes, & brain (rats & rabbits).	Dumanskij, 1974
	<u>mW/m^2</u>		
0.3	3.0	Impaired motor function, reaction time, memory & attention (human children).	Kolodynski, 1996
0.35	3.5	Measured intensity 6 feet from cellphone.	
0.6	6.0	Change in calcium ion efflux from brain tissue. Cardiac arrhythmia & cardiac arrest (frogs).	Dutta, 1986 Frey, 1968
1.0	10.0	Headache, dizziness, irritability, fatigue, weakness, insomnia, chest pain, difficult breathing, indigestion (human occupational exposure) Stimulation of white blood cells (guinea pigs)	Shandala, 1978
2.5	25.0	Breakdown of blood-brain barrier (humans).	Salford, 1997
5.0	50.0	Biochemical & histological changes in liver, heart, kidney, & brain tissue. Leukemia, melanoma, & bladder cancer.	Belokrinitskiy, '82 Dolk, 1997
10.0	100.0	Damaged mitochondria & cell nuclei in hippocampus of brain. Impaired memory & visual reaction time. Redistribution of metals in lungs, brain, heart, Liver, kidney, muscles, spleen, bones, skin, & blood.	Belokrinitskiy, '82a Chiang, 1989 Shutenko, 1981
1000.0	10,000.0	FCC Exposure Limit	

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