

To Whom It May Concern:

Dear Sirs/Madams:

I am Scientist Emeritus and Former Director of the National Institute of Environmental Health Sciences and National Toxicology Program of the National Institutes of Health. I am currently a Scholar in Residence at the Nicholas School of the Environment at Duke University.

Wireless networks, cell towers and cell phones create radiofrequency radiation emissions. U.S. FCC limits for human exposure to radiofrequency were last reviewed in 1996 and based on the assumption that heating is the only harmful effect. Aware that the FCC's 1996 limits lacked the underpinning of solid scientific data regarding long term health effects, the FDA requested large-scale studies by the National Toxicology Program (NTP) and in 2018 the NTP studies found clear evidence of an association with cancer in male rats. Additionally, the NTP found heart damage and DNA damage, despite the fact that the animals were carefully exposed to non-heating RFR levels long assumed to be safe. The Ramazzini Institute animal studies used even lower RFR lower exposures to approximate cell tower emissions and also found increases of the same tumor type. The NTP studies were carefully controlled to ensure exposures did not significantly heat the animals. The animal study findings in combination with human studies indicate adverse effects from non heating levels of radiofrequency.

I document the importance of the NTP findings of effects from non thermal exposures in my declaration in [an Amicus Brief](#) for the case Environmental Health Trust et al v. the FCC. The August 13, 2021 judgment ordered the FCC to address several issues including the health implications of long term exposures.

A mounting body of published studies associates radiofrequency radiation with adverse negative health effects. FCC limits need to be strengthened to protect the public, especially children and vulnerable populations, from long term exposures.

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National Toxicology Program Radiofrequency Radiation  
<https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>

Amicus Brief of Joe Sandri, August 5, 2020  
<https://ehtrust.org/wp-content/uploads/20-1025-Amicus-Brief-Joe-Sandri.pdf>

Falcioni et al., Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission, Environmental Research, Volume 165, 2018, Pages 496-503 DOI: [10.1016/j.envres.2018.01.037](https://doi.org/10.1016/j.envres.2018.01.037)

Priyanka Bandara, David O Carpenter, [Planetary electromagnetic pollution: it is time to assess its impact](https://doi.org/10.1016/S2542-5196(18)30221-3), The Lancet Planetary Health, Volume 2, Issue 12, 2018, Pages e512-e514,ISSN 2542-5196, [https://doi.org/10.1016/S2542-5196\(18\)30221-3](https://doi.org/10.1016/S2542-5196(18)30221-3).

Schuermann D, Mevissen M. [Manmade Electromagnetic Fields and Oxidative Stress—Biological Effects and Consequences for Health](https://doi.org/10.3390/ijms22073772).International Journal of Molecular Sciences. 2021; 22(7):3772. <https://doi.org/10.3390/ijms22073772>

Smith-Roe SL., et al., [Evaluation of the genotoxicity of cell phone radiofrequency radiation in male and female rats and mice following subchronic exposure](https://doi.org/10.1016/j.envmol.2020.01.001), Environ Mol Mutagen 2020; 61 (2): 276-290