

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Technology Transitions	)	GN Docket No. 13-5
	)	
AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition	)	GN Docket No. 12-353
	)	

To: Office of the Secretary  
Federal Communications Commission  
Washington, DC 20554

Reply Filed by: **Catherine Kleiber**  
**N9387 Riverview Dr.**  
**Waterloo, WI 53594**  
**(920) 478-9696**  
**kleiber@gdinet.com**

**April 10, 2014**

Dear Sir or Madam,

I am writing to request that you open a supplemental Notice of Proposed Rule Making (NPRM) on radiofrequency sickness as it relates to decisions to abandoning the copper landline telephone infrastructure. Radiofrequency (RF) sickness is a functional impairment caused by overexposure to radiofrequencies, which includes the microwave frequencies used in wireless communication and high frequency signals on electrical wiring, also known as “dirty” electricity or electrical pollution.<sup>1,2,3,4</sup> Once one has radiofrequency sickness, exposure to radiofrequencies causes functional impairments which can range from uncomfortable to life-threatening.

In a recent letter, the United States Department of the Interior states that “the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today” ([http://www.ntia.doc.gov/files/ntia/us\\_doi\\_comments.pdf](http://www.ntia.doc.gov/files/ntia/us_doi_comments.pdf)) No one should be forced off of a safe landline phone and onto a cellphone which emits radiation that has significant biological effects, including cancer, and meets no meaningful safety limits, as stated above. The AT&T proposal would ultimately **force** people in rural areas to use cellphones and therefore should be denied. Use of wireless technology should be discouraged, not encouraged because additional use means an increase in unavoidable radiation emissions from antenna installations, resulting in increased health risks for surrounding citizens and increased environmental damage (<http://www.youtube.com/watch?v=wARxnaxrRkK>). “Public safety standards are 1,000 – 10,000 or more times higher than levels now commonly reported in mobile phone base station studies to cause bioeffects.”(<http://www.biointiative.org/conclusions/>). Furthermore, even these outdated limits are not being enforced see this press release from the EMR Policy Institute (<http://www.marketwire.com/press-release/-1770139.htm>) and this video about antenna sites exceeding allowable transmissions (<http://www.youtube.com/watch?v=8oICZotMwPo&list=UUswusUtlfemZ1TqGtspPstA&index=3>).

AT&T says they have to transition away from copper line phones because too many people have already moved away from them. However, based on my in-law’s experience, this is a problem of AT&T’s own making because they have essentially neglected their copper wires so badly that the phone service has become so crummy and repairs so poor that people are forced to leave landline phones if they want decent service. Does this mean that providers of other essential services can neglect their way into forcing changes? Why has the FCC allowed this to neglect to go on?

I have radiofrequency sickness. I become ill in environments polluted by radiofrequency signals of both transmitted and electrical origin. It is important that the FCC promulgate rules related telephone service such that people with radiofrequency sickness have telephone options available to them throughout the country that are safe for them, namely landline telephones. Furthermore, the FCC needs to promulgate biologically based safety standards for design and testing of electronic devices such that they are no longer putting high frequency electrical signs onto building wiring. The presence of high frequency

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electrical signals can cause functional impairment and limit access for people with radiofrequency sickness to public buildings and community gathering spots and thus violates the Americans with Disabilities Act (ADA), especially the 2008 ADA Amendments.

The proliferation of wireless technology is increasing the number of people with radiofrequency sickness and also restricting the daily activities of people with radiofrequency sickness. Phasing out the copper landline telephones would cause further isolation. **The FCC has extra responsibility under the American's with Disabilities Act (ADA) to keep landline phones even in rural areas because many people with radiofrequency sickness cannot use wireless devices at all.** Elimination of landline phones would leave these people, including ourselves, with no way other than paper mail to communicate with the outside world (see this link to view a video about the cardiac arrhythmias some people get as a result of exposure to wireless devices <http://www.youtube.com/watch?v=EI9fZX4iww>). This is indeed a violation of the 2008 ADA Amendments. Many many people with RF sickness have fled to rural areas to escape the proliferation of wireless technology in metropolitan areas and rely on landline telephones for communication.

Courts have interpreted the 2008 ADA Amendments broadly to ensure accessibility throughout society and require broad inclusivity. (<http://www.justice.gov/osg/briefs/2003/3mer/2mer/2002-1667.mer.aa.html>, <http://disabilitylaw.blogspot.com/2012/06/d-mass-allows-ada-title-iii-challenge.html>) Thus, telecom companies cannot abandon landlines until they have a technology that provides an equal or better level of access to people with symptoms of RF sickness - estimated at 3-30% of the population and ranging from severely impaired to less severely impaired. People with RF sickness cannot safely use wireless technology or technology which exposes them to RF on wiring.

No new source of radiation exposure should be allowed without examining the ADA compliance. Many people are now excluded from public buildings, public places, parks, highways, and limited in almost all aspects of normal daily living. Continued rollout of additional sources of RF radiation puts the FCC in direct violation of the ADA. View this video <http://www.youtube.com/watch?v=sv1E9IXUd6M> to see further discussion about wireless technology and cardiac arrhythmia, including the fact that regular screening for cardiac susceptibility prior to allowing people into WiFi enabled areas (and at least yearly thereafter) would be recommended according to RF exposure protocols. **Should public places really contain an environmental pollutant so dangerous that regular screening would be appropriate to keep people from suffering disabling or fatal consequences? Should people, especially people already suffering from RF induced impairment, be FORCED to rely on such a potentially dangerous medium to communicate?**

Radiofrequency radiation, which includes the radiation emitted by wireless devices, was classified by IARC as a class 2B possible human carcinogen, similar to lead, DDT, and chloroform, in 2011.<sup>5</sup> There are an increasing number of experts stepping forward to say that that classification should be changed to either 2A "probable" carcinogen<sup>6</sup> or even class 1 - carcinogen.<sup>7</sup> Even if the classification is not changed, people should not be forced to use a class 2B carcinogen to communicate. Other governments warn their citizens NOT to use cellphones and to use landlines whenever possible. The only reason wireless is still being pushed is the huge industry-based sales pitch, aided by "cool"-factor induced denial. A more complete discussion of just how good the evidence of carcinogenicity is can be found at <http://thetruthaboutsmartgrids.org/2013/12/04/rf-fields-possibly-probably-or-definitely-carcinogenic/>.

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Please be sure to read the references he cites at the end of the article. See this video of Professor Emeritus Dr. Anthony Miller, of the University of Toronto, talking about the carcinogenicity of radiation from wireless devices which can be found at (<http://www.youtube.com/watch?v=wARxnaxrRKK>). Telecom executives have started to avoid their own products, read the story at this link <http://www.c4st.org/news/item/what-s-happening-around-the-world/belgium-s-telecomm-boss-no-wifi-and-cell-phones-in-my-offices.html>

Symptoms that occur with RF radiation exposure vary depending on the particular frequencies involved, their amplitude, and the duration of exposure and the size, height, and build of the exposed person. Headache, brain-fog, short-term memory loss, scattered thinking, irritability, nerve pain, muscle weakness, heart palpitations, and appetite loss are common. Longer stays in polluted environments intensify the symptoms.<sup>1</sup>

Wireless technology and polluting electrical technology such as variable speed motors, compact fluorescent light bulbs, dimmer switches, etc. often cause symptoms for people with radiofrequency sickness (Please see [www.electricalpollution.com](http://www.electricalpollution.com) for more information.)

I am not the only one in my family who is affected. My two young sons are also affected. They have lost their appetite and even vomited as a result of being in polluted environments. My older son, now nine, loses behavior control in response to transmitted communications signals. We have observed this effect particularly related to WiFi, transmitting utility meters, and cellphones. Polluted electrical environments evoke a similar response. The change in his behavior is quite dramatic. In unpolluted environments, he is in control of himself, polite, logical, sweet and kind. In short, wonderful. In polluted environments, within a short time he starts becoming hyper and if we do not leave he becomes quite out of control, cannot listen to instructions, and behaves in ways that would normally be atypical.

My younger son, now seven, also experiences loss of behavior control. However, his response to transmitting utility meters is even more dramatic: he suffers from symptomatic cardiac arrhythmia (<http://www.magdahavas.com/?s=bradycardia>). Within a short time, he begins to act as though he has a major illness coming on, crying and begging to leave. Within minutes after leaving the polluted environment, he is no longer fussy or crying. This happened at Christmas a several years ago, a time he would not normally want to leave his grandparents home, and has happened at other places and events since. He developed similar arrhythmias in response to the installation of 4G cellphone service in our area. We have been frantically shielding the house since in order to keep him healthy and have had to limit his time outside for the same reason. Recent replicated double blind studies show that a cordless phone base station operating at WiFi frequencies can cause cardiac arrhythmias in susceptible individuals.<sup>8,9,10</sup> This short video discusses the cardiac effect that wireless can have- <http://www.youtube.com/watch?v=EI9fZX4iww>. See <http://www.youtube.com/user/EMRPolicyInstitute> for a longer presentation by Prof. Magda Havas in three segments.

Obviously, we should not be forced to use wireless technology, as we would be under a plan like AT&T's - since it induces arrhythmia for us and could probably also cause cardiac arrest, a fact Frey proved in frogs years ago.<sup>11</sup>

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We are not alone in experiencing very serious effects from exposure to radiation from wireless devices (pulsed microwave radiation). I have spoken with others who are similarly isolated by the proliferation of wireless technology and their own serious reactions to it. "Jumping off the Wireless Bandwagon - Wifi and You" mentions that schoolchildren are also experiencing cardiac symptoms from WiFi, including cardiac arrest.<sup>12</sup>

I am the webmaster of a website about radiofrequency sickness, electrical pollution, and wireless technology. It is [www.electricalpollution.com](http://www.electricalpollution.com). As webmaster, I have received contacts from many individuals who also have radiofrequency sickness. Exclusion from society by the increasing levels of microwave radiation from wireless technology is a pretty universal experience of persons with radiofrequency sickness. **Most of us rely on landline telephones for communication.**

**Wireless technology was NOT safety tested prior to release.** Safety is only "proven" by continued industry insistence that the only way wireless technology can have any biological effect is through thermal or tissue heating effects. This is totally untrue. Disconnect by Devra Davis, an epidemiologist, discusses the coverup and research supporting non-thermal biological effects at great length. She also discusses research done years ago demonstrating the ability of pulsed microwave radiation to stop the heart. Cellular Telephone Russian Roulette ([http://microondes.files.wordpress.com/2010/03/robert\\_c\\_kane\\_cellular\\_telephone\\_russian\\_roulette.pdf](http://microondes.files.wordpress.com/2010/03/robert_c_kane_cellular_telephone_russian_roulette.pdf)), written by Robert C. Kane, a former Motorola engineer, discusses the fact that numerous studies show that significant biological effects occur at such low levels that useful wireless technology is by definition unsafe wireless technology. He further discusses the problem of microscopic, but biologically harmful hot spots which occur at levels far below those normally considered to cause thermal harm.

There are numerous studies showing that radiation from wireless technology seriously harms a variety of animal species and also plants, impairing reproduction, growth, and navigation.<sup>12, 13, 14</sup> A NEPA evaluation and EIS are necessitated by the presence of three options which have the potential to have radically different impacts [Burkholder v. Peters, 58 F. App'x 94, 96 (6th Cir. 2003) (quoting 42 U.S.C. § 4332(2)(C)).] The EIS should include a review of the impact of all options on the environment, as well as on human health and safety. "The Report on Possible Impacts of Communication Towers on Wildlife Including Birds and Bees" commissioned on 30th August, 2010 by the Ministry of Environment and Forest, Government of India (incorporated by reference herein in its entirety [http://www.moef.nic.in/downloads/public-information/final\\_mobile\\_towers\\_report.pdf](http://www.moef.nic.in/downloads/public-information/final_mobile_towers_report.pdf)) and "Impacts of radio-frequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem – a review," (incorporated by reference herein in its entirety [http://www.biolmedonline.com/Articles/Vol4\\_4\\_2012/Vol4\\_4\\_202-216\\_BM-8.pdf](http://www.biolmedonline.com/Articles/Vol4_4_2012/Vol4_4_202-216_BM-8.pdf)) and the letter from the Department of Interior (incorporated by reference herein in its entirety [http://www.ntia.doc.gov/files/ntia/us\\_doi\\_comments.pdf](http://www.ntia.doc.gov/files/ntia/us_doi_comments.pdf)) provide enough compelling evidence of potential environmental harm at existing RF limits to necessitate an EIS evaluating the harm done by promoting additional wireless use and installation versus continuing in the status quo versus requiring repair of existing landline telephone infrastructure and pricing of wireless service to discourage frivolous use of wireless technology.

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A number of studies show that electromagnetic radiation, including radiofrequency radiation, alters heart rate variability, blood pressure (including inducing hypertension with microwave exposure) and increases risk of arrhythmia related heart disease and heart attack.<sup>1,2,8,9,10</sup>

There is extensive documentation in the literature of alterations of  $\text{Ca}^{2+}$  homeostasis.<sup>2</sup> This is likely to be responsible at least in part for the profound effects that radiofrequency radiation has on the heart and neurological function.  $\text{Ca}^{2+}$  regulates gap junction opening. Gap junctions are key in many intercellular communications.

Exposure to radiofrequency radiation also interferes with the action of enzymes, signaling pathways, and makes the immune system simultaneously hyperactive and less effective.<sup>2,16</sup> Immune impairment results in part from the disruptive effect of radiofrequency radiation on calcium ion homeostasis. In addition to radiofrequency radiation-induced immune impairment increasing risk of various types of infection, it is likely to increase the risk of getting cancer from the DNA breakages radiofrequency radiation is well-documented to induce.<sup>17</sup> While radiofrequency radiation is non-ionizing, the metabolic changes it can cause result in oxidative damage to DNA and subsequent breakage. Direct interactions between radiofrequency radiation and DNA can have similar results, as well as causing changes in gene transcription, through changes in electron flows induced by the radiation.<sup>17</sup>

Neurological function can be seriously impaired by radiofrequency radiation. Cholinesterase enzyme activity is impaired by exposure to radiofrequency radiation in a manner similar to impairment caused by organophosphate pesticides, often rendering a person with radiofrequency sickness particularly sensitive to small amounts of chemicals.<sup>4</sup> Radiofrequency radiation can lower the pain threshold, slow reaction times, cause fatigue, muscle weakness, headaches, difficulty concentrating, short-term memory problems and even memory loss.<sup>1,3,16,17</sup> These may be caused by disruption of  $\text{Ca}^{2+}$ , disruption of various enzyme pathways, induction of the stress response and associated effects, increased permeability of the blood-brain barrier, or various other effects of over-exposure to radiofrequency radiation.<sup>1,2,4</sup>

Radiofrequency radiation significantly decreases melatonin levels and decreases the ability of existing melatonin to fight cancer.<sup>2</sup>

**All these biological effects are good reasons to REMOVE sources of exposure to RF from the environment, built and unbuilt.** A review of old Soviet literature discusses the fact that reflexes, including conditioned reflexes, are slower in individuals exposed to RF. They go on to state “It is possible to observe degeneration of the neurons in the cerebral cortex and the basal ganglia, the pons, the medulla oblongata, and in some cases even the cerebellum, as well as histological and chemical changes in the vicinity of nerve fibers.”<sup>1</sup> Obviously, it is not a good idea to have an environmental toxin that can impair reflexes and damage nerves in the environment at all. The original purpose of cellphones was to allow communication from anywhere, often inside vehicles. The safe operation of motorized vehicles relies on those very reflexes and good neurological and brain function, therefore all cellphones should be labeled with warnings about their ability to compromise neurological and brain function and warn against having a cellphone operating in a motorized vehicle. Furthermore, a robust landline phones system should be maintained to minimize the need for people to use cellphones and a pricing structure to deter their frivolous use should be adopted.

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Many more people are adversely affected by RF radiation than realize it. Radiation from wireless devices may exacerbate the effects of a distraction such as conversation and impair reflexes and slow brain processing even at the lower levels phones emit when not connected. This may occur in part due to RF lowering dopamine levels.<sup>20</sup> The findings of “Examining the Impact of Cell Phone Conversations on Driving Using Meta-Analytic Techniques” support this assertion. Specifically, the authors state “There was a similar pattern of results for passenger and remote (cell phone) conversations.”<sup>21</sup> The RF emissions impairing the driver’s reactions is a likely explanation. “A Comparison of the Cell Phone Driver and the Drunk Driver” also shows delays in reaction times that may relate to the RF emissions from the phone.<sup>22</sup>

There are long-term public health implications of wireless radiation exposure. Detrimental biological effects, distinct from tissue heating effects, have been extensively documented in studies at a range of different frequencies and at levels below the current United States safety standard.<sup>2</sup> Many other nations already have more rigorous safety standards than does the US. The European Parliament has voted to re-evaluate and reduce levels of exposure to transmitted radio and microwave frequencies due to the public health risk they pose. Microwave and radiofrequency radiation are now being associated with attention deficit disorder, autism, sleep disorders, multiple sclerosis, Alzheimer’s disease and epilepsy, as well as asthma, diabetes, malignant melanoma, breast cancer, and other illnesses that have become increasingly more common. Please see [www.bioinitiative.org](http://www.bioinitiative.org) to read a 2012 review of the peer-reviewed science on the long-term risks of exposure to transmitted microwave and radio frequency radiation. Studies finding no health effects are predominantly industry funded.<sup>23</sup> A report by Hallberg and Johansson<sup>24</sup> published in *Pathophysiology* asks the provocative question about whether the recent (1997 and later) increase in exposure to microwave frequencies may be responsible for the recent decline in public health in Sweden. The data seem to say that public exposure to microwave frequencies is a likely culprit. In light of this, limiting exposure to radiofrequency radiation in vehicles so that persons with radiofrequency sickness can safely travel and are able to fully exercise their civil rights makes a great deal of sense.

The Soviet Union performed large amounts of research and found biological effects at levels far below our “safety” guidelines, hence their much lower safety limits.<sup>1</sup> Our current safety regulations are not designed to protect people from the non-thermal hazards posed by transmitting meters or other devices. The FCC “safety” standards are solely designed to protect a 6 ft 185 lb man from tissue heating during a short (6 minute) exposure. They are not designed to protect even a 6 ft man from biological effects during a continuous exposure.<sup>25</sup> They are not designed to protect women, children, and smaller men even during short-term exposures and the exposure for the general population would be continuous, so these “safety” standards are meaningless for the population as a whole.<sup>26</sup> Additional studies are now available. Please visit <http://www.prlog.org/12245111-everything-you-wanted-to-know-about-cell-phone-radiation.html> for links to the numerous comments by experts calling for the FCC to enact modern biologically-based RF safety limits. All projects moving people from safe landline telephones to wireless technologies of any sort should be halted until meaningful safety limits are in place. It violates everyones human rights to do otherwise (see “**Wireless Technology Violates Human Rights**”, attached).

In metropolitan areas, AT&T would like to force people onto U-Verse. An internet search shows that U-Verse is a fiberoptic system that often utilizes the copper line system to get to each home in established

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neighborhoods. In new suburbs, it is fiber to the home. There are substantive questions related to the safety of the hybrid systems.

Engineering standards for high-speed internet services need to be developed that protect human health by minimizing exposure high frequency signals since evidence exists that exposure to both transmitted RF and RF on building wiring can cause serious human health problems ([www.electricalpollution.com](http://www.electricalpollution.com)). Existing standards designed to protect against radio signal interference are inadequate to protect people from experiencing adverse RF health effects.

Both engineering problems that I can see would relate to the affect "dirty" electricity or RF on wiring can have on people. In the hybrid system, high frequency signals would be put on the copper phone wire whose ground is bonded to the ground for the electrical utility system, thus the very high frequency signals could go from the phone line to the ground wire to the rest of the electrical grid and as ground currents in the surrounding area. Additionally, very high frequency transients from a poorly engineered signal generator for the fiber optic system could pollute the electrical wiring where it would be measurable in surrounding buildings, would increase the overloading of the neutral wire, and increase electrical ground currents. At present there are no FCC standards for conducted RF above 30 MHz. This is a serious oversight since consumer and utility transmitting devices could easily pollute the wiring with communication frequencies a levels detrimental to human health. This has already been documented in reference to a transmitting electrical meter (incorporated herein by reference "Report on Examination of Selected Sources of Electromagnetic Fields at Selected Residences in Hastings-on-Hudson" - Isotope Wireless [http://stopsmartmetersny.org/images/Report on Examination of Selected Sources of Electromagnetic Fields at Selected Residences 20140301.pdf](http://stopsmartmetersny.org/images/Report_on_Examination_of_Selected_Sources_of_Electromagnetic_Fields_at_Selected_Residences_20140301.pdf)). Both are engineering problems that should be addressed prior to rolling U-Verse out further and especially before forcing people to use it.

U-Verse also provides a WiFi service within each home. The default setting is ON. Whether the transmitter may be turned off at all is unclear. **No provider should be providing a WiFi service hub within homes, especially not in a default transmitting condition.** Such transmitters expose occupants inside the home to biologically active and potentially harmful levels of radiofrequency (microwave) radiation without notification or permission. **Further, they expose neighbors, passersby, and the general environment to biologically significant levels of radiation** (see [http://www.ntia.doc.gov/files/ntia/us\\_doi\\_comments.pdf](http://www.ntia.doc.gov/files/ntia/us_doi_comments.pdf) for a discussion of some of the negative environmental impacts by the Department of Interior). Therefore, no additional U-Verse installations should be made with default WiFi activated service hubs prior to a NEPA review of the environmental impact of such widespread installations of microwave transmitters. Any further installations of in home WiFi service should require notification of homeowners of the IARC carcinogen classification of RF radiation and the wide array of potentially detrimental biological effects that RF radiation exposure can have.<sup>1</sup>

**Until the potential technical problems are addressed such that U-Verse is safe, no customer should be forced off their copper line service.**

Copper line service carries its own power. Neither U-Verse, cell antennas, nor cellphones necessarily do. What of reliability during disasters? This is especially important since smart meters have increased the vulnerability of the electrical grid (<http://www.gettingsmarteraboutthesmartgrid.org/>, <http://>

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[electromagnetichealth.org/wp-content/uploads/2014/02/Smart-Grid-Report-3-15-13.pdf](http://electromagnetichealth.org/wp-content/uploads/2014/02/Smart-Grid-Report-3-15-13.pdf)). Major outages have increased in the last few years.

High frequency signals on wiring also cause radiofrequency sickness, hence the need for the FCC to enact meaningful health protective standards related to the engineering of electronic devices. Milham and Morgan found a dose-response relationship between high frequencies present on building wiring and cancer.<sup>27</sup> Removing high frequencies on building wiring has improved MS symptoms, blood sugar levels, asthma, sleep quality, teacher health, headaches, ADD, and numerous other health problems.<sup>28,29,30</sup> Technical papers provide a solid electrical and biomolecular basis for these effects. A recent paper by Ozen showed that transients induce much stronger current density levels in the human body than does the powerline 60Hz signal.<sup>31</sup> Another technical paper discusses the authors' findings that high frequency communication signals on power lines also induce much stronger electrical currents in the human body than a low frequency signal of the same strength.<sup>32</sup> The induced currents disturb normal intercellular communications. This causes harmful short-term and long-term effects. The effects seem to be the same whether the system is AC or DC since the most biologically active component is the "noise" from poorly engineered devices.

Electrical engineering and biological sciences are largely separate disciplines. Biologists, molecular biologists, and doctors have been largely unaware of the high frequency pollution of electrical systems (AC and DC). The assumption, until recently, by biologists was that AC and DC systems were "clean". This is not so and has not been so for many many years. This has been well known by electrical engineers, but they have been taught that from a biological standpoint it is insignificant, after all the pollution, even in extreme cases, usually does not amount to much more than a couple of volts and in many cases is measured in millivolts. However, the assumption of safety is proving not to be true.<sup>27,28,29,30,31,32</sup> This shows the importance of establishing engineering standards for electronic devices that protect from biological effects. If proper standards are established, and the above mentioned references offer a good basis for establishing initial standards, non-polluting electronics and electrical components can be engineered. This would benefit everyone in the long run and decrease the isolation of people with radiofrequency sickness.

Our experience, and that of others, strongly suggests that the proliferation of wireless technology and electrically polluting electrical technology is a serious public health threat that is likely to be behind many of the rapidly increasing public health problems such as multiple sclerosis, fibromyalgia, chronic fatigue syndrome, diabetes, asthma, allergies, migraines, ADD/ADHD, sleep disorders, etc. The FCC has a duty to the public to protect the public health and safety from harm from radiofrequency radiation. (H.R. Report No. 104-204, p. 94) that trumps its duty to promote wireless technology. Please publicly acknowledge the inadequacy of the current thermally based FCC guidelines and halt any projects which would promote wireless technology until biologically meaningful RF radiation limits are enacted.

FCC does not possess the expertise to set biologically-based radiofrequency radiation safety limits. The Environmental Protection Agency (EPA) does. Therefore, the FCC should advocate that Congress direct the EPA to establish biologically-based radiofrequency radiation safety limits and provide the budget and resources to carry out that task. 2012 HR6358 was an excellent example of legislation to authorize the EPA to establish biologically-based radiofrequency radiation safety limits.

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In short, wireless technology and polluting electrical technology are unsafe and access-limiting. Elimination of landline telephones would further marginalize people with radiofrequency sickness in violation of the American's with Disabilities Act and endanger the public health and environment. Please protect the health and rights of the citizens of this great country. Please open NPRMs specifically in order to promulgate FCC rules related to protecting the civil rights of people with radiofrequency sickness, as guaranteed under the ADA and 2008 ADA Amendments and to re-work engineering rules for electronic devices so that they provide meaningful protection for human health and prevent electronic devices from polluting the electrical grid with RF.

Thank you.

Sincerely,

Catherine Kleiber

**References:**

1. Marha K, Musil J, and Tuha H. Electromagnetic Fields and the Life Environment. Institute of Industrial Hygiene and Occupational Diseases, Prague, Czechoslovakia. English Translation 1971
2. Cherry, N. 2000 Criticism of the Health Assessment in the ICNIRP Guidelines for Radiofrequency and Microwave Radiation (100 kHz- 300 GHz)
3. Johnson Liakouris AG. Radiofrequency (RF) sickness in the Lilienfeld study: An effect of modulated microwaves Archives of Environmental Health; May/June 1998; 53, 3.
4. Grant L. Microwaves Imitate Pesticides. U.S. Department of Energy Risk Management Quarterly, Volume 5-3M.
5. IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS PRESS RELEASE N° 208 [http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208\\_E.pdf](http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf)
6. Devra Lee Davis, Santosh Kesari, Colin L. Soskolne, Anthony B. Miller, Yael Stein. "Swedish Review Strengthens Grounds for Concluding That Radiation from Cellular and Cordless Phones Is a Probable Human Carcinogen;" *Pathophysiology* - April 2013 (Vol. 20, Issue 2), Pages 123-129 [http://www.pathophysiologyjournal.com/article/S0928-4680\(13\)00003-5/abstract](http://www.pathophysiologyjournal.com/article/S0928-4680(13)00003-5/abstract)
7. Hardell and Carlberg. "Using the Hill Viewpoints from 1965 for Evaluating Strengths of Evidence of the Risk for Brain Tumors Associated with Use of Mobile and Cordless Phones," *Reviews on Environmental Health*, Volume 28 (November 2013), Issue 2-3, Pages 97-106, <http://dx.doi.org/10.1515/reveh-2013-0006> .
8. Havas, J. Marrongelle, B. Pollner, E. Kelley, C.R.G. Rees, L. Tully. Provocation study using heart rate variability shows microwave radiation from DECT phone affects autonomic nervous system. *Eur. J. Oncol. Library*, vol. 5, 2010 <http://www.magdahavas.com/wordpress/wp-content/uploads/2012/01/Havas-HRV-Ramazzini.pdf>

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9. M Havas and J Marrongelle. Replication of Heart Rate Variability Provocation Study with 2.4 GHz Cordless Phone Confirms Original Findings [Electromagn Biol Med](#). 2013 Jun;32(2):253-66. doi: 10.3109/15368378.2013.776437. <http://www.ncbi.nlm.nih.gov/pubmed/23675629#>
10. M Havas. Radiation from wireless technology affects the blood, the heart, and the autonomic nervous system *Rev Environ Health* 2013; 28(2-3): 75–84
11. A.I. Frey and E.S. Eichert. MODIFICATION OF HEART FUNCTION WITH LOW INTENSITY ELECTROMAGNETIC ENERGY. *JOURNAL OF BIOELECTRICITY* 5(2), 201-210 (1986)
12. Nelson J. Jumping off the Wireless Bandwagon - Wifi and You. *Watershed Sentinel*. Jan/Feb 2011. <http://www.watershedsentinel.ca/content/jumping-wireless-bandwagon-wifi-and-you>
13. "Impacts of radio-frequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem – a review" ([http://www.biolmedonline.com/Articles/Vol4\\_4\\_2012/Vol4\\_4\\_202-216\\_BM-8.pdf](http://www.biolmedonline.com/Articles/Vol4_4_2012/Vol4_4_202-216_BM-8.pdf))
14. "Report on Possible Impacts of Communication Towers on Wildlife Including Birds and Bees" ([http://www.moef.nic.in/downloads/public-information/final\\_mobile\\_towers\\_report.pdf](http://www.moef.nic.in/downloads/public-information/final_mobile_towers_report.pdf))
15. Warnke U. BEES, BIRDS AND MANKIND: Destroying nature by “electrosmog”
16. Johansson O. Disturbance of the immune system by electromagnetic fields—A potentially underlying cause for cellular damage and tissue repair reduction which could lead to disease and impairment, *Pathophysiology*, Volume 16, Issues 2-3, August 2009, Pages 157-177.
17. Blank M and Goodman R. Electromagnetic Fields May Act Directly on DNA, *Journal of Cellular Biochemistry* 75:369-374 (1999)
18. Santini R, Santini P, Le Ruz P, Danze JM, and Seignel M. 2003 Survey Study of People Living in the Vicinity of Cellular Phone Base Stations. *Electromagnetic Biology and Medicine* Vol. 22, No. 1, pp. 4149.
19. Hyland GJ. Physics and biology of mobile telephony. *The Lancet*, Vol 356, November 25, 2000.
20. Klaus Buchner and Horst Eger. Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields\_A Long-term Study under Real-life Conditions Original study in German: BUCHNER K, EGER H (2011) *Umwelt-Medizin-Gesellschaft* 24(1): 44-57. [http://www.radiationresearch.org/images/RRT\\_articles/Buchner%20Eger%20Rimbach%20Study%202011%20ENG%20FINAL%20Revised%2029%20July%202011.pdf](http://www.radiationresearch.org/images/RRT_articles/Buchner%20Eger%20Rimbach%20Study%202011%20ENG%20FINAL%20Revised%2029%20July%202011.pdf)
21. “Examining the Impact of Cell Phone Conversations on Driving Using Meta-Analytic Techniques” (<http://hfs.sagepub.com/content/48/1/196.abstract>)
22. “A Comparison of the Cell Phone Driver and the Drunk Driver” <http://www.distraction.gov/download/research-pdf/Comparison-of-CellPhone-Driver-Drunk-Driver.pdf>
23. Huss et al., "Source of Funding and Results of Studies of Health Effects of Mobile Phone Use: Systematic Review of Experimental Studies", *Environmental Health Perspectives*, 115(1): 1-4, 2007. <http://www.chponline.org/members/2006/9149/9149.pdf>.
24. Hallberg O, Johansson O, Apparent decreases in Swedish public health indicators after 1997 – Are they due to improved

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diagnostics or to environmental factors? Pathophysiology Volume 16, Issue 1, June 2009, Pages 43-46.

25. A letter from Norbert Hankin, Center for Science and Risk Assessment, Radiation Protection Division, EPA, regarding the limitations and purpose of the FCC exposure standards. [http://www.emrpolicy.org/litigation/case\\_law/docs/ noi\\_epa\\_response.pdf](http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf)
26. Identification of Research Needs Relating to Potential Biological or Adverse Health Effects of Wireless Communication, 2008, National Academy of Science.
27. Milham S, Morgan L. A new electromagnetic exposure metric: High frequency voltage transients associated with increased cancer incidence in teachers in a California school, American Journal of Industrial Medicine, Volume 51, Issue 8, Date: August 2008, Pages: 579-586
28. Havas M, Olstad A. Power quality affects teacher wellbeing and student behavior in three Minnesota Schools, Science of the Total Environment, Volume 402, Issues 2-3, 1 September 2008, pp. 157-162.
29. Havas M. 2008. Dirty Electricity Elevates Blood Sugar Among Electrically Sensitive Diabetics and May Explain Brittle Diabetes. Electromagnetic Biology and Medicine, 27:135-146. [http://www.informaworld.com/smpp/content~db=all? content=10.1080/15368370802072075](http://www.informaworld.com/smpp/content~db=all?content=10.1080/15368370802072075)
30. Havas M. 2006. Electromagnetic hypersensitivity: biological effects of dirty electricity with emphasis on diabetes and multiple sclerosis. Electromagnetic Biology Medicine 25(4):259-68.
31. Ozen, S. 2007. Low-frequency Transient Electric and Magnetic Fields Coupling to Child Body, Radiation Protection Dosimetry (2007), pp. 1-6. <http://rpd.oxfordjournals.org/cgi/content/full/ncm315>
32. Vignati, M. and L. Giuliani, 1997. Radiofrequency exposure near high-voltage lines. Environ Health Perspect 105(Suppl 6):1569-1573 (1997) <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1469914>