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To: New Hampshire House Science, Technology and Energy Committee.
Public Hearing: 01/30/2024 11:00 am Legislative Office Building

From: Cindy Russell, MD
Executive Director of Physicians for Safe Technology

Re: Strong support of New Hampshire-HB1487- AN ACT relative to the health effects of 5G technology. **A Yes vote is requested.**

Date: Jan 28, 2024

Dear Committee Members:

We are very pleased to see New Hampshire bipartisan bill HB 1487 (Rep Jason Gerhard-R and Lucius Parshall-D) before you and strongly encourage its passage through your committee and to passage at the state level. Your state has already shown its wisdom and foresight in passing HB 522, AN ACT establishing a commission to study the environmental and health effects of evolving 5G Technology (Rep Patrick Abrami-R and Sen Thomas Sherman-D), signed by Governor Sununu in 2019, which set up the first commission in the United States to look at this important issue. The independent New Hampshire 5G Commission provided the state, and beyond, a transparent, scientific, and through examination of the public health issues surrounding 5G technology and wireless technology in general. Their 15 recommendations are a testimony to the effort and integrity of this influential commission.

HB 1487 addresses many of the goals raised in the New Hampshire commission report by encouraging deployment of safer technologies such as fiberoptic; increasing awareness and education on safe technologies in schools as well as for the public; and monitoring and mapping radiofrequency radiation for public safety. It is well crafted legislation that will protect public health and the environment of New Hampshire for future generations. It is long overdue.

The reason this is important to address, as you may know, is the growing body of evidence revealing the biological and negative human health impacts of wireless technology. This radiofrequency radiation acts as a toxicant similar to a chemical toxin, with oxidative stress on the organism. Different people will have different tolerances to this radiation. Children are the most vulnerable and must be protected.

Background

Physicians are concerned about both the long-term and short-term effects of nearby cell towers. Signs of microwave illness that some experience rapidly in the presence of cell towers include headache, dizziness, heart palpitations, fatigue, poor concentration, anxiety, confusion and insomnia. Long term health harm includes cancer, reproduction, neurologic decline, immune system and endocrine disruption. Research below supports this bill.



Brain and Nervous System Effects

The brain and nervous system are considered to be a primary target of wireless non-ionizing radiation, as nerves function by using minute electrical signals. Effects of wireless radiation on the nervous system demonstrated in studies include DNA damage, alteration of neural functioning (cognition and learning), decrease in neurotransmitters (mood altering), oxidative nerve cell injury and inflammation, damage to hippocampus (memory center) and demyelination (disruption of the protective cells surrounding nerves). Studies of Wi Fi routers, cell phones, as well as cell towers show adverse neurologic effects including memory, behavior and cognition.

Cell Tower Neurologic and Cognition Effects

Dozens of studies show neurologic and other health effects in residents who live in proximity to cell towers. The severity of health effects is dependent on the distance from the towers. The most common symptoms are fatigue followed by insomnia, headache, poor concentration, memory loss, irritability, heart palpitations and skin effects. **Santini (2002)** noted the above symptoms when cell towers were within 200-300 meters to homes. A follow up study Santini in 2003 revealed that older subjects reported more symptoms and were more sensitive. The authors noted that the duration of exposure of 1 to 5 years did not have an effect on frequency of symptoms but after 5 years there was a significant increase in irritability reported.

In an independent cell tower study from Japan, **Shinjo and Shinjo (2011)**, looked at the health effects of residents living in a condominium complex from 1998-2009, both before and after cell towers were placed. The authors surveyed the resident's health symptoms before placement of cell towers, during cell tower functioning and after removal of different antennas on the rooftops. They found a significant development of neurologic symptoms with placement of the cell towers and a significant reduction in symptoms after removal.

Meo (2018) studied the effects of cell towers near 2 high schools and found cognitive changes after 2 years in the teenagers near the higher emitting cell antenna. This 2-year case-controlled study examined the neurologic effects of children, aged 13-16, in schools with nearby cell towers. The study revealed significant decline in cognitive scores when the radiation from the cell tower was higher but still at non-thermal levels. **All levels were below current ICNIRP exposure guidelines.** Cognitive function tasks were measured by the Cambridge Neuropsychological Test Automated Battery (CANTAB). Participants were excluded who had any confounding factors. Students in the school with higher exposure to RF-EMF produced by cell towers was associated with delayed fine and gross motor skills, spatial working memory, and attention compared to students in the school who were exposed to lower RF-EMF.

Cell Tower Cancer Effects

A 10-year study (1996-2006) by Dode (2011) examined the distance from cell towers and cancer clusters. He and his colleagues found a highly significant increase in cancers in those living within 500 meters of the cell tower. They noted "The largest density power was 40.78 $\mu\text{W}/\text{cm}^2$, and the smallest was 0.04 $\mu\text{W}/\text{cm}^2$." The current guidelines are about 1000 $\mu\text{W}/\text{cm}^2$, thus even at lower power long term effects are evident. The authors conclude "Measured values stay below Brazilian Federal Law limits that are the same of ICNIRP. The human exposure pattern guidelines are inadequate. More restrictive limits must be adopted urgently." A study by Wolf and Wolf (2004) showed a significant increase in cancer in those living within 350 feet of a cell tower. Eger (2004) found an increase in new cancer cases within a 10-year period if residents lived within 400 meters of a cell tower. They also found that within 5 years of operation of the transmitting base station the relative risk of cancer incidence tripled in residents near the cell tower compared to resident living outside the area.

Review of Health Effects of Cell Towers 2022

In August 2022 the biologist and respected researcher Alfonso Balmori published a thorough review of the existing scientific literature on the health effects of base station (cell tower) antennas on humans titled, [Evidence for a health risk by RF on humans living around mobile phone base stations: from radiofrequency sickness to cancer](#). Three effects were noted 1) radiofrequency sickness 2) cancer and 3) changes in biochemical parameters. He states, “Considering all the studies reviewed globally (n = 38), 73.6% (28/38) showed effects: 73.9% (17/23) for radiofrequency sickness, 76.9% (10/13) for cancer and 75.0% (6/8) for changes in biochemical parameters...*Of special importance are the studies performed on animals or trees near base station antennas that cannot be aware of their proximity and to which psychosomatic effects can never be attributed.*”

500 Meter Buffer Recommended Around Schools and Hospitals to Limit Liability

Pearce (2019) looked at health effects of cell towers, publishing a peer reviewed industry paper, Limiting liability with positioning to minimize negative health effects of cellular phone towers, which recommends a 500 Meter buffer recommended around schools and hospitals to limit liability. Pearce noted that current U.S. Law is Unhelpful for Preventing Future Liability. “Current U.S. law has created a somewhat peculiar overriding federal preemption that precludes taking the “environmental effects” of RFR into consideration in cell tower siting (see Section 704 of The Telecommunications Act of 1996). The current U.S. standards are based solely on thermal effects... because scientific knowledge is incomplete, a precautionary approach is better... To overcome these challenges in urban areas cellphone companies often locate cellphone base stations at schools, because the monthly rental fee (~\$1500) is welcome income for economically-challenged school districts that have influence on local zoning. However, some jurisdictions have already prohibited the placement of cell phone towers near schools or hospitals because of the increased sensitivity of these populations, as in India... voluntarily restrictions can be made on the placement of cellular phone base stations within 500 m of schools and hospitals.”

Electromagnetic Hypersensitivity

Electromagnetic hypersensitivity (EHS) to wireless radiation is increasingly recognized as a disability and environmental illness in both children and adults (Bevington 2019). Variable symptoms which occur in some individuals in the presence of wireless devices include headaches, fatigue, dizziness, nausea, and heart palpitations. Predisposing factors include chemical sensitivities, prior toxic exposures, infections, impaired immune systems and genetic variation. It is estimated that 5%-30% of the population has mild EHS and 0.65% have a severe disability and cannot work or go to school due to wireless devices and infrastructure present. A young woman, Jenny Fry, from the UK committed suicide after becoming severely electrosensitive when the new Wi Fi was placed in her school. She was not able to participate in school activities and was not given accommodation in her school. In the UK a student has recently received accommodation for their disability. Dr. Scott Eberly, a hospice physician, developed EHS after a carbon monoxide poisoning and relates his story and how he finally figured out that he had become sensitive to his wireless devices and how disabling that had been for him. His two articles are What’s the Diagnosis Doctor? (Eberle 2014), An underworld journey: Learning to cope with electromagnetic hypersensitivity. (Eberle 2017).

Reproductive Organs: Infertility and Miscarriage

Damage to DNA either female or male or to the fetus in critical windows of development can not only cause infertility and miscarriage but also heritable birth defects. Recent research demonstrates that RFR is toxic to the fragile reproductive process with a distinct lack of studies showing that this technology is safe for the reproductive organs. RFR has been shown to cause injury to DNA, proteins, lipids and fragile metabolic processes. Peer reviewed research shows harm to sperm, ovaries (causing aging of ovaries) and embryos. Miscarriage is also a risk. Dr. De Kun Li performed a prospective study on pregnant women following them through their pregnancy and found that the highest levels of everyday EMF exposure were associated with a 3-fold increase in miscarriage. Cell towers may have high enough emission levels on a daily basis to contribute to miscarriage (Li 2019). Cell tower radiation could contribute to long term reproductive failure as was seen by

Magras in rats exposed to cell tower radiation over 5 generations. The biological effects are silent until these students are older and ready to have a family. Only then is the harm realized.

FCC Limits: A False Sense of Security

We are told by the FCC that wireless radiation and cell towers are safe within current safety guidelines, or that we do not really know if there is harm or that the research is inconclusive or that it is not ionizing (like x-rays) so it cannot hurt us. This is similar to the dismissive and doubt creating language used by the tobacco industry and a host of other chemical companies to protect their toxic products. The studies above indicate that new standards are needed that protect humans and the environment. The FCC failed to reevaluate the standards and review new evidence and was sued.

The lawsuit against the FCC was won by Environmental Health Trust and Children's Health Defense on August 13, 2021. The Court wrote, "Under this highly deferential standard of review, we find the Commission's[FCC] order arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission's current limits may cause negative health effects unrelated to cancer... We find the Commission's order arbitrary and capricious in its complete failure to respond to comments concerning environmental harm caused by RF radiation."

5G Health Effects: 7 Case Reports of Symptoms When Cell Towers Installed

This last year 7 case reports of residents rapidly experiencing microwave illness when 5G cell towers were placed in Sweden indicates something is amiss. Most of these people were healthy prior to the installation of the towers and tolerating lower levels of radiofrequency radiation. Levels measured professionally showed these were within the FCC and international guidelines but peak values may exceed guidelines. 5G is different in adding more radiation (to 2G, 3G, 4G) without removing the larger towers needed for backhaul. This 5G radiation is beamforming and very high powered within the cone of radiation emitted.

The authors of the case reports note,

"The woman's dog also showed signs of ill health after the 5G deployment. According to her, the dog got diarrhea soon after the 5G deployment. This disappeared during the washout period in the other apartment with no 5G, but returned when they moved back to her own apartment." ([Hardell and Nilsson, April 2023](#))

"These levels apparently provoked, within a short time period, ill health in the studied persons. They are far above levels that have been reported to provoke ill health from previous generations of wireless technology [20-27], and also far above levels recommended by experts. In 2012, the BioInitiative Report suggested a limit of 30-60 $\mu\text{W}/\text{m}^2$ for human exposure, lower for sensitive persons and children, 3- 6 $\mu\text{W}/\text{m}^2$ [28]. Even lower guidelines were proposed in 2016, maximum 10 – 1 000 $\mu\text{W}/\text{m}^2$, lower at night time 1-100 $\mu\text{W}/\text{m}^2$, and for sensitive persons 0.1-10 $\mu\text{W}/\text{m}^2$ [29]. On the other hand, the measured levels from 5G are still far below the levels recommended by ICNIRP [5] and the FCC [30]. According to ICNIRP 2020 exposure can be as high as 10 000 000 $\mu\text{W}/\text{m}^2$ for whole body exposure averaged over 30 minutes, thus allowing peak levels to be even very much higher [31]." ([Hardell and Nilsson, April 2023](#))

Radiation Levels are Averaged, Not Considering Peak Levels

Currently measurements of radiofrequency radiation (RFR) are done by averaging, not looking at peak levels of RFR which cause the most damage. Imaging trying to gauge the effect of a tornado by averaging the wind speed from the inside to the outside for a mile. The center of the tornado that takes your roof off contains the critical wind speed.

We need real time data on radiofrequency radiation levels, surveys and an attitude of precaution to be able to create safer healthier communities for our children.

Thank you for your consideration and thoughtfulness,

Cindy Russell MD
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“Waiting for high levels of scientific and clinical proof before taking action to prevent well-known risks can lead to very high health and economic costs, as was the case with asbestos, leaded petrol and tobacco.” The European Commission on wireless radiofrequency radiation (Ref below)

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