

## **Submission by Environmental Health Trust on FCC Docket 19-226 Regarding Expanding Limits to Frequencies Down to 3 KHz**

ET Docket No. 19–226; FCC 19–126

### **All Links submitted by reference.**

Please also see our longer document on “Proposed FCC changes to Measuring and Evaluating Human Exposure to Radiofrequency Electromagnetic Fields and Wireless Power Transfer Devices are Flawed: need for biologically-based standards ( ET Docket No. 19–226; FCC 19–126; FRS 16618)”

The FCC wants to expand regulatory limits to frequencies down to 3 KHz. We believe it is premature because there is no human health and environmental impact data showing a safe level. Instead there is a growing base of scientific evidence showing adverse effects at levels below ICNIRP limits.

It is our professional opinion that the agency should not move forward with the above proposal and needs to develop safety standards that protect against long-term health and environmental effects. Further, the agency should provide revised standards for testing and monitoring that reflect submitted peer-reviewed evidence that protection is required against biological effects from current levels of non-ionizing radiation. ET 19-226 closes dockets opened since 2013, fails to take seriously the hundreds of peer-reviewed publications and other expert comments submitted as part of this docket, uncritically adopts the minority scientific guidelines developed by ICNIRP for internal fields in the frequency band below 3 GHz and extends them to those up to 3,000 GHz. In adopting ICNIRP positions of a group of 13 scientists many of which have close ties to industry, the agency also fails to take into account the fact that the majority including several hundred experts in the fields of bioelectromagnetics and related matters strongly dissent from the conclusions of ICNIRP, which remains a self-appointed self-governing minority group that has no independent oversight or accounting for its funding.

This document has citations to selected references showing such effects, clearly indicating that non-ionizing radiation cannot be assumed safe.

Kaiser Permanente researchers have published several studies linking pregnant women’s exposure to magnetic field electromagnetic fields to not only increased [miscarriage](#) and but also increased [ADHD](#), [obesity](#) and [asthma](#) in the woman’s prenatally exposed children.

In 2001, the World Health Organization’s International Agency for the Research on Cancer [classified](#) ELF magnetic fields as “possibly carcinogenic to humans” based on the consistent research finding a two-fold increase in childhood leukemia associated with residential exposure

to magnetic fields. The research finding effects has increased since that date. Clearly safety cannot be assumed.

### **World Health Organization/ International Agency for Research on Cancer**

International Agency for Research on Cancer. (2001). Press Release [\*IARC finds limited evidence that residential magnetic fields increase risk of childhood Leukaemia\*](#). Retrieved from <http://archive.li/pZxs3#selection-601.0-601.97>

World Health Organization International Agency For Research On Cancer. (2002). [\*Non-ionizing radiation, part 1: Static and extremely low-frequency \(elf\) electric and magnetic fields\*](#). Lyon: World Health Organization.

National Institute of Environmental Health Sciences EMF-RAPID Program Staff. (1999). [\*Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields\*](#). Research Triangle Park: National Institutes of Health. Retrieved from [https://www.niehs.nih.gov/health/assets/docs\\_p\\_z/report\\_powerline\\_electric\\_mg\\_predates\\_508.pdf](https://www.niehs.nih.gov/health/assets/docs_p_z/report_powerline_electric_mg_predates_508.pdf)

### **CALIFORNIA EMF PROJECT REPORT**

Neutra, R., DelPizzo, V., & Lee, G. (2002). [\*An evaluation of the possible risks from electric and magnetic fields \(emfs\) from power lines, internal wiring, electrical occupations, and appliances\*](#). Oakland: California EMF Program.

### **Published Studies (Published Research on Powerlines Magnetic and Electric Fields)**

Li D, Chen H, Ferber JR, Hirst AK, Odouli R. [\*Association Between Maternal Exposure to Magnetic Field Nonionizing Radiation During Pregnancy and Risk of Attention-Deficit Hyperactivity Disorder in Offspring in a Longitudinal Birth Cohort\*](#). JAMA Network Open. 2020;3(3):e201417. doi:10.1001/jamanetworkopen.2020.1417

Li, D., Ferber, J., Odouli, R., & Quesenberry, C. (2012). [\*A Prospective Study of In-utero Exposure to Magnetic Fields and the Risk of Childhood Obesity\*](#). Scientific Reports, 2(1). <https://doi.org/10.1038/srep00540>

Li, D. (2011). [\*Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring\*](#). Archives Of Pediatrics & Adolescent Medicine, 165(10), 945. <https://doi.org/10.1001/archpediatrics.2011.135>

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Carles, C., Esquirol, Y., Turuban, M., Piel, C., Migault, L., & Pouchieu, C. et al. (2020). [Residential proximity to power lines and risk of brain tumor in the general population](#). *Environmental Research*, 185, 109473. <https://doi.org/10.1016/j.envres.2020.109473>

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Soffritti, M., Tibaldi, E., Padovani, M., Hoel, D., Giuliani, L., & Bua, L. et al. (2016). [Synergism between sinusoidal-50 Hz magnetic field and formaldehyde in triggering carcinogenic effects in male Sprague-Dawley rats](#). *American Journal Of Industrial Medicine*, 59(7), 509-521. <https://doi.org/10.1002/ajim.22598>

Soffritti, M., Tibaldi, E., Padovani, M., Hoel, D., Giuliani, L., & Bua, L. et al. (2016). [Life-span exposure to sinusoidal-50 Hz magnetic field and acute low-dose  \$\gamma\$  radiation induce carcinogenic effects in Sprague-Dawley rats](#). *International Journal Of Radiation Biology*, 92(4), 202-214. <https://doi.org/10.3109/09553002.2016.1144942>

Juutilainen, J., Kumlin, T., & Naarala, J. (2006). [Do extremely low frequency magnetic fields enhance the effects of environmental carcinogens? A meta-analysis of experimental studies](#). *International Journal Of Radiation Biology*, 82(1), 1-12. <https://doi.org/10.1080/09553000600577839>

Turner, M., Benke, G., Bowman, J., Figuerola, J., Fleming, S., & Hours, M. et al. (2014). [Occupational Exposure to Extremely Low-Frequency Magnetic Fields and Brain Tumor Risks in the INTEROCC Study](#). *Cancer Epidemiology Biomarkers & Prevention*, 23(9), 1863-1872. <https://doi.org/10.1158/1055-9965.epi-14-0102>

Li, Y., & Héroux, P. (2019). [Magnetic Fields Trump Oxygen in Controlling the Death of Erythro-Leukemia Cells](#). *Applied Sciences*, 9(24), 5318. <https://doi.org/10.3390/app9245318>

Zendehdel, R., Yu, I., Hajipour-Verdom, B., & Panjali, Z. (2019). [DNA effects of low level occupational exposure to extremely low frequency electromagnetic fields \(50/60 Hz\)](#). *Toxicology And Industrial Health*, 35(6), 424-430. <https://doi.org/10.1177/0748233719851697>

Tiwari, R., Lakshmi, N., Bhargava, S., & Ahuja, Y. (2014). [Epinephrine, DNA integrity and oxidative stress in workers exposed to extremely low-frequency electromagnetic fields \(ELF-EMFs\) at 132 kV substations](#). *Electromagnetic Biology And Medicine*, 34(1), 56-62. <https://doi.org/10.3109/15368378.2013.869755>

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