Affidavit of Dr. Paul Dart, MD in Support of Standing

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Children's Health Defense, Michele Hertz, Petra Brokken, Dr. David O. Carpenter, Dr. Paul Dart, Dr. Toril H. Jelter, Dr. Ann Lee, Virginia Farver, Jennifer Baran, Paul Stanley, M.Ed. Petitioners v. Federal Communications Commission and United States of America, Respondents	Case No: 20-1138 Petition for Review of Order by the Federal Communications Commission (FCC 19-126) (Consolidated with Case No. 20-1025)

AFFIDAVIT OF PAUL DART MD IN SUPPORT OF STANDING

1. My name is Dr. Paul Dart. My address is [redacted] Eugene, Oregon 97405. I am one of the named Petitioners in the above captioned proceeding.

2. I filed comments at the FCC in the proceedings below on February 5, 2013[1] and on September 2, 2013[2] and asked them to change their rules to address the concerns I raised regarding the public's exposure to wireless radiation at levels allowed by the FCC's guidelines.

3. Specifically, I submitted extensive reliable evidence and cited to a large body of literature indicating that "*there is significant cause for concern regarding the growing impacts of these exposures on the public. Research documenting their adverse biologic and health effects is robust now. The implications of this research cannot be discounted, and must not be ignored.*" I suggested that "*[i]t would be indefensible at this time for the FCC to take any actions that may increase exposure of the population to EMR [Electromagnetic Radiation] from cell phones, base stations, Wi-Fi, Smart Meters and other emitting devices. The current levels of exposure need to be reduced rather than increased further. The FCC must especially protect vulnerable groups in the population including children and teenagers, pregnant women, men of reproductive age, individuals with compromised immune systems, seniors, and workers*."

4. The Commission entirely ignored the evidence I submitted and chose to retain its current limits and defective approach. I therefore decided to become a petitioner in Children's Health Defense's challenge to the decision.

5. The purpose of this Affidavit is to provide evidence of my standing to pursue the matter. I will provide some of the basic facts particular to my individual circumstances and will provide information about my patients and the impact of the FCC's decision to retain its current standards and guidelines has on my patients and my practice. This information will show that I (along with my patients), have suffered the injuries-in-fact traceable to the FCC Order that could

[1] https://ecfsapi.fcc.gov/file/7520940903.pdf.

[2] https://www.fcc.gov/ecfs/filing/6017465430.

be redressed by an order from this Court holding unlawful, vacating, enjoining, and/or setting aside the FCC Order and remanding the matter to the FCC for further consideration and action.

6. I am a medical doctor in private practice in Eugene, Oregon. I received my bachelor's degree in psychology from the University of California at Santa Cruz, and my medical degree from the Mayo Clinic. I started my private practice of Environmental Medicine in 1986. Environmental doctors focus on recognizing, treating and preventing illnesses caused by exposure to environmental triggers and toxins. Electromagnetic radiation ("EMR") from Radio Frequencies ("RF") and Microwave-based technologies is a type of environmental toxin. It is invisible, it emits no smell and people love the conveniences it enables, but it is extremely harmful. Growing number of individuals can hear it and feel it but based on the scientific evidence, likely, we all are adversely affected in various ways.

7. During the first 15 years of my clinic, I saw a total of perhaps two or three patients who complained of reactivity to electromagnetic exposures, which they were able to manage with avoidance for the most part. But starting in the early 2000's, patients with these complaints started presenting in my office more frequently, and as the roll-out of the cellular infrastructure and in-building networks continued, these patients' problems became more severe and they began to have a much more difficult time avoiding and reducing exposure.

8. At that time, many environmental physicians (including myself) referred to this problem as "Electromagnetic Hypersensitivity Syndrome" or "EHS," but "Microwave Sickness," is a more precise and accurate term for this health problem for several reasons.

9. First, because historically this terminology was the first used in the research literature to discuss illness caused by exposure to microwave frequencies-based technologies, such as radars.

10. Second, because although people who developed this sickness do react to a wide variety of electromagnetic exposures, it is the huge increase in pulsed microwave based technologies (which also utilize pulsation and modulations) that is producing this illness in a significantly larger proportion of the population.

11. Third, this sickness is not a hypersensitivity or an allergic reaction, like peanut allergy for example, where some people have the capability to react in this way and others do not. Human physiology has a bioelectric aspect, and this is especially true of the heart, brain, nervous system, and the membranes that surround our cells and control intracellular and intercellular communication. Pulsed and modulated electromagnetic RF and microwaves-based technologies directly affect this physiology. These are biological effects, not thermal effects. With enough exposure any human being can be made sick from these biological effects of exposure to non-thermal levels of pulsed and modulated microwave RF.

12. Humans vary in their physiology and in their resilience to stressors, and with a given level of adverse exposure, some people get sick sooner than others do. Some people's physiology will decompensate or lose the ability to adapt at a lower level of exposure to a noxious or toxic influence, when others have not yet done so. As the intensity of such exposure increases, more people will decompensate.

13. In the last 20 years the level of exposure of the public to pulsed microwave radiation has increased by several orders of magnitude. The prevalence of microwave sickness also appears to have increased during this interval.

14. In 2012, our local electric utility started testing smart meters, with initial plans to install a "mesh" network of meters on every house in the city—meters that would transmit multiple times a minute, 24 hours a day.[3] I knew that if such a network was installed, the city would become unlivable for some of my patients with microwave sickness. Out of concern for these patients, I started to have discussions with the engineers and the board of directors at the utility. Their response to my initial concerns was that these transmissions were within the FCC's "safety" guidelines, so there could not be a problem.

15. The problem, of course was that the FCC 1996's guidelines only addressed the thermal effects of microwave RF and made no attempt to address its possible biological effects. As an interested physician, I was aware that a great deal of research on microwave RF's biological effects had been done since the mid-1990's. I'd been listening to environmental physicians talk about these problems for at least a decade. I had avoided studying the subject in more detail partly because I was scared to really get a clearer picture of how serious this problem was becoming in our world.

16. The engineers at the electric utility had neither the time nor the expertise to evaluate the medical significance of this research, or to recognize the clinical significance of the technologies they were thinking about using. So I formed a medical advisory group, and spent the next two years performing an extensive review of the existing research on the biological (non-thermal) effects of microwave radio frequency transmissions, writing up a thorough summary of that review, vetting this product with the other members of the group, and communicating the results of all this to the electric utility's engineers and board of directors. This research review[4] was the core of the testimony that I presented to the FCC on September 2, 2013[5], titled *"Biological and Health Effects of Microwave Radio Frequency Transmissions, A Review of the Research Literature"* (*"my research review"*).

17. The huge increase in environmental exposures to microwave RF and the ensuing increase in clinical pathology is a difficult problem to deal with as part of my environmental medicine practice. The gold standard for treating environmental problems is to adequately reduce levels of exposure. But this is becoming increasingly difficult even in rural environments. As urban cellular and coverage has expanded, many of my patients have become basically excluded from the public space. The level of exposure to microwave RF in our urban areas is several orders of magnitude higher than it was in the year 2000. The ubiquity of wireless communications in the

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[3] Advanced metering infrastructure supports bidirectional connectivity between "client" smart meters and the utility's "head-end" server. There is a wide-area "Tier 3" network that supports a group of smart meters that "mesh," or communicate through each other and ultimately provide a connection point on a "Tier 2" field area network that provides backhaul to a "Tier 1" Internet Protocol "core" facilitates intercommunication with the utility's head-end. The advanced metering infrastructure supports centralized meter reading, remote service connect/disconnect, prepay services, demand-response, time-of-use pricing, power quality monitoring, outage management and other features/functions. But it all requires a host of RF emitters located on each home or business.

[4] Filed in the docket below at https://ecfsapi.fcc.gov/file/7520940903.pdf.

[5] Filed at the docket below at: https://www.fcc.gov/ecfs/filing/6017465430.

workplace means that from a practical point of view some patients are disabled from working in almost any modern setting.

18. Here are some examples of patients who are suffering as a result of these elevated levels of exposure that are nonetheless within the FCC's "safe" limits.

Case 1:

A previously healthy 9 year old girl developed fatigue, nausea, racing heartbeat, pressure in chest, shortness of breath, acid reflux, a band of heat around the back of her head, tremors, visual disturbances, facial rash, reduced appetite, anxiety, depression, and obsessive thoughts, four months after a router was placed directly over her head in her grade school classroom. After three months of struggling with these symptoms, the family made the connection with EMF exposure, and reduced exposures in the home environment, eliminated her iPad and her smart phone, and discontinued use of the hybrid electric car. With these reductions in exposure over the summer, her symptoms improved, and by early September she was almost symptom-free, with normal energy and good mood.

About two weeks after she returned to school that next fall, her classmates started using computers with Wi-Fi for the first time, and she developed shortness of breath, tension in her chest, and nausea. Her mother reduced her time in the classroom to half time, home schooling her for the other half of the day, and the teacher avoided using the computers when she was there during the afternoon. But the school refused to turn off the Wi-Fi router. Symptom of nausea and sleep disturbance continued for two more weeks. Her mother removed her to a private grade school that had eliminated Wi-Fi from school. As the school became more aware of her situation, they also reduced her exposure to cell phones in the classroom.

Her symptoms moderated after that, to a great extent. She did well in the classroom, but symptoms would flare with exposure to a lot of active cell phone activity (at school assemblies, or out on the town). She would recover from an exposure overnight. When she wasn't in one of these reactions, she was a happy, healthy girl.

In 2019 she matriculated into the ninth grade and tried to attend her local public high school (which has roughly 60 active Wi-Fi routers in operation in the building). She could not tolerate being in her classroom for any significant length of time, developing nausea, vertigo, light-headedness, indigestion, loose stools, some increased inflammation in her joints, and tightness in the head. She had to spend most of her day studying outside the classroom environment.

Although it was clear that her absence from classroom was not working academically, the school refused to accommodate for her problem by removing the Wi-Fi router from her classroom. After the fall term ended, she withdrew from the school. She is trying to attend a class or two at the junior college, but her parents have not been able to arrange for an academic setting with her age peers.

Case 2:

A vital and highly intelligent 17 year old girl developed irregular heartbeat, chest tension/cramping, shortness of breath, tension/restlessness, and episodes of fatigue, headache, vertigo, and loss of mental focus, starting in the autumn of the year after

returning to a private school that had just installed wireless routers in a room close to her classroom. She improved over the summer, but symptoms returned episodically at school during the next year, varying some with her proximity to or distance from the routers in the school. With treatment, she managed to make it through her senior year. She has not continued to college, as exposures would be ubiquitous in the typical college environment. However, they are equally common in the public work environment. Right now, she is marking time, working some in her family's business, and not sure what to do next.

Case 3:

A 57-year-old ceramic artist started developed chronic symptoms of headache, tachycardia, intermittent chest pains, intermittent vertigo, tinnitus, fatigue, and memory problems, starting in the year after a microwave RF transmitting gas company smart meter was placed at her residence in 2007. Symptoms flared most significantly when she was sitting on her sofa, directly on the other side of the wall from this meter.

In June of 2011 this 40 milliwatt meter was replaced with a more powerful 100 milliwatt meter, and over the next two or three months she developed increased irritability, poor appetite, balance problems, more constant tinnitus, burning symptoms in her face, intermittent insomnia, constant mental fogginess, chest tightness and chest pain, dysesthesia in her legs, visual disturbances, and head tension/pain.

That October she had the gas company pull the meter (shutting off the gas supply to her house) and her symptoms improved rapidly. By late November she was feeling relatively normal. But she needed the gas to run her kiln, and so she had the meter placed on the house again at the end of December. Symptoms rapidly returned, and she was forced to have the meter removed again in mid-January. Symptoms moderated somewhat in her home environment.

But her reactivity to other sources of RF continued to be higher after that, triggering symptoms with proximity to cell towers and to other exposures. Sleep continued to be more difficult for her. She has reduced exposures in her home environment significantly, but 13 years after the initial exposure to the microwave RF smart meter, she continues to have symptoms of microwave sickness when she is exposed to microwave RF.

Case 4:

A 51 year old teacher at the local junior college developed gradually increasing problems during the two years after she started working in a cubicle fifteen feet away from a wireless router, which further increased in severity after installation of a wireless router in her home (replacing the prior ethernet connection). Symptoms included pressure in the crown of her head and forehead, intense buzzing tinnitus in her ears, tightness in the solar plexus, heart palpitations, anxiety, insomnia, hypersensitivity to sound, and impaired memory and concentration. She removed the Wi-Fi router from her home environment, but symptoms remained severe, moderating some with vacations and increasing when she was back in the office environment. These disabling symptoms forced her to take medical leave from her office, and she finally lost her job. She had to hire a lawyer to get disability, and finally had to sell her home to pay her expenses. She

continues to have great difficulty with reactivity when she's in neighborhoods close to cell tower transmission, or when she's exposed to Wi-Fi or cell phones in public environments. Finding tolerable housing has been extremely difficult. She is functionally disabled from any work in a modern office setting.

Case 5:

A 64 year old graphic designer developed bursitis (that didn't respond to cortisone), sores in her nose, increased inhalant allergies with sneezing, gummy ear eustachian tubes, clogged sinuses, right knee joint pain, deep aching in her thumbs, deep itching skin, depression (severe), insomnia, frequent headaches (a new problem for her), palpitations, and some other symptoms, all starting a few months after putting Wi-Fi in her home.

When she realized the possible connection, she turned off the iPad and the Wi-Fi router that day, and within a day her thumbs were better, followed as time went by the reduction in the gummy ear, joint pains and bursitis and heart palpitations.

She took further measures to reduce her exposures to EMF in her home and in her workplace, and her symptoms continued to improve. Sleeping under a shielding canopy significantly improved her sleep. She still had chest/heart symptoms when out in public environments with more exposure to Wi-Fi and active cell phone use.

19. In a quick once over of my files I find around 20 cases of patients who are severely impacted to a disabling level by nonconsensual exposures within FCC "safe" limits. One patient chose to end her life because she simply could not find a place to live that sufficiently reduced her exposure and severe reactivity. I'm working part time now, and don't see as many new patients, but I always have several patients on my waiting list whose chief compliant is reactivity to nonconsensual microwave exposures.

20. An equal or greater number of my patients have presented with problems which were not disabling and which they did not correlate with microwave exposures—problems that improved with reduction of exposure to microwave RF in their home environment.

21. It is completely inaccurate to suggest that Microwave Sickness is a controversial condition or a condition which is only found in rare individuals with a special hypersensitivity. With sufficient levels of exposure, pulsed microwave signals and radiation can cause a great many human beings to experience one or more of the symptoms included in the diagnosis of "microwave sickness"—in the absence of any specific or conscious awareness on their part of the presence of the exposure. This has been documented in numerous research articles published over the last half century, starting with articles published by Russian researchers in the 1950's.

22. In my research review that I submitted to the docket I provide 82 references from the extensive research which exists in the scientific literature on Electromagnetic Hyper Sensitivity (Microwave Sickness).[6] I also provided further information in an accompanying document titled *RF and Electrohypersensitivity.*[7]

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[6] See pdf pages 21-34 (native document pages 9-22). Filed in the record below at: https://ecfsapi.fcc.gov/file/7520940903.pdf.

[7] Filed at the record below at https://ecfsapi.fcc.gov/file/7520940904.pdf.

23. There are those who argue against the existence of this condition, citing the results of subjective provocation studies claiming that individuals with "self-identified" microwave sickness are unable to distinguish the presence or absence of an exacerbating RF transmission. The studies in question have multiple design weaknesses that should have rendered then invalid. Most of them do not control for the "nocebo effect" a prerequisite to the validity any provocation study. They incorrectly assume people are a switch on/off, and ignore the individual reactions. Some studies do not control for baseline RF exposure levels in the study environment, do not allow for a wash-out period sufficient to clear symptoms before the challenges which will be adjusted to the individual, and do not consider the possibility of delayed or prolonged reactions to an acute exposure. I discuss this issue in some detail in my 2013 testimony.[8]

24. Furthermore, many of these studies suffer from bias and a clear conflict of interests by being funded by the Telecom industry. Those studies that have been conducted by independent scientists with adherence to scientific principles and an understanding of the manifestation of the condition showed that some people who developed the condition can even detect the signal.

25. From a clinical point of view, the greater weakness of the reliance on subjective perception provocation studies to deny the existence of the condition is that it is simply nonsensical. We do not use subjective perception provocation studies to diagnose any condition and definitely not to deny its existence. We don't deny the existence of gastroenteritis because the patient doesn't know which part of which meal contained the pathogen. Why would anyone argue that the ability to be a human RF meter is a prerequisite for having symptoms provoked by pulsed microwave RF? It simply isn't logical to make such an argument, and it flies in the face of the large quantity of research showing a relationship between RF exposure levels and the presence of these symptoms in populations who are oblivious to that association or to the nature of that exposure.

26. Another in-depth discussion of the flaws of the provocation studies can be found in a peer-reviewed scientific paper by Professor Beatrice Golomb, MD PhD, from UC San Diego School of Medicine.[9] Dr. Golomb's paper, provides a detailed analysis showing that the alleged "mystery sickness" of the US diplomats in Cuba is in fact Microwave Sickness. Her paper thoroughly explains the science, why the cause of the symptoms cannot be explained by anything except exposure to pulsed non-thermal levels of Microwave based technologies/weapons. In her paper she also provides a thorough review of the science, and the physiological mechanisms of the various symptoms. She concludes: "*Reported facts appear consistent with RF/MW as the source of injury in Cuba diplomats. Non-diplomats citing symptoms from RF/MW, often with an inciting pulsed-RF/MW exposure, report compatible health conditions. Under the RF/MW hypothesis, lessons learned for diplomats and for RF/MW-affected "civilians" may each aid the other.*"

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[8] See my research review that I submitted to the docket, pdf pages 25-27 (native document pages 13–15). Filed at the record below at https://ecfsapi.fcc.gov/file/7520940903.pdf.

[9] Golomb B. Diplomats' mystery illness and pulsed radiofrequency/microwave radiation. Neural Comput. 2018 Sep 5. P. 2927–2929. Filed in the docket below at https://www.fcc.gov/ecfs/filing/1091330786203, https://ecfsapi.fcc.gov/file/1091330786203/Wireless%20radiation%20and%20EMF%20abstracts%20August%202016%20-%20August%202019%20Joel%20Moskowitz%209-13-2019.pdf.

27. The FCC failed to address biological effects in their exposure guidelines for our citizens. They are therefore responsible for the sickness that many patients are experiencing. The exposure guidelines are supposed to protect our citizens from harm, and they are not doing so. The FCC's failure to acknowledge or address these adverse biological effects of microwave exposure is the major cause of the extreme difficulty that patients have in attaining any accommodation, redress or support for their disabling illness. None of them consented to being irradiated, but they cannot escape it.

28. Many other patients in my practice, who do not present with a wide variety of symptoms, report that they sleep better when they reduce their exposure to their home environments by turning off the Wi-Fi at night and putting their phones on airplane mode. This makes sense, because the research literature shows that RF exposure can reduce melatonin levels in animals and in human beings. I document this research in my research review that I submitted to the docket, citing 26 references from the scientific literature,[10] and in the accompanying document titled *RF and Hormones*.[11]

29. Melatonin secretion is an important factor in a healthy sleep cycle. Sleep disturbance is an epidemic problem in our country today and millions of dollars are being spent on drugs to help people sleep. The FCC's failure to acknowledge this biological effect of microwave RF exposure is responsible in part for perpetuation of this public health problem.

30. I document the extensive research documenting the relationship between microwave RF exposure, DNA damage, cancer, and infertility in of the research review I gave to the FCC as part of my testimony, citing 112 references from the scientific literature.[12] Further information is provided in separate documents titled *RF and DNA Damage*,[13] *RF and Cancer*,[14] and *RF and Infertility.*[15] *And RF and Brain Tumors*[16]

31. The research literature clearly shows that long term cell phone use increases brain tumor risk. This is even true of the industry-funded research that is quoted in the newspapers as saying that there is no clear association between the two. The statements by defenders of current guidelines are no different than those by the tobacco industry that there is no evidence that cigarettes cause cancer. I document this cell phone research in the research review I gave to the

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[10] See my research review, pdf pages. 35-41 (native document pages 23–29). Filed in the record below at https://ecfsapi.fcc.gov/file/7520940903.pdf.

[11] Filed in the record below at https://ecfsapi.fcc.gov/file/7520940905.pdf.

[12] See my research review that I submitted to the docket, pdf pages 43-67 (native document pages 31-55). Filed in the record below at https://ecfsapi.fcc.gov/file/7520940903.pdf.

[13] Filed in the record below at: https://ecfsapi.fcc.gov/file/7520940906.pdf.

[14] Filed in the record below at: https://ecfsapi.fcc.gov/file/7520940908.pdf.

[15] Filed in the record below at https://ecfsapi.fcc.gov/file/7520940909.pdf.

[16] Filed in the record below at https://ecfsapi.fcc.gov/file/7520940911.pdf

FCC as part of my testimony, citing 38 references from the scientific literature.[17] I also provided further information in an accompanying document titled *RF and Brain Tumors.*[18]

32. The status quo of these problems is that they are not being acknowledged and they are continually getting worse. The FCC guidelines are the anchor pin of the status quo.

33. The FCC guidelines are quoted all the time by those who do not want to acknowledge or deal with the problem. As the current FCC guidelines do not recognize the adverse biological effects of microwave RF, they help maintain the public's general ignorance of the significance of these problems. And this is producing a great deal of harm to the health of the public.

34. The FCC decision refused to acknowledge the existence of the scientific research on adverse biological effects. It allows exposure guidelines to remain in effect. The FCC has chosen to avoid any effort to protect the public from these biological effects. In so doing, the FCC assumes a burden of responsibility for the significant and growing harm that these adverse biological effects that microwave based technologies are causing to the public health, the public welfare and the public purse.

35. Congress gave the FCC responsibility to protect the public from these hazards. Because the FCC's 1996 guidelines do not protect the public from the biological effects of microwave RF, I consider the FCC's continued use of these guidelines to be directly responsible for the harm that these microwave exposures are causing to the public at large and to my patients.

36. When the FCC declined to make changes that would tighten the current exposure standards, it stated that the received testimonies "*fail to provide any specific, pragmatic recommendation for how our RF exposure limits could be adjusted as a result of [the research presented in testimony]*." If it is indeed rational to reduce these limits, complaining that the testimonies didn't provide the answer to this question is tantamount to complaining that the providers of testimony didn't do the FCC's job for them—as if there was no way that the agency could figure out how to work out this problem.

37. At a further point in their decision the FCC states that "*the Commission recognizes that it is not a health and safety agency*." Essentially, the Commission is implying here that they don't want to do this job, because they don't know how to do this job.

38. Whether or not that implication is an accurate reading of the Commission's motivations here, my testimony of 9/1/2013 actually did make a specific proposal for how the FCC could approach this question:

> "*The FCC should request that the EPA impanel a Working Group composed of health experts who have no conflicts of interest with industry to review the scientific literature on EMR. The Group should recommend biologically–based EMR standards that ensure adequate protection for the general public and occupational health based upon the precautionary principle. Finally, the FCC should adopt the standards, testing procedures, and appropriate precautionary warning language recommended by the Working Group*."

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[17] See my research review that I submitted to the docket, pdf pages 69-77 (native document pages 57–65). Filed in the record below at https://ecfsapi.fcc.gov/file/7520940903.pdf.

[18] Filed in the record below at https://ecfsapi.fcc.gov/file/7520940911.pdf.

39. The Commission's decision did not mention or respond to this concrete suggestion of how to move forward, and incorrectly stated there wee no such suggestions.

40. The Commission offers as a reason for declining to take action that some of the testimony suggested exposure levels "*millions to billions of times more restrictive than FCC limits. No device could reliably transmit any usable level of energy by today's technological standards while meeting those limits*." Using this argument to suggest that it would be technically impractical for industry to reduce exposure levels in our country is quite disingenuous, given that Russia, Bulgaria, Hungary, Switzerland, China, and Italy all have allowable exposure levels 1/100th of those permitted in the USA. The Russian exposure limits are significant, since their pioneering research on pulsed microwave RF's biological effects during the cold war was decades ahead of research in the western bloc. The Russian government established two acceptable levels of exposure, one for the general public (2 to 10 microwatts/square centimeter) and another higher level for military personnel. Contrast this with the United States which decided to avoid two legal exposure limits and applied the military exposure guidelines of 200 to 1000 microwatts/square centimeter) to the entire population.

41. The Commission then states *that* "*as noted by the FDA, there is no evidence to support that adverse health effects in humans are caused by exposures at, under, or even in some cases above, the current RF limits.*" This is simply not correct. My testimony and testimony/comments by many other participants below presented a great deal of scientific evidence that supports this conclusion. And in the seven years since I presented my testimony, much more scientific evidence in support of this claim has accumulated.

42. The Commission goes on to claim that "*no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses*." Let's consider that this sentence actually means. When apologists for industry discuss the possibility of biological effects of "non-thermal" pulsed microwave exposures, their arguments go through several stages. In the first stage, they argue that the forces of microwave RF are not strong enough to break molecular bonds in DNA, that the effect of the exposure was proportional to the strength of the exposure, and that therefore there was no possibility of microwave RF causing cancer. This sounds like good physics, but it is bad biology. In biological systems the effect of an exposure is not proportional to the strength of the exposure—it is proportional to the *response of the organism* to that exposure. Biological systems have ways of amplifying the response to certain inputs (a small amount of bee venom, for example) that can cause dramatic effects. Current research suggests that microwave RF can do this by altering voltage-gated calcium channels in a manner that increases free radical production in cells. And free radicals definitely can break molecular bonds, damaging DNA.

43. When epidemiological studies started to show a significant correlation between exposures to microwave RF from cell phones or cell towers and cancer, they shifted position and argued that epidemiology isn't definitive enough and we needed to see animal studies.

44. When multiple forms of animals' studies demonstrated that microwave RF increases free radical production and fragmentation of DNA, they pivoted and claimed that this doesn't prove a causal relationship with cancer.

45. When longer animal studies showed an increased level of cancers in exposed animals, they rationalized that these studies needed to be replicated, and that no mechanism had been discovered that could explain how this happened.

46. Now the animal studies have been replicated in research funded by the federal government, and a proposed mechanism has been supported consistently by multiple studies. So now they arguing that just because the rats got tumors, this doesn't prove that humans will.

47. So what does the statement "no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses" say, and what doesn't it say? This really depends on your definition of the words "establishes," "causal," and "link."

48. The research review that I provided to the FCC with my testimony clearly shows that a significant body of scientific evidence has found microwave RF increases production of free radicals, increases fragmentation of DNA, reduces fertility in insects, birds, and mammals, reduces sperm counts in human males, and is associated in epidemiological studies with a significant increases microwave sickness symptoms, total cancer deaths in the community, and increased incidence of brain tumors. These symptoms have increased along with long term cell phone use, use of other wireless devices and exposure to the radiation from its infrastructure.

49. One must presume that the FCC would only accept this link as established and causal for human beings when we do the same sort of long term double blind exposure studies in human beings as have been performed in rats: Expose the study group for years to isolated and controlled exposures of microwave RF. Isolate the control group in a similar controlled setting. Sacrifice the subjects at the end of the study and slice them up and look for cancer in various organs.

50. While the FCC is waiting patiently for this impossible and unethical standard of human study and sacrifice to be met, the incidence of related tumors continues to increase in adults and in young children, and the reproductive rate of countries in the world has continued to drop until now in many countries including our own it is below the level of replacement of the existing population.

51. This is not a rational or reasonable way to approach defense of the public health. One can only conclude that the FCC is choosing to act in support of other interests than the interest of the health of the public. Because obviously, if the exposure guidelines were reduced to a level that was supported by the science, and the bio-effects of pulsation and modulation were addressed in the health guidelines, someone would have to spend a lot of money developing safer modulations and rebuilding our telecommunications infrastructure.

52. From my perspective as a physician, the FCC's decision not to revisit the 1996 guidelines is a service to the telecommunications industry, but a betrayal of the public trust, a betrayal of the welfare of the public, and a betrayal of my patients.

53. This decision manifestly compromises my ability to give my patients who developed microwave sickness the treatment they need, since their main need is to reduce their microwave RF exposure to a more biologically tolerable level. The guidelines allow a level of exposure in the community at large that makes it prohibitively expensive for these patients to achieve adequate relief even in a shielded home environment, and impossible to achieve in the public space. The existing FCC exposure limits make it impossible for me to obtain an adequate reasonable accommodation for my patient's disabilities in their school and/or workplace.

54. My frustration with this public health situation is increased by the fact that it isn't really necessary. If the adverse biological effects of this exposure were more widely acknowledged, and the levels of exposure were reduced to a biologically acceptable level by appropriate

regulation, and the effects of pulsation and modulation was addressed, we could still have a modern telecommunications infrastructure, but with much less of an adverse physiological impact on the public. It would just cost money to make the change.

55. Wi-Fi is being installed in schools because it is cheaper and easier to install than hard-wiring a classroom. But classrooms *could* be hard-wired, and this would eliminate a huge and problematic exposure of our schoolchildren to wireless signals that research has shown can increase behavior problems, reduce fertility, and cause a wide range of acute symptoms in many individuals. It would just cost money to make the change. These institutions use the FCC guidelines to justify not spending the money to make such changes.

56. An end to science denial by the FCC, and the creation of exposure level guidelines or regulations that actually reflect the existing science, would be the first step in the direction of reducing the hazard and harm to the public. This is already occurring in some communities in Europe.

57. My work with the electric utility and my testimony to the FCC was motivated primarily by my desire to advocate for my patients, some of whom are severely disabled by this technology. Many of them are not really in a position to speak for themselves. Who will speak for these people? I have therefore had to speak out for the interests of the health of the general public that is largely oblivious to the problem because of the FCC's actions and omissions.

58. I was trained at the Mayo Clinic, where the overriding philosophy is that the welfare of the patient comes first. It is a physician's duty to help patients, and also to help the public health of the community. It is difficult and painful to try to do this when the government institutions that should be overseeing and defending the welfare of the public are not doing their job, and in fact are actively participating in industry efforts to deny and hide the existence of the actual science and block the creation of any regulatory changes that are appropriately guided by this science.

59. I claim standing as a petitioner in this suit on the basis of my extensive presented testimony showing a harm, on the basis of the FCC's scientifically indefensible decision to ignore and fail to confront that testimony in making their decision, on the basis that this decision frustrates my ability to properly treat my patients and relieve their suffering, and on the continued injury-in-fact that the existing guidelines and the FCC's refusal to modify them is causing to my patients, many of whom are too disabled to speak for themselves in this matter.

60. My primary concern is for my patients, including those who have yet to walk in the door but likely will, if the FCC does not change its standards. I appear for them. But I also appear for myself, asserting my own personal interests. I am directly injured by the FCC order. The FCC's standards directly impact my professional practice. My patients' constant nonconsensual exposure to "FCC safe" emissions frustrates my ability to ameliorate and heal my patients' injuries. The only certain cure is ending nonconsensual exposure. My Hippocratic oath[19] requires that I take all necessary steps to "prevent disease whenever I can, for prevention is preferable to cure." The AMA Code of Ethics also demands that I seek changes in legal requirements which

[19] "A Modern Hippocratic Oath" by Dr. Louis Lasagna, Dean, School of Medicine at Tufts University, 1964.

are contrary to the best interests of the patient. Code of Medical Ethics Opinion 8.1 states that "While a physician's role tends to focus on diagnosing and treating illness once it occurs, physicians also have a professional commitment to prevent disease and promote health and well-being for their patients and the community."[20]

61. Thus, I am clearly and individually injured by the FCC's authorization and encouragement of harmful radiation in several concrete ways, and my professional ethics require that I participate in efforts to solve this health problem. The FCC's failure and refusal to recognize the injuries it is causing me and my patients as part of the order below is a direct driver of further harm.

62. If the Court reverses, vacates and remands the order, the FCC will finally have to craft standards that reduce or eliminate the harm. Changes to the FCC guidelines that would address non-thermal levels and modulated, pulsed signals, will safeguard my life and the lives of my patients. A remand that requires the FCC to address the situation of those who are already suffering and holding that accommodations should be granted to those who are already suffering and need to avoid nonconsensual exposure to wireless radiation, would significantly mitigate the harm.

63. The FCC order did not adequately consider or reasonably respond to my comments or those of others who raised similar issues. Their decision to retain their existing guidelines entirely fails to resolve the problems that my patients face in daily life as a result of constant exposure to harmful radiation, and the problems that I face as a physician in trying to help my patients heal and in trying to relieve their suffering from the disease and disability that they are experiencing as a result of these constant exposures to harmful radiation. My patients' health, and my ability to adequately treat them as a physician, have been harmed by rules that do not adequately protect health and safety, and in fact directly allow continued harm. This harm will continue until the rules are changed to truly protect health and safety and take into account the needs of those who are or may become injured by electromagnetic radiation.

64. This concludes my Affidavit. Paul Dart MD

Paul Dart MD

SUBSCRIBED AND SWORN TO BEFORE ME this 4th day of May, 2020, to certify which witness my hand and official seal.

[Seal]

Notary Public in and for OREGON FOR LANE County

[20] Full text available at https://www.ama-assn.org/delivering-care/ethics/health-promotion-and-preventive-care.

OFFICIAL STAMP
WHITNEY RENE MATKOWSKI
NOTARY PUBLIC-OREGON
COMMISSION NO. 982302
MY COMMISSION EXPIRES DECEMBER 19, 2022