20-1025 (Lead); 20-1138 (Consolidated)

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

ENVIRONMENTAL HEALTH TRUST; CONSUMERS FOR SAFE CELL PHONES; ELIZABETH BARRIS; THEODORA SCARATO

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;
UNITED STATES OF AMERICA
Respondents

Petition for Review of Order Issued by the
Federal Communications Commission

DEFERRED JOINT APPENDIX

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Individual Rights; R. Paul and Kathleen Sundmark
Reply Comments, Mar .4, 2013

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

In the Matter of
Reply Round for ET Docket #03-137 and WT Docket #12-357

Reply Filed by
R. Paul and Kathleen Sundmark

Reply Comments on FCC Notice of Proposed Rulemaking

We, R. Paul and Kathleen Sundmark, deem that our statements are true to the best of our knowledge.

1. Our mailing address is P.O. Box 9, Tujunga, CA 91043.

2. R. Paul Sundmark is a retired Outside Plant Technician for AT&T. Kathleen Sundmark is a licensed Doctor of Chiropractic. She practiced for 30 years specializing in neurology and internal disorders.

3. We believe that there has been sufficient research to establish the non-thermal biologic effects of RF at present exposure limits. The FCC should therefore promptly update its guidelines and implement measures to slow the exponential growth of wireless technologies in this society to protect the general public as well as workers from these effects. We urge an immediate reduction of exposure limits to a precautionary biologically-based level. The 2012 BioInitiative Report is incorporated by reference herein in its entirety (http://www.bioinitiative.org/)

4. The present "time-averaged" exposure standards do not account for pulsations and other signal modulations, time-varying exposures from multiple fixed and mobile sources, variations in the health status of exposed individuals, and more. We urge FCC to establish guidelines based upon true, often involuntary, exposure variations in the general and worker populations.

5. The GAO has reported that the FCC said it relies on federal health and safety agencies to determine exposure limits. It has not requested updated information on public and environmental safety for current exposures levels, nor an assessment of the wisdom of increasing exposure limits. We specifically urge the FCC to defer to the EPA for reliable exposure guidelines which protect the public, including vulnerable

subpopulations such as – but not limited to – young people, ill and disabled people, pregnant women, people of reproductive age, workers and the elderly, and the environment, including vulnerable species such as – but not limited to -- birds, bees and other pollinators, and amphibians.

6. FCC appeared to describe a conflict of interest when it stated in a case that serves both the public in terms of health and safety and the telecommunications industry that provides services. This is another reason for deferring to the EPA or other biological experts for a complete literature review and preparation of appropriate and precautionary exposure guidelines that adequately protect health and safety of the public.

7. Closing, we urge FCC to reevaluate its ability to uphold its responsibility to establish appropriate RF exposure guidelines based on public health and safety, not industry requirements. If it considers itself to be sufficiently expert in this task, we urge FCC not to raise, but to greatly reduce allowable exposures to precautionary levels in the face of research on non-thermal biological effects upon humans and the environment.

8. Further, a moratorium should be placed on sales of new spectrum, transmitting utility meter installation, and installation of additional base stations for wireless service while biologically-based safety limits are being developed.

Respectfully submitted,
R.Paul and Kathleen Sundmark

Individual Rights & ADA; Cynthia Edwards Comments, Feb. 5, 2013

FCC 12-152

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

In the Matter of	)	
	)	
Notice of Proposed Rulemaking	)	
18 FCC Rcd 13187, 13188 ¶1 (2003)	)	ET Docket No. 03-137
	)	
And	)	
	)	
Service Rules for the Advanced Wireless Services	)	WT Docket No. 12-357
H Block---Implementing Section 6401 of the	)	
Middle Class Tax Relief and Job Creation Act of	)	
2012 Related to the 1915-1920 MHz and	)	
1995-2000 MHz Bands ¶53 footnote 95	)	

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

Comment Filed by:
Cynthia Edwards
1985 Upland Dr.
Ann Arbor, MI
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734-761-2036

Feb 5, 2013

AFFIDAVIT OF _Cynthia Edwards

State of Michigan

County of Washtenaw

I, Cynthia Edwards, attest that my statements are true to the best of my knowledge.

Comment round for ET Docket No. 03-137 and WT Docket No. 12-357.

1. My name is Cynthia Edwards—. My address is 1985 Upland Dr. Ann Arbor Mi 48105.
2. I work in retail sales and landscaping.
3. I am writing to comment on the existing FCC guidelines for smart meters because the radio frequencies coming from SmartMeters are making me sick, as they are many other people. Once the meters started being installed in my city in 2012, I began having trouble sleeping, developed a loud ringing in my ears, started feeling exhausted all the time, have experienced brain fog and an inability to concentrate, and my irregular heartbeat that had been under control suddenly was wildly irregular, and nothing has been able to stop it. This is terrifying because it predisposes me for a stroke or heart attack. All of this is putting my health and my life at risk. This is completely unacceptable and I want to know why my government is not protecting my life.
   I am writing to demand that the FCC take responsibility for the mess it has allowed to happen and for putting my life at risk. I demand that the installation of smart meters and digital meters be stopped immediately until independent research can be done and ALL the research taken into account, not just that done by the industry.
   Several people in my community have had to move out of their houses because of becoming so ill after the meters were installed. Many others are now constantly ill. People's blood pressures have spiked and they have had to go on medication to controll it. A young boy with juvenile diabetes, which had been completely under control, had his numbers spike into the danger zone. ALL OF THIS HAPPENED DIRECTLY AFTER SMART METERS WERE INSTALLED.
   It is important to note that it is not only the RF smart meters but the digital meters that are causing these problems as well. And there seem to be no regulations regarding these meters at all. In Michigan , DTE is forcing the removal of analog meters and the installation of the digital meters, even if a person is opting out of the smart meter installation. Consumer's Energy is allowing analog meters to be retained so there is clearly no reason for DTE's absolute refusal to do this. THESE DIGITAL METERS ARE ALSO MAKING PEOPLE SICK AND NEED TO BE REGULATED.

   There are as many as 8% of the population who are technically "electronically sensitive". The Americans With Disabilities Act recognizes

> electronic sensitivity as a legitimate disability and yet smart meters and digital meters are making their lives a living hell. This means that the FCC standards are allowing a violation of the ADA. This cannot be allowed to continue.
>
> ***Current FCC guidelines are based on physics and engineering rather than biological studies, which has nothing to do with the reality being faced by humans and other animals, birds, insects etc.***
>
> The guidelines currently used by the FCC were adopted in 1996, are thermally based, and are believed to protect against injury that may be caused by acute exposures that result in tissue heating or electric shock. FCC guidelines have a much lower certainty of safety than standards. Meeting the current FCC guidelines only assures that one should not have heat damage from SmartMeter exposure. It says nothing about safety from the risk of many chronic diseases that the public is most concerned about such as cancer, miscarriage, birth defects, semen quality, autoimmune diseases, etc. Therefore, when it comes to nonthermal effects of RF, FCC guidelines are irrelevant and cannot be used for any claims of SmartMeter safety unless heat damage is involved (Li, 2011).

There is no scientific literature on the health risks of SmartMeters in particular as they are a new technology. However, there is a large body of research on the health risks of EMFs. Much of the data is concentrated on cell phone usage and as SmartMeters occupy the same energy spectrum as cell phones and depending on conditions, can exceed the whole body radiation exposure of cell phones phones In terms of health risks, the causal factor under study is RF radiation whether it be from cell phones, Wi-Fi routers, cordless phones, or SmartMeters. Therefore all available, peer-reviewed, scientific research data can be extrapolated to apply to SmartMeters, taking into consideration the magnitude and the intensity of the exposure.

Since the mid-1990's the use of cellular and wireless devices has increased exponentially exposing the public to massively increased levels of RF. There is however, debate regarding the health risks posed to the public given these increased levels of radiation. It must be noted that there is little basic science funding for this type of research and it is largely funded by industry. An intriguing divide, noted by Genuis, 2011 is that most research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposure. Research funded by industry and some governments seems to cast doubt on the potential for harm. Elements of the controversy stem from inability to replicate findings consistently in laboratory animal studies. However, analysis of many of the conflicting studies is not valid as the methodology used is not comparable. Despite this controversy, evidence is accumulating on the results of exposure to RF at non-thermal levels including increased permeability of the blood-brain barrier in the head (Eberhardt, 2008), harmful effects on sperm, double strand breaks in DNA which could lead to cancer genesis (Phillips, 2011), stress gene activation indicating an exposure to a toxin (Blank, 2011), and alterations in brain glucose metabolism (Volkow, 2011).

There are no current, relevant public safety standards for pulsed RF involving chronic exposure of the public, nor of sensitive populations, nor of people with metal and medical implants that can be affected both by localized heating and by electromagnetic interference (EMI) for medical wireless implanted devices. Many other countries (9) have significantly lower RF/MW exposure standards ranging from 0.001 to 50 ~W/cm2 as compared with the US guideline of 200-1 000 ~W/cm2. Note that these recommended levels are considerably lower that the approximately 600 ~W/cm2. (time-averaged) allowed for the RFR from SmartMeters operating in the low 900 MHz band mandated by the FCC based on only thermal consideration. In summary, there is no scientific data to determine if there is a safe RF exposure level regarding its non-thermal effects. The question for governmental agencies is that given the uncertainty of safety, the evidence of existing and potential harm, should we err on the side of safety and take the precautionary avoidance measures?

The two unique features of SmartMeter exposure are: 1) universal exposure thus far because of mandatory installation ensuring that virtually every household is exposed; 2) involuntary exposure whether one has a SmartMeter on their home or not due to the already ubiquitous saturation of installation in every community. Governmental agencies for protecting public health and safety should be much more vigilant towards involuntary environmental exposures because governmental agencies are the only defense against such involuntary exposure.

My health and my life are in danger and I am asking the FCC to do the right thing –

1. Stop the use of SmartMeters and digital meters IMMEDIATELY until independent research is done and real safety standards can be created

2. Require that power companies install shielding on every house and business to protect people from the RF they are now constantly exposed to.

3. Require testing of both Smart Meters and digital meters on a variety of homes around the country and NOT IN A LABORATORY, so that the problems they are creating can be seen and understood where they are happening, in relation to the huge amount of RF coming from Cell towers, WiFi, portable phones, etc.

Respectfully submitted by

Cynthia Edwards
1985 Upland Dr.
Ann Arbor, MI 48105
February 5, 2013

Individual Rights; Diana Ostermann Comments, Feb. 4, 2013

FCC 12-152

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

In the Matter of	)	
	)	
Notice of Proposed Rulemaking	)	
18 FCC Rcd 13187, 13188 ¶1 (2003)	)	ET Docket No. 03-137
	)	
And	)	
	)	
Service Rules for the Advanced Wireless Services	)	WT Docket No. 12-357
H Block---Implementing Section 6401 of the	)	
Middle Class Tax Relief and Job Creation Act of	)	
2012 Related to the 1915-1920 MHz and	)	
1995-2000 MHz Bands ¶53 footnote 95	)	

To: Office of the Secretary
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Washington, DC 20554

Comment Filed by: Diana Ostermann
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(Telephone Number)

February 4, 2013

AFFIDAVIT OF Diana Ostermann

State of Michigan

Allegan County

I, Diana Ostermann attest that my statements are true to the best of my knowledge.

Comment round for ET Docket No. 03-137 and WT Docket No. 12-357.

1. My name is Diana Ostermann. My address is 7364 North Shore Drive, South Haven, MI 49090.

2. I am self-employed, working as my husband's radiology practice manager.

3. When researching the safety of wireless smart meters, I found much evidence that the FCC RF exposure standards are set thousands of times higher than the levels that have been shown to harm health. The current guidelines are based on engineering convenience, not biological studies of negative health effects. Published in 2007, the original BioInitiative Report analyzed thousands of scientific studies of these biological effects. The updated Bioinitiative 2012 (http://www.bioinitiative.org/table-of-contents/) published 12/31/12 looks at 1800 new studies and finds that the risks to health have significantly increased since the 2007 report. The 2007 report recommended a standards level of 0.1 microWatts/cm2. The 2012 report found biological effects at 0.003 microWatts/cm2. New standards must be set based on these very real biological effects not just thermal effects.

4. The current FCC guidelines allow devices operating in the 900 MHz range (including cell phones and smart meters) to emit up to 600 microWatts/cm2. Yet the scientific studies summarized above find that wireless RF exposure in the range of 0.002 – 10.0 microWatts/cm2 cause a host of negative biological effects including damage to DNA and genes, which can lead to cancer after 10 or more years of exposure; interruption of neurotransmitters and cell communication; EEG changes which cause memory problems and reduction in learning; lowered melatonin production which reduces

sleep and affects testosterone levels; causes reduced sperm production and damaged sperm; affects the natural rhythm of the brain; affects heart rate and heart arrhythmias; and breeches the blood brain barrier which allows toxins to enter the brain. Involuntary exposures in public places to wireless devices such as cell phones and laptops anywhere from 10 feet to 100 yards away cause exposures in the range of 0.001 to 0.08 microWatts/cm2 PER DEVICE. How many active cell phones and laptops are within a 10-50 foot radius of a pedestrian on a busy urban sidewalk or in a café with wifi? These exposures are additive, and the resulting damage is cumulative over time.

5. The current FCC certification testing process ignores the reality of urban environments, where the proliferation of wireless devices and the resulting 'electrosmog' consume much of the permitted RF emissions. Devices submitted for FCC certification are tested in isolation, and approved so long as the RF emissions for that single device are below the maximum limit. An example is the Tropos 7320 wireless broadband router whose weighted cumulative RF exposure (for 2 co-located radios) is 98.62% of the allowed maximum at a distance of 23cm. Obviously, this approval assumes there are no other sources of RF operating anywhere near the Tropos router; no cell towers, no wifi networks, no smart phones, tablets or any other RF emitting devices, when in fact the ambient RF in many urban areas is now as high as 100 microWatts/cm2. This amount added to the Tropos router's emissions would likely exceed the current FCC limits (which are too high).

6. The current definition of "co-location" of transmitters as being within 20cm (8 inches) of another transmitter is absurd. The reality is, multiple (omnidirectional) transmitters can be significantly further apart than 20 cm. yet have RF waves from each transmitter simultaneously affecting a person. The Tropos example given in item 5 above is such a scenario. Since the FCC standard is for EXPOSURE not for EMISSION LEVEL, perhaps the standard should define bands of distance (ie, 10 feet, 25 ft, 50 ft), list the possible emitters within that distance, with an associated discounting of the nearby transmitters' emissions based on distance, and then add that to the emissions of the device seeking FCC approval to determine total exposure.

7. The current standards make no distinction between continuous wave (CW) frequencies and pulsed signals, even though pulsed signals have been shown to be up to 28 times as damaging as CW signals. There should be a significantly lower limit for pulsed than for CW signals.

8. The current standards were set based upon tests done on healthy, 6 foot tall, young adult males. Children, fetuses, and sickly individuals suffer effects at much lower levels. The standards should be revised downward to reflect safe levels for the most vulnerable.

9. The measurement of power density averages the exposure over a 30 minute period. This practice hides the momentary peak RF emission. Wireless smart meters utilizing a pulsed signal can have peak measurements 10,000 times the averaged measurement. The standards should contain a cap on the momentary peak emission, since that is what the human body is responding to.

10. The current standards ignore the fact that the impacts of RF exposure are cumulative. FCC Certification is based upon a single exposure as if that is the only time an individual will ever be near that device. Given that people are exposed to RF daily (such as from cell phones and laptops) and even continuously (from cell towers and smart meters), the standards need to determine a safe annual or even 10 year cumulative exposure level in order to certify an emitter.

Respectfully submitted by

Diana Ostermann
7364 North Shore Dr.
South Haven, MI 49090

February 4, 2013

Individual Rights; Chris Nubbe Comments, Jul. 13, 2016

July 13, 2016

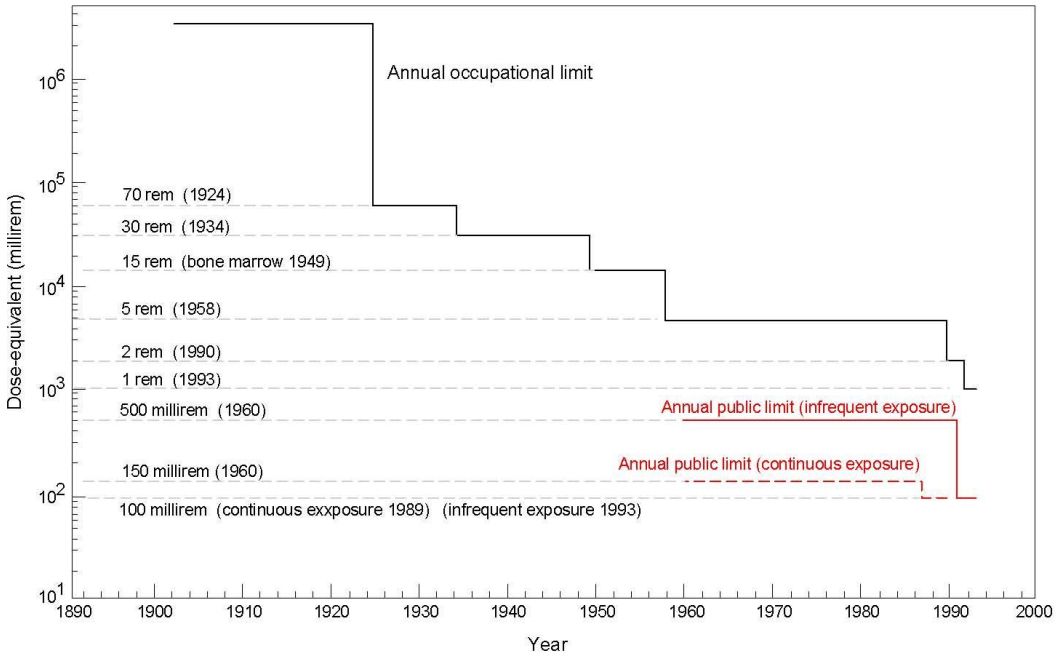
To: Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

From: Chris Nubbe
PMB 377, 1001 Cooper Pt Rd SW Ste 140
Olympia, Washington [98502]

Re: The following public comments are submitted in regards to the FCC Spectrum Frontiers Proposal for Wireless 5G Broadband, as reflected in GN Docket No. 14-177, IB Docket Nos. 15-256, 97-95, WT Docket No. 10-112, RM-11664

I have read the FCC Fact Sheet on the Spectrum Frontiers Proposal, as well as Tom Wheelers Speech and Presentation to the Press Club June 20, 2016 on this topic as well as reviewed other documents such as FCC Record 15-138 regarding this matter. I find that the stated intent, to turn innovators loose upon the additional frequency and bandwidth to be made available by this proposal for wireless 5G Broadband, without any consideration of safety, and for the express purpose of speeding up new wireless product development for greater profit and market share, is both reckless, irresponsible, and unconstitutional.

One need only examine the historical record of X-Ray technology in this country to see both a repeating pattern here as well as a precautionary tale. The following logarithmic plot of the recommended limits on annual exposures to ionizing radiation shows a continual decrease from 1890 to the present. http://www.fas.org/sgp/othergov/doe/lanl/00326631.pdf



In 100+ years, Ionizing Radiation Dose limits went from 10 Rad per day in 1902 down to present levels of 100 millirem per year which is a 36,500 times lower limit of radiation exposure. Early reductions in X-Ray exposure levels were prompted when the necrotic fingers of X-Ray technicians began falling off. The shoe fitting fluoroscope was another terribly unsafe application of the new X-ray technology as it radiated all of the reproductive, internal organs, and brains of its users while they looked at the fit of the bones in their feet in the new shoes. There have been many examples of technological adolescence over the years covering a wide range of materials, like the radium girls who painted clock faces with radium paint, asbestos fibers used in insulation, pipes, building materials, etc.

The current Personal Communications Service Standard for Public Exposure to (non-ioinzing microwave radiation) was set by FCC in 1996 at 1000 uW/cm^2 . Less than 20 years later, precautionary levels now recommended in the Bioinitiative Report are 0.0003 to 0.0006 uW/cm^2, which are over a million times less than the 1996 FCC standard still in use.
http://www.bioinitiative.org/research-summaries/
http://www.bioinitiative.org/rf-color-charts/
Given that scientists have documented irreversible infertility in mice after five (5) generations of exposure to RFR at cell phone tower exposure levels of less than one microwatt per centimeter squared (μW/cm2), a level which is a thousand times lower than the current FCC standard, there is cause for concern. Even the National Institute of Health (NIH), National Toxicology Program (NTP) has recently confirmed what many studies from around the world have already documented that cell phone radiation causes very rare and specific types of cancer in rats, the same types of cancers that have been occurring in humans from cell phone usage. Links to the NIH NTP Study are here.
http://biorxiv.org/content/early/2016/06/23/055699
http://www.saferemr.com/2016/05/national-toxicology-progam-finds-cell.html
http://www.motherjones.com/environment/2016/05/federal-study-links-cell-phone-radiation-cancer
http://www.naturalnews.com/054165_cell_phone_radiation_brain_tumors_government_study.html
http://www.wsj.com/articles/cellphone-cancer-link-found-in-government-study-1464324146?mg=id-wsj

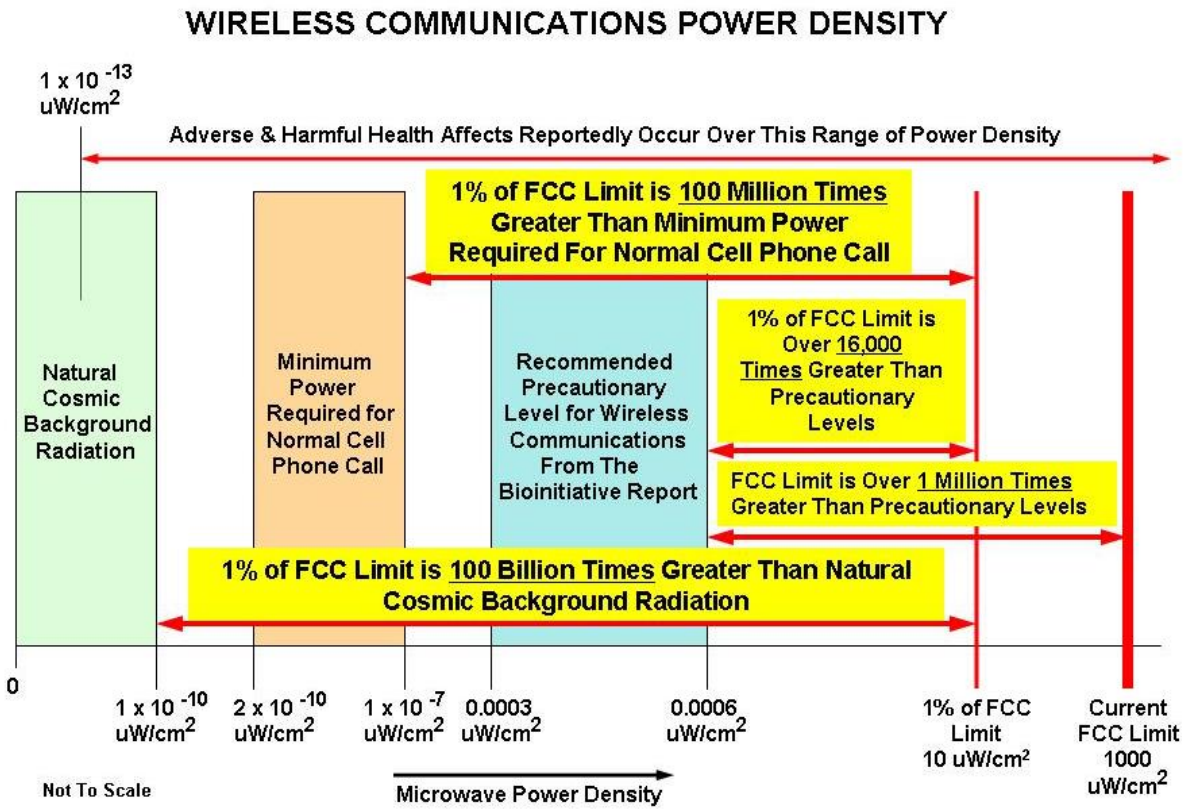
The obvious concern here is that the allowable levels of microwave radiation are already too high and are already causing serious damage to living organisms. Current FCC levels for microwave radiation for the wireless industry are the highest in the world. To put that into perspective the following chart compares current exposure guidelines to speed limits around the world.

As 'volts per metre' is not a unit that most people are familiar with, we have arbitrarily taken the 1998 Salzburg level of 0.6 V/m as being 'equivalent to' a 30 mph vehicle speed limit in residential areas and then scaled the other levels relative to this. It is easy to see that the ICNIRP guidance is not very precautionary.

1800 MHz Public Exposure Guidelines	PFD	Equivalent	c.f. speed
	$\mu W/m^2$	V/m	m.p.h.
FCC (USA) OET-65	10,000,000	61	3000
ICNIRP (1998), WHO	9,000,000	58	2847
Belgium (excluding Wallonia)	1,115,000	21	1002
Italy (sum of frequencies)	100,000	6	300
Russia, PRChina	100,000	6	300
Switzerland, Lichtenstein, Luxembourg	95,000	6	292
Belgium Wallonia	24,000	3	147
Typical 100m from a base station (0.2 to 6 V/m)	10,000	1.9	95
Vienna (sum GSM)	10,000	1.9	95
Italy (single frequency)	1,000	0.6	30
Salzburg 1998 (sum GSM)	1,000	0.6	30
EU-Parl, GD Wissenschaft, STOA GSM (2001)	100	0.2	9
Median level, 15 US cities 1977 (mainly VHF & TV)	48	0.14	7
Salzburg GSM/3G outside houses (2002)	10	0.06	3
Salzburg GSM/3G inside houses (2002)	1	0.02	1
Burgerforum BRD proposal, waking areas (1999)	1	0.02	1
Burgerforum BRD proposal, sleeping areas (1999)	0.01	0.002	0.1
Mobile phone handsets can work down to about	0.000002	0.00003	0.0015
Natural background level (all RF frequencies)	0.000001	0.00002	0.001
Cosmic background at 1800 MHz average approx	0.00000000001	0.00000006	0.000003

This chart taken from http://www.powerwatch.org.uk/science/intguidance.asp

The following graphic representation shows just how unnatural and huge the amount of microwave radiation has been increased as a result of the rapid proliferation of wireless technology.



From this we see that current FCC Radiation limits are BILLIONS of times greater than the microwave radiation levels that life on this planet evolved to. The problem with this proposal to push 5G into service before resolving the basic issue of the safety of microwave radiation already widely in use, is that in stead of extinguishing the fire that is currently burning your house down, 5G will just throw more gasoline on it. This proposal will greatly increase the exposure levels of microwave radiation everywhere as one of its stated goals is to provide wireless 5G coverage in rural areas not already served. The result will be to greatly increase the number of people who will not be able to tolerate these levels of radiation. The Americans with Disabilities Act (ADA) and the U.S. Constitution require cities to protect the rights of people injured by wireless technology. "The telecommunications Act should not be interpreted to injure an identifiable segment of the population, exile them from their homes and their city, leave them no place where they can survive, and allow them no remedy under City, State or Federal laws or constitutions."
http://www.cellphonetaskforce.org/?page_id=400
This country demonstrates its resolve to protect the rights of minorities in every ADA accessible and tobacco free public space we use. Its only a matter of time before that same resolve is applied to cell phone radiation.

Several interesting points taken from the Fall 2008 edition of the American Trial Lawyer are as follows: "More than 1000 peer-reviewed, published studies form the basis for establishing the link between mobile phone use and a variety of health problems…… The expanding telecommunications and internet industries have perpetrated a dangerous fraud upon the public, withholding information that would expose the risk that cell phones pose to humans and the environment". Evidence of the true health risks of wireless technology can be seen in the "insurance carriers' decision to exclude health risk claims from product liability policies marketed to the wireless industry. Beginning in 2002, major insurers excluded health risks from cell phone usage as a covered loss under policies sold to the industry….. Because the FDA granted the industry a variance on the requirement for premarket safety, it is unlikely that the FDA will take further steps at protecting the public…… Further, the cell phone industry routinely misrepresents as safety standards the emission guidelines for wireless radiation promulgated under the Telecommunications Act of 1996 and administered through the FCC. The FCC has no safety authority. Thus no safety standards exist to protect consumers from the dangers of cell phones an other wireless devices……In the absence of sound Federal Guidelines or vigilant regulation, Litigation is the only option to compensate victims and deter the continued disingenuous and dangerous behavior of the wireless industry". A copy of this article from the American Trial Lawyer Magazine is attached.

The Fall 2011 edition of the Trial Lawyer Magazine contains an article about the warning signs of radiation and cell phones which states "In May 2011 the World Health Organization (WHO) …. elevated cell phones to Group 2B in its internationally recognized rankings of carcinogens …. According to the WHO, cell phones are possibly carcinogenic to humans, now being classified alongside the pesticide DDT, lead, chloroform and gasoline engine exhaust…..children using cell phones are exposed to RF energy rates two times higher in the brain

and up to 10 times higher in the bone marrow of the skull compared to adults' use…… because their tissue normally contains a larger number of ions and thus has higher conductivity…..With its five billion subscribers, massive marketing presence, high degree of social acceptance, irresistible gadgets, unrivaled convenience and habit-forming pastime, the cell phone industry has reached limits well beyond "Big Tobacco…. it has denied the existence of any danger and has spent millions of dollars trying to discredit the research that points to problems regarding safety — all the while registering patents responsive to the dangers associated with cell phone use….. A good student of history might find striking parallels emerging from the position put forward today by the cell phone industry as compared to the earlier actions of the industries that produced and, for many years, protected tobacco and asbestos through coordinated efforts to stymie research and constantly deny the hazards truly presented by products to which the consuming public had become attached". A copy of this Fall 2011 article from the Trial Lawyers Magazine is attached and can be found here: http://www.thenationaltriallawyers.org/the-trial-lawyer-magazine/archived-issues/

On August 11, 2014, Arthur Firstenberg from the Cellular Phone Task Force, reported that Twenty-nine high-profile lawsuits brought by people whose brain tumors were caused by their cell phones are finally moving toward trial in Washington DC. Six of these cases were originally filed in 2001 and 2002. Many of the plaintiffs are no longer alive. The 12- and 13-year-old cases will now move into the discovery phase and each of the plaintiffs is asking for more than $100,000,000. There are 46 defendants including Motorola, Nokia, AT&T, Bell Atlantic, Cellular One, Cingular Wireless, SBC Communications, Verizon, Vodafone, the Telecommunications Industry Association, the IEEE, ANSI, the CTIA, and the FCC. From Judge Frederick H. Weisberg, Washington D.C. Superior Court: Expert Preemption Order (page 5): "Federal law is the supreme law of the land, but there is no constitutional provision that says federal facts are the supreme facts of the land. Federal law can preempt state law, but it cannot preempt scientific fact. The scientific truth, whatever it may be, lies outside of the FCC's regulations about what is 'safe' or 'unsafe.' The experts have offered their opinions on the state of the scientific knowledge and general causation. They have testified about the methodology they used to reach those opinions. Their testimony on these points, at this stage of the case, is not subject to preemption." http://www.saferemr.com/2014/08/major-breakthrough-in-cellphone.html

Unlike the cases of past technological adolescence where limited numbers of people and limited areas of the environment were affected, this experiment of wireless technological proliferation is global and has the goal of blanketing the globe everywhere to facilitate uninterrupted wireless service. The continued push of this dangerous technology solely for profit and without responsible safety considerations and limitations is genocide in terms of causing irreversible sterility and in terms of causing cancer and other sickness in the population qualifies as a weapon of mass destruction. The definition of Weapons of Mass Destruction (WMD) taken from a Federal Government web site http://www.fbi.gov/about-us/investigate/terrorism/wmd/wmd_faqs "are defined in US law (18 USC §2332a) as: … (C) any weapon involving a biological agent, toxin, or vector (as those terms are defined in section 178 of this title)(D) any weapon that is designed to

release radiation or radioactivity at a level dangerous to human life. WMD is often referred to by the collection of modalities that make up the set of weapons: chemical, biological, radiological, nuclear, and explosive (CBRNE). These are weapons that have a relatively large-scale impact on people, property, and/or infrastructure." On page 10 of the Criminal and Epidemiological Investigation Handbook http://www.fbi.gov/about-us/investigate/terrorism/wmd/criminal-and-epidemiological-investigation-handbook the term biological agent as it refers to WMD's is further defined as it "includes any weapons involving a disease organism. However, it does not require the actual use of a biological agent. Also, it does not require that the biological agent be a select agent only that that agent is capable of causing biological malfunction, disease, or death in a living organism (Title 18 U.S.C. Section 178)." The International Criminal Court http://www.icc-cpi.int/en_menus/icc/about%20the%20court/frequently%20asked%20questions/Pages/12.aspx defines "Crimes against humanity include any of the following acts committed as part of a widespread or systematic attack directed against any civilian population, with knowledge of the attack: … extermination; enforced sterilization, other inhumane acts of a similar character intentionally causing great suffering or serious bodily or mental injury." The term Genocide as defined by the United States Holocaust Memorial Museum is taken from this site http://www.ushmm.org/wlc/en/article.php?ModuleId=10007043 "United Nations approved the Convention on the Prevention and Punishment of the Crime of Genocide. This convention establishes genocide as an international crime, which signatory nations undertake to prevent and punish. It defines genocide as: … any of the following acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such: ... Killing members of the group; … Causing serious bodily or mental harm to members of the group; … Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part ….. Imposing measures intended to prevent births within the group…".

It should now be apparent from the gravity of this situation that our elected and appointed government officials have failed to honor their oath and obligation to support and defend the constitution by failing to refuse to obey unconstitutional regulations/laws, failing to protect the life, liberty, and the pursuit of happiness for their fellow countrymen, by failing to prevent the approval/proliferation of wireless technologies which are essentially Weapons of Mass Destruction, making them complicit in ongoing Crimes Against Humanity and the Genocide of their fellow countrymen as well as themselves. As you should be aware, the Constitution Limits your ability to take actions which you are not authorized to do. Likewise International Laws and Treaties further prohibit Genocide and Crimes Against Humanity. While some of you would make the excuse that you did not know about the damage microwaves cause, that cannot be said in this case. There are 1000's of government studies performed since at least the 1940's documenting many adverse effects of microwave exposure.

While people sometimes posthumously nominate individuals for the Darwin Award for removing themselves from the gene pool (as in death by stupidity), clearly no population of people on this earth would ever grant to their elected

officials the authority to sterilize and sicken with cancer life upon this earth on a local or global basis. Certainly no such authority has been granted to the United States Government by the American People. Whenever public officials take actions not authorized by their official capacity, they become liable in their personal capacity. You now stand before a perfect storm of litigation for which no amount of unconstitutional preemption will protect you. One of the most landmark cases decided by the US Supreme Court which established the doctrine of judicial review was Marbury v. Madison (1803) " the particular phraseology of the Constitution of the United States confirms and strengthens the principle, supposed to be essential to all written Constitutions, that a law repugnant to the Constitution is void, and that courts, as well as other departments, are bound by that instrument", a full copy of that decision is available here: http://supreme.justia.com/cases/federal/us/5/137/case.html .

The people of this country and of the world at large are becoming more and more aware of the unresolved safety issues of microwave technologies. As such they are watching closely what actions the FCC and other elected and appointed officials take on this issue. I have no doubt that current and future victims harmed by this technology will hold you accountable for your part in creating this problem.

To be clear, I do not consent to be radiated at any time and in any way by microwave technologies now in use or future microwave technologies planned for development and use. It is my contention that an immediate moratorium on these microwave technologies is needed until they can be made absolutely safe or are replaced altogether by other technologies which have no such adverse effects.

Sincerely,

By: Autograph of Chris Nubbe

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Individual Rights & ADA; Katie Singer Comments, Nov. 8, 2013

FCC 13-39

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

In the Matter of	)	
	)	
Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies	)	ET Docket No. 13-84
	)	
Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields	)	ET Docket No. 03-137

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

REPLY Filed by: Katie Singer
PO Box 6574
Santa Fe NM 87502
Katie@KatieSinger.com
505.820.0773

November 8, 2013

AFFIDAVIT OF KATIE SINGER

State of New Mexico

County of Santa Fe

I, Katie Singer, attest that my statements are true to the best of my knowledge.

REPLY round for FCC ET Docket No. 013-84 and ET Docket No. 03-137

1. My name is Katie Singer. My address is PO Box 6574, Santa Fe NM 87502.

2. I am a writer. My next book, *An Electronic Silent Spring: Facing the Dangers and Creating Safe Limits*, will be published by Steiner Books in 2014.

3. and onward. I endorse the following COMMENTS filed in ET Docket No. 03-137 and ET Docket No. 13-84:

COMMENT by The EMR Policy Institute
COMMENT by Cindy Sage and David O. Carpenter, Co-Editors, The BioInitiative Report 2007 and 2012
COMMENT by Sage, Hardell, Herbert on RF Radiation Effects on Sperm, Reproduction, Brain Tumors, Adverse Fetal and Neonatal Effects, and Autism
COMMENT by The American Academy of Pediatrics

In addition, I submit the following list of solutions compiled from government agencies, an IEEE engineer and health organizations. They can move us toward a safer electrical grid, safer electronics, safer telecommunications--and a healthier world.

First Steps for individuals and *society*

1. Recognize that electricity, electronics and wireless devices have brought great benefits to humanity. Recognize that electricity and electromagnetic radiation can harm health and the environment. (BioInitiative Report 2012; The Seletun Scientific Statement 2009; and EMR Policy Institute--see EMR Policy's proposed definition of biological harmful interference in box below)
2. Recognize that electronic innovations and inventions have outpaced testing, monitoring and regulating of health. Recognize that safety standards do not exist for children, pregnant women, people with medical implants or other vulnerable populations. Recognize that current standards do not consider the effects of exposure to second-hand radiation, multiple frequencies or multiple transmitters. (FCC Notice of Inquiry 13-39)
3. Commit to guiding ourselves by the Precautionary Principle and first do no harm. Do not deploy or purchase any new technology until third party,

independent testing proves that it does not cause biological harm. (See Precautionary Principle defined in the glossary.)

NEXT STEPS

Next Steps for legislators

1. Mandate a clearly stated federal law that FCC standards do not pre-empt the ability of injured citizens to go to court and recover damages caused by the trespass of electro-magnetic radiation into their bodies. (EMRpolicy.org)
2. Mandate Whitney North Seymour Jr.'s amendment to Section 704 of the Telecommunications Act, which will allow localities to determine their own setback policy on telecom equipment. (EMRpolicy.org)
3. In Congress, re-introduce and mandate the Cell Phone Right to Know Act (HR 6358 2012). It will give the EPA authority to determine biological safety standards on cell phones, require SAR labeling on mobile phones, and fund research about the health effects of wireless devices. All EMR-emitting devices should be included in this Act. (12.12.12 letter from the American Academy of Pediatrics, in the appendix.)
4. Mandate warning labels on all mobile devices that 1)show a picture of how far radiation penetrates the head when the device is near it and 2)state, “This device emits electromagnetic radiation, exposure to which may cause brain cancer. Users, especially children and pregnant women, should keep this device away from the head and body." (Maine Children's Wireless Protection Act, proposed by legislator Andrea Boland, electromagnetichealth.org)
5. Enforce National Environmental Policy Act (NEPA) requirements of Environmental Assessment before deploying new technology near schools or sensitive habitats. (epa.gov)
6. Repeal the FCC's reclassifying the pinna (outer part) of the ear as an extremity in its 2013 Reassessment of RF Exposure Limits and Policies. (Radiofrequency Interagency Work Group, 2003 letter to FCC)
7. Allow people with medical implants and Electro-hypersensitivity reasonable accommodation (i.e. shut off wireless devices and services) in public spaces. (1991 Americans with Disabilities Act.)
8. To provide immediate relief, allow every ratepayer in every state the option of a mechanical, analog meter for their utilities.

Next Steps for regulators

1. Mandate a nationwide, standardized and regulated electrical code--instead of our current (voluntary) National Fire Protection Association-National Electrical Code. Recognize that "interference" can harm electrical equipment *and* cause thermal and non-thermal effects that harm human health and the environment. OSHA should regulate this code for workers' safety; FDA should regulate the electrical grid's impact on public health, including medical devices and equipment; and EPA should regulate the grid's environmental impacts. This code should be applied to

the "smart"
grid and "smart" appliances and all sources of electricity, including unconventional sources. (BioIniative.org; HR 6358 2012)

2. Revise our National Electrical Safety Code (NESC) so that there is no more than 1.0 mG (0.1 microtesla) of magnetic field within habitable space. (BioInitiative 2012, p. 37)
3. NESC must also require utilities to separate neutrals and grounds correctly to prevent return current from flowing over the earth, metallic water and gas piping, building steel and other conductive materials--and to prevent shocking or even electrocuting people in showers or swimming pools. (Donald Zipse, "Are the National Electrical Code and the National Electrical Safety Code Hazardous to Your Health?" *Industrial Commercial Power Systems Technical Conference*, 1999.)
4. Mandate single-point grounding-transformer isolation on all transformers so that neutral wires are not shared, and ground current and magnetic fields are significantly reduced. (*Practical Grounding, Bonding, Shielding and Surge Protection*, by G. Vijayaraghavan, M. Brown and M. Barnes, Newnes/Elsevier, 2004, p. 237.)
5. Quantify levels of electromagnetic radiation that cause biological harm. Establish a standard for reaching safe levels for all segments of the population and the environment. (BioInitiative.org) Note: In 1971, OSHA issued a protection guide for workers' exposure to RF radiation (29 CFR 1910.97). This guide was later ruled to be advisory, not mandatory. osha.gov/SLTC/radiofrequencyradiation/.
6. Mandate regulations that limit electrical and electromagnetic radiation to levels that protect human health and the environment. (BioInitiative.org; HR 6358 2012)
7. Require periodic testing (by independent third parties) for the presence of hazardous levels, similar to current testing for and enforcement of air quality standards. Require mitigation when hazardous levels are reached, followed by re-testing. (EMRpolicy.org)
8. The FCC should require installation of sensors at all building-mounted and tower-mounted locations. Emissions levels should be recorded on a regular, ongoing basis and sent to a computer interface via a cabled phone line. These readings should be monitored and posted on a website accessible to the public. High levels should be mitigated promptly. (EMRpolicy.org, Americans Beware)
9. The FCC should promote cabled Internet in residences, at public institutions and in localities. Fiber optics should be installed for *cabled* (not wireless) services, including Internet, TV and telephone. (EMRpolicy.org)
10. Congress should fund the FDA to regulate the effects of RF signals and emissions on people who depend on medical devices and medical equipment. (Center for Devices and Radiological Health *and* Electronic Product Radiation Control Program at FDA)
11. Require licensed electricians to learn (through continuing education)

to identify and eliminate wiring errors on utility wiring and in public and private buildings that generate magnetic fields and ground current --and that may cause biological harm. (*Soares Book on Grounding and Bonding, 10th ed.* International Association of Electrical Inspectors, 2008, p. 429.)

12. Require health care providers, educators, electricians, city planners, architects, electronics designers, solar and wind power manufacturers and others to take annual continuing education about how electronics, wireless devices and transmitters create hazards for children, pregnant women, people with medical implants, people with EHS and the environment, similar to OSHA and EPA mandated periodic training to deal with hazardous materials. (OSHA.gov, EPA.gov and, for example, 29 Code Federal Regulation.)

Next Steps for utility and telecommunications companies

1. Replace every digital wireless transmitting utility meter with an analog mechanical one. (BioInitiative.org; see also letters from epidemiologist De-Kun Li, MD and the American Academy for Environmental Medicine in the appendix.)
2. Keep TV and radio broadcast facilities far from populated areas. (emrpolicy.org)
3. Maintain landlines, a known, safe technology. (BioInitiative.org)

Next Steps for manufacturers

1. Recognize that high frequencies generated by linear and switch-mode power supplies (SMPSs) generate square waves and harmonics that interfere with electronic equipment *and* may cause biological harm. Eliminate fluorescent lights, including compact fluorescent bulbs (CFLs), which use electronic ballasts (aka SMPSs); they generate high frequency harmonics, and they usually contain mercury. Replace them with bulbs such as LEDs that save energy and do not generate square waves and harmonics. Eliminate dimmer switches that generate square waves and harmonics; replace them with dimmers that do not generate harmonics or with standard switches. Revisit standards for electronics and appliances, including 12-volt DC electronics and appliances, that are currently used on boats, RVs and in some solar-powered homes. (BioInitiative.org)
2. Design solar-powered systems that do not generate high frequency fields. Eliminate DC-AC inverters. Whenever possible, use propane or DC-powered appliances and electronics in solar-powered homes and buildings.
3. Create safer electric and hybrid cars, whose existing computerized systems (charging, LCD display, windows, etc.) trap drivers and passengers in a metal box filled with electro-magnetic fields.
4. Create safer medical implants by installing a hazard-overload interrupter in every implant, similar to ground-fault interrupters in household wiring. (Dr. Gary Olhoeft, Colorado School of Mines)

5. Reduce or eliminate ads for wireless devices that target children, as France has done. Reduce or eliminate depictions of substance abuse or violence in films or videos and create more prosocial programs, as the American Academy of Pediatrics (AAP) suggests.

Next Steps for health care providers

1. Since pediatricians who watch more TV are less likely to advise families to reduce their media exposure, physicians need to examine their own media habits. (DA Gentile, C. Oberg et al, "Well-child visits in the video age: pediatricians and the American Academy of Pediatrics' guidelines for children's media use," *Pediatrics* 2004:114(5)L: 1235-1241; and "Children, Adolescents and the Media," *Pediatrics* 2013;132958-961.
2. Require continuing education for physicians, first responders, public health assessors and other health care providers about creating electrically safe living, learning and working environments for pregnant women, children, people with medical implants and those with Electro-hypersensitivity. Physicians must be trained to recognize Electro-hypersensitivity; to educate parents about creating an electrically safe environment for children; to perform common procedures (i.e. dental work and hernia surgery) safely on people with medical implants. (Austrian Medical Association Guidelines, aerztekammer.at/documents/ 10618/976981/EMF-Guideline.pdf; Dr. Gary Olhoeft, Colorado School of Mines)
3. The AAP encourages pediatricians to ask, at every well-child visit, *How much recreational screen time does your child or teen consume daily? Is there a TV or Internet-connected device in the child's bedroom?* Physicians could encourage parents to establish a plan for all home media use. *Pediatrics* 2013;132958-961.
4. Create centers that treat children and adults who use mobile devices addictively, similar to centers that address gambling, alcohol and drug addictions.
5. Require every hospital to employ an electrical interference specialist (as many already do) to monitor potentially hazardous interference between devices *and* between personnel, patients and devices. Health care providers should educate themselves and their clients about plausible and known risks to health caused by RFs; they should encourage precautionary behavior among themselves and their clients.

Next Steps for schools

1. Remove Wi-Fi and wireless devices from schools and libraries. Provide wired learning environments for students and faculty. (Dr. Martha Herbert and Cindy Sage, MA, "Autism and EMF? Plausibility of a pathophysiological link-- Parts 1 and 2," *Pathophysiology* 2013.)
2. Remove digital wireless transmitting utility meters from schools and libraries. Replace them with analog mechanical meters.
3. Provide guidance for educators to recognize Electro-hypersensitivity in children and about the addictive nature of using interactive electronic

devices and the Internet--similar to guidance issued by the CDC for identifying children with food allergies, preventing exposures and managing reactions (cdc.gov/healthyyouth/foodallergies/). Strengthen students' communication skills in non-electronic, eye-to-eye contact. (*Alone Together*, by Sherry Turkle; see also "Children, Adolescents and the Media," a 10.28.13 Policy Statement from the AAP.)

4. Eliminate fluorescent lights. Use incandescent or CLED lights.
5. Before granting licenses, master electricians and plumbers could require apprentices to identify and clear magnetic fields in their own homes.
6. Create institutes that teach people how to measure ELFs, RFs and SARs; how to identify whether electricity is safely installed; whether the levels of electromagnetic fields in an area are safe; how to mitigate unsafe levels (and how to identify when an environment cannot be mitigated without major infrastructure changes); and how to live with less electronics.

Next Steps for environmental, citizen, religious and professional groups

1. Encourage awareness about the biological effects of emissions from electronics and wireless services on pregnant women, children, people with medical implants and others. Encourage schools, doctors' offices, libraries, places of worship, restaurants, other areas of public accommodation--and your own workplace--to dismantle wireless services, including digital wireless utility meters.
2. As an immediate step to accommodate Electro-Sensitive members, congregations could dismantle wireless services and request that members leave wireless devices at home for weekly or monthly services.
3. Push a solution-based agenda with local and federal legislators and regulators that will make our society safer and healthier. (BioInitiative.org)

Respectfully submitted by
Katie Singer
PO Box 6574
Santa Fe NM 87502
November ~~8, 2013~~ 15, 2013
Katie Singer
(your signature)

Sworn to before me
This 15 day of Nov, 2013

Kay Carlson
Notary Public

My commission expires 11-6-17

Individual Rights; BC Human Rights Tribunal
approves smart meter class action,
Citizens for Safe Technology; Aug. 22, 2013

Citizens for Safe Technology Society



BC Human Rights Tribunal approves smart meter class action

On August 28, 2012, the BC Human Rights Tribunal (BCHRT) issued a decision approving a representative complaint (akin to a class action) against BC Hydro on behalf of "those persons allegedly diagnosed with electromagnetic hypersensitivity and who have been advised to avoid exposure to wireless technology."

A copy of the Tribunal's decision is available at:

http://www.bchrt.bc.ca/decisions/2012/August.htm

The Tribunal approved the representation of that class by the Citizens for Safe Technology Society, which it found to have authority to bring the representative complaint. The Society may be contacted at www.citizensforsafetechnology.org by any person wishing to join in the complaint.

The Tribunal found that the complaint brought by the Citizens for Safe Technology Society properly alleges a breach of the Human Rights Code in that it alleges a disability, adverse treatment in respect of a service customarily available to the public, and a nexus or connection between the disability and the adverse treatment.

By way of the Complaint, the Citizens for Safe Technology Society seeks:

- A declaration that BC Hydro has discriminated against each person in the Class by failing to provide each person in the Class with an unconditional written commitment that BC Hydro will refrain from installing and/or operating a wireless smart meter at the individual's place of residence and/or residential complex.

- An order that BC Hydro cease and desist forthwith from the said discrimination by offering to refrain from installing and/or operating a wireless smart meter at the individual's place of residence and/or residential complex.

On May 31, 2011, the World Health Organization recognized that radiofrequency electromagnetic fields are a Class 2B possible human cancer risk. The emissions generated by the Microwave Device fall under this classification of emissions and risk.

The Citizens for Safe Technology Society is currently fundraising to bring a tort action against BC Hydro so as to prohibit the imposition of microwave emitting smart meters on BC residents regardless of whether they have electromagnetic hypersensitivity.

Individual Rights; Wireless Technology Violates Human Rights,
Catherine Kleiber, Sep. 30, 2016

Wireless Technology Violates Human Rights

How universal exposure to radiation from wireless devices complying with existing inadequate safety limits violates the Nuremberg Code of Ethics

Catherine Kleiber, www.electricalpollution.com

The report "Wi-Fi – A Thalidomide in the Making. Who Cares?" by Barrie Trower makes it clear that **exposure to radiation from wireless technology will cause DNA damage, including damage to the mitochondrial DNA that is irreparable and will transmit to all future progeny** of affected females. In a mouse study, "*RF Radiation–Induced Changes in the Prenatal Development of Mice*" (http://avaate.org/IMG/pdf/magras_mice_study.pdf), six months of real-life ambient exposure to a medley of radiation sources at levels well below those allowed by FCC RF limits resulted in total sterility, which did not reverse. It would be expected to take longer in humans, however this finding supports the urgency of the points Mr. Trower makes in his report which can be found at http://www.electricalpollution.com/documents/WiFiAThalidomideInTheMakingWhoCares.pdf.

Thus, there is NO possible way that the FCC can both promote wireless technology and protect the public health and safety, as directed by the House Committee on Commerce in H.R. Report No. 104-204, p. 94.

Obviously, Congress made clear with the stipulation that it was the FCC's responsibility to adopt uniform RF regulations "with adequate safeguards of the public health and safety" (H.R. Report No. 104-204, p. 94) that they were not interested in promoting wireless technology at the expense of the public health and safety.

The **FCC is obligated by the directive in H.R. Report No. 104-204, p. 94 to inform Congress it is impossible to both promote wireless and protect the public health and safety** since it is now clear that wireless technology has the potential to compromise the genetic integrity of individuals for all future generations. Continued promotion of wireless technology in spite of that and the following evidence:

- Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposures) bioRxiv preprint first posted online May. 26, 2016 (http://dx.doi.org/10.1101/055699)
- *Tumor Promotion by Exposure to Radiofrequency Electromagnetic Fields Below Exposure Limits for Humans* (http://www.ncbi.nlm.nih.gov/pubmed/25749340)
- The BioInitiative Reports (www.bioinitiative.org)
- Biological Effects from RF Radiation at Low-Intensity Exposure, based on the BioInitiative 2012 Report, and the Implications for Smart Meters and Smart Appliances (http://emfsafetynetwork.org/wp-content/uploads/2013/08/Biological-Effects-From-RF-Radiation-and-Implications-for-Smart-Meters-June-5-2013-2.pdf)
- "*Provocation study using heart rate variability shows microwave radiation from 2.4 GHz cordless phone affects autonomic nervous system*" (http://www.magdahavas.com/wordpress/wp-content/uploads/2010/10/Havas-HRV-Ramazzini1.pdf) and replicated (http:// www.ncbi.nlm.nih.gov/pubmed/23675629#)
- "*Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation*" (http://www.ncbi.nlm.nih.gov/pubmed/26151230)

- "*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)
- "*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)
- "CRITICISM OF THE HEALTH ASSESSMENT IN THE ICNIRP GUIDELINES FOR RADIOFREQUENCY AND MICROWAVE RADIATION (100 kHz - 300 GHz)" (www.electricalpollution.com/documents/Cherry2000EMR_ICNIRP_critique_09-02.pdf)
- "*Swedish review strengthens grounds for concluding that radiation from cellular and cordless phones is a probable human carcinogen*" (http://www.ncbi.nlm.nih.gov/pubmed/23664410)

would not only violate the directive in H.R. Report No. 104-204, p. 94 which said it was the Commission's responsibility to adopt uniform RF regulations "with adequate safeguards of the public health and safety" and the principles of public health protection, but also be in direct violation of the entire Nuremberg Code of Ethics (http://www.hhs.gov/ohrp/archive/nurcode.html).

Prior to approval of wireless technology for civilian use, it is clear from "Wi-Fi – A Thalidomide in the Making. Who Cares?" that it was already known that there were bio-effects from exposure to pulsed microwave radiation that were separate from tissue heating and it is clear from Cellular Telephone Russian Roulette: A Historical and Scientific Perspective (http://microondes.files.wordpress.com/2010/03/robert_c_kane_cellular_telephone_russian_roulette.pdf) that extensive scientific literature existed showing that harmful tissue heating could occur extremely quickly and locally at levels well below those allowed by the ICNIRP and IEEE limits and also that ample evidence existed of disabling effects on organisms when chronically exposed to RF radiation.

Reasonable people with full access to the data could and did think a dangerous situation was being created by 1984, see "Biological Effects of Radiofrequency Radiation" (EPA 600/8-83-026F, 1984) (http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=300065H1.txt) and then again prior to the passage of the 1996 Telecommunications Act (http://www.emrpolicy.org/litigation/case_law/docs/epa_to_fcc_3nov_93.pdf). In spite of this, no biologically protective safety limits were implemented to protect citizens during daily life.

It violates the Nuremberg Code of Ethics to experiment on non-consenting people who cannot stop the experiment, especially when harm can reasonably be expected to result. That is exactly what has happened and is happening. The fact that those reasonable expectations have been fulfilled can be seen in The BioInitiative Reports and in many of the documents submitted for consideration within these FCC dockets (ET Docket No. 13-84, and ET Docket No. 03-137).

Industry continues to generate uncertainty, in spite of the numerous well-designed studies showing harm, and continues to call for additional studies instead of action. Results of the society-wide human experiment continue to roll in which demonstrate the harmfulness of the technology. A small sample of these studies are below:

- "*Prenatal and Postnatal Exposure to Cell Phone Use and Behavioral Problems in Children*" (http://www.ncbi.nlm.nih.gov/pubmed/18467962)
- "*Apparent decreases in Swedish public health indicators after 1997—Are they due to improved diagnostics or to environmental factors?*," Hallberg and Johansson (http://www.pathophysiologyjournal.com/article/S0928-4680(09)00002-9/abstract)

- "*The Influence of Being Physically Near to a Cell Phone Transmission Mast on the Incidence of Cancer*" (http://emrstop.org/index.php?option=com_docman&task=doc_details&gid=4&Itemid=18)
- "*Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields- A Long-term Study under Real-life Conditions*" (http://www.radiationresearch.org/images/RRT_articles/Buchner%20Eger%20Rimbach%20Study%202011%20ENG%20FINAL%20Revised%2029%20July%202011.pdf)
- "*How does long term exposure to base stations and mobile phones affect human hormone profiles?*," Eskander et al. (http://www.sciencedirect.com/science/article/pii/S0009912011027330)
- "*Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression.*" (http://dx.doi.org/10.1016/j.jchemneu.2015.08.001)

Indeed, in light of evidence that harm could be expected from its use and exposure is involuntary in many cases, there has been a violation of the entire Nuremberg Code of Ethics since RF technology was approved for civilian use without biologically-meaningful RF safety limits in place, specifically "1. The voluntary consent of the human subject is absolutely essential ..." and "9. During the course of the experiment, the human subject should be at liberty to bring the experiment to an end...". Millions of people are being exposed to a dangerous toxin in an open-ended non-consenting experiment which they cannot bring to an end and over which they have no control.

Performing additional studies without immediate action to put protective safety limits in place based on the array of existing studies showing harm, only continues the massive violation of human rights.

The fact that any new microwave-based technology **might** be safer is no excuse to contend that this open-ended non-consenting experiment should continue. Any new **possibly** safer technology should be studied in double-blind placebo controlled medical-style laboratory safety studies using approved protocols carefully designed to detect health effects before being allowed to undergo **controlled consenting** medical-style human studies. The track record of previous microwave-based (wireless) technology and the Nuremberg Code of Ethics demands it!

Therefore, the **FCC is obligated** by H.R. Report No. 104-204, p. 94, by the principles of public health protection, and by the Nuremberg Code of Ethics **to immediately place a moratorium on additional spectrum sales, antenna installations, transmitting utility meter installations, new wireless technologies, and sales of wireless devices,** while notifying Congress, The Environmental Protection Agency, The Center for Disease Control, The National Institute of Health, and The U.S. Department of Health and Human Services of the **serious health hazard posed by wireless technology and seeking their professional support in developing RF safety limits that truly protect the public health from biological harm.** *If further experiments are needed, they should be done immediately using approved medical-style protocols, not using the entire population in an inescapable uncontrolled study done without consent.*

If the FCC would like to argue that this is not an experiment because data collection is not consistent enough and negative outcomes were expected or known, then population-wide exposure to this toxin is still either "inhuman treatment" or "torture," both of which are human rights violations. **Money is not a justifiable reason to expose an entire population to a potentially lethal agent that can be reasonably expected to isolate and disable many, impairing their ability to reach their full potential and live their life fully and freely.**

Individual Rights; Kate Reese Hurd Comments, Oct. 29, 2013

FCC 13-39

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

In the Matter of	)	
	)	
Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies	)	ET Docket No. 13-84
	)	
Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields	)	ET Docket No. 03-137
	)	

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

Comment Filed by: Kate Reese Hurd
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High Falls, NY 12440
E-mail: kreehu@gmail.com
845-687-2035

October 29, 2013

I wish to submit a further comment.

1 The **NYS Public Service Commission** recently sent me copies of 3 documents pertinent to their program of digital utility metering in New York State:

1. The FCC OET Bulletin 56, Fourth Edition, August 1999, Authors Robert F. Cleveland, Jr. and Jerry L. Ulcek, "Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields;"
2. The article "No Health Threat From Smart Meters" from the fourth quarter 2010 Utilities Telecom Council journal, UTC; and
3. The Electric Power Research Institute, EPRI, article of February 2010, "A Perspective on Radio-Frequency Exposure Associated With Residential Automatic Meter Reading Technology."

2 In these articles, I am given to understand that the FCC's current limits on exposures to RF radiation are based on the amounts needed to heat body tissues sufficiently to cause rats to change their behavior. The UTC article states that radio frequencies "emitted by smart meters, cell phones, wireless routers...can only damage the body at extremely high levels." **Recent science shows this assumption is far off the mark.** Extremely low levels are bio-active and many effects stem directly from the pulsing nature of wireless RF radiations.

3 The **BIOINITIATIVE REPORT OF 2012** [1] peer-review of over 1800 new studies urges an immediate international limit of no more than .03 **milli**Watts per **meter** squared[2], because biological effects are seen at levels at least this low. The **AUSTRIAN MEDICAL ASSOCIATION**[3] has issued guidelines which set the limit far lower than that, at .001mW/m^2. Please see their document of March 3, 2012, Guideline of the Austrian Medical Association - Freiburger Appell (Consensus paper of the **Austrian Medical Association's EMF ...diagnosis** and potential **treatment** of unspecific stress-related health problems.) See pp. 9-10 for their limits and ranges for both RF radiation and electromagnetic fields (EMFs). We must pay attention.

4 More and more people ARE becoming electrohypersensitive, experiencing a wide range of symptoms brought on by chronic and exponentially increased exposures to RF radiation and EMFs - headaches, etc., and even now a Type 3 Diabetes. All three documents, listed above, convey grossly out-dated material on the biological effects of RF and electrical transmissions and fields.

5 The FCC OET Bulletin 56 of August 1999 cites that *"two areas of the body, **the eyes and the testes**, are know to be particularly vulnerable to heating by RF energy because of the relative lack of available blood flow to dissipate the excessive heat load…. Temporary sterility, caused by such effects as **changes in sperm count and mobility** is possible."* It also states that *"although not commonly observed* [in 1999]*, a microwave 'hearing' effect has been shown to occur under certain very specific conditions of frequency, signal modulation, and intensity where animals and humans may perceive an RF signal as a **buzzing or clicking sound**. Although a number of theories have been advanced to explain this effect, the most widely-accepted hypothesis is that the microwave signal produces thermoelastic **pressure within the head** that is perceived as sound by the auditory apparatus within the ear. This effect is not recognized as a health hazard, and the conditions under which it might occur would rarely be encountered by members of the public."*

6 But, regardless of the conclusions of the FCC in 1999, it must be fully respected that citizens, now in 2013, ARE experiencing exactly these nerve-wracking buzzings, tinitus and pressures, in their homes and workplaces, on account of exposure to non-thermal, RF radiations from wireless devices (such as digital utility meters). We must not be forced to live with these conditions.

7 On p. 8, the article states that effects have been seen at *"relatively low levels of RF radiation. These reported effects have included certain changes in the **immune system**, **neurological effects**, **behavioral effects**, evidence for a link between microwave exposure and the action of certain drugs and compounds, a **'calcium efflux' effect in brain tissue** (exposed under very specific conditions), and **effects on DNA**."* [my bold]

8 ➔ Please: I would have thought that in 1999, when confronted with these clear intimations of something going very wrong in our biologies on account of our readiness to expose ourselves to low level RF radiation such as this, the FCC would have taken a strongly precautionary stance, not the 'monitor-the-evidence' and 'wait-and-see' approach it did (as in the article) while opening the floodgates for RF radiation to saturate our entire biosphere in an "innocent until proven guilty" manner that applies ONLY to human beings, that does not belong to a technology that has never been a part of the natural process of life and could not be trusted to be compatible with it.

9 If you do not decrease the limits drastically, to where the **BioInitiative Report of 2012** documents suggest, and better yet to the level urged by the Austrian Medical Association, it may be too late for us to assure our well-being and our reproductive viability into the future. **I understand that it is being seen that in just five generations of RF exposures such as ours, rats can't reproduce**. And rat DNA does not differ from human DNA in its essential nature and vulnerability. We must pay attention.

10 And where will those of us who are children, elderly, frail or sensitive go to live when digital, wireless utility meters in HAN, NAN and WAN grids electrify our environs in all directions? This is not a time for saying, "let's try it and wait and see." We know enough to be able to say that if we do not retreat now, we are in terrible trouble. Who will tend all those who are increasingly born with ASD and those who succumb to brain cancers, other cancers, Alzheimer's? And what about all the suffering from insomnia and heart a-rhythmias, ADHA, etc. All of this leads back to, are effects from far too much RF radiation, 24/7, unremittingly. The constant on/off pulsing of all wireless devices harasses cellular functions that depend on clear bioelectrical signals that regulate nerve, heart, hormone and immune system responses. We cannot avoid becoming sick from this sooner or later, because the effects are also cumulative, as in the case of cancers from it.

11 I discovered that the direct cause of the disquiet in my own chest, in my heartbeat, was the cordless phone base station and wireless router in my home emitting pulsing WiFi 24/7. Since silencing this WiFi, my heartbeat has settled down. I connect by ground phone and ground cables. The difference is night and day. *I am glad that I have that choice. Other places I go, I do not.*

12 In many cases, because the FCC limits are so astronomically high compared to the levels that are being verified to be bio-disruptive, the devices we use everyday often expose us to shockingly excessive amounts of RF radiation - not because they need to be so high, but because the FCC and the manufacturers simply regard these amounts of exposure as harmless. We are coming to know how very far from harmless they are, and how very true the earlier research was in its indications.

13 Using a **Cornet ED-78S RF/LF Field Strength Power Meter** sensor I've found that many cordless phone, DECT, base stations emit pulsing WiFi constantly and in the range of up to 1827 mW/m^2 - mostly in the upper range. When the handset is activated it can deliver up to 1900 mW/m^2 **directly to the ear**. These DECTs are Verizon, Panasonic, and AT&T. The Motorola model I only briefly checked was emitting constant RF pulsing of at least 400 mWm^2.
However, some base stations are designed to be silent unless a handset is activated, at which time they emit at 1-13 mW/m^2 - still far too much but hugely less than the absolutely shocking 1800 of

these others I've mentioned. The silent ones happen to be RadioShack and VTech - which is not to say that all of their models 'shut up' between calls. When the handset is activated, the ear receives 3-17 mW/m^2, not the amounts up to 1900, where even at 3 feet away the exposures are unsafe in light of the recent research. I've seen the photographs of the adolescent rat brain as it looks normally on the surface and then as it looks after the equivalent of only two hours of talking on one of these DECT phones.[4] The surface has lesions. Even 50 days later it is abnormal with lesions - no recovery in that time. No wonder we have blood-brain-boundary problems and such trouble with microorganisms that can too easily cross it, such as Lyme. We must pay attention.

14 EVERY wireless device must have on/off switches for the wireless function - none of this constant on with no off button. Regardless of lowered RF emissions limits, warnings must be placed on all such devices at point-of-purchase. None can be assumed safe. We need to know that we take into our hands both our lives and those of all generations to come within our family tree, in the event that we care about the longevity of our personal lineage if not our collective longevity.

15 **And herein is my sense of alarm about wireless meters in particular, upon which your proceedings bear: It is argued (in the articles I was sent by the NYS Public Service Commission) that metering contributes little to the RF we are exposed to. Not so. People can *choose* to frequent coffee shops or not, *choose* to hook up their computers and devices by WiFi, etc., or not, as they please. And they *can choose not to* when they understand how high the stakes are to their health. But meters are PERMANENT installations. Whatever their emissions are now with no 'grid', where they spike wireless radio frequencies at least 4-5x a minute 24/7 whether transmitting or not, these emissions will be on the increase. Each meter is to keep constant contact with "smart chips" in all household appliances and with up to a thousand neighboring meters. ➔ All of this wireless pulsing must go through my dwelling, my workplace and through me, permanently. THIS IS TOXIC TRESPASS. I have the freedom to choose to remove wireless WiFi from within my home for health reasons. I will have no freedom and no control over this unremitting trespass from meters, and no escape from it.** And it is being shown that near proximity to these devices causes trauma to the blood.[5] This alone directly endangers the well-being of anyone doing work in the vicinity. We must pay attention.

16 Please drastically reduce the limits for RF radiations as urged in the BioInitiativeReport , mandate the total revamping of all existing devices and terminate all "SmartGrid" plans.

Sincerely,

Kate Reese Hurd

[1] BioInitiative Report of 2012, Conclusions Section: http://www.bioinitiative.org/conclusions/ In the Report itself see "Section 22: Precaution in Action - Global Public Health" for the **International Advisories** (http://www.bioinitiative.org/). We must pay attention.

[2] .03 mW/m^2 = .003 uW/cm^2 as in the Report (i.e .03 **milli**Watts/**meter**^{2} = .003 **micro**Watts/**centimeter**^{2}.)

[3] Austrian Medical Association - Google "Guideline of the Austrian Medical Association" for the diagnosis and treatment of EMF- related health problems and illnesses (EMF syndrome). Link is above, in the text.

[4] See the presentation of Dr. Karl Maret, M.D. and BioMedical Engineer in the YouTube which is not only about so-called "Smart" meters: http://www.youtube.com/watch?v=p-nmaYU6kek&list=PL63B0143B3C354D88 "The Truth About Smart Meters" Sept 15, 2010. CTVsantacruz Freedom Forum 1:53:42. Also see another YouTube on RF technology and what has been known of the terrible health effects of it: http://www.youtube.com/watch?v=v4HsxNG2-4M Brian Thiesen CSTinBC Aug 15, 2012 1:08:15- "The Truth about Smart Meters" - meters being just the most present and egregious form of RF, now flooding the biosphere.

[5] http://www.youtube.com/watch?v=y4JDEspdx58 "Live Blood Analysis - Observable Effects of RF/MW Radiation via Smart Meters"

Individual Rights; Wireless “Revolution” Must Be Supported by Scientific Proof of Safety for Human Health and the Environment, Patricia Burke, Sep. 30, 2016

Wireless "Revolution" Must Be Supported by
Scientific Proof of Safety for Human Health and the Environment

Until the US takes steps to insure that the conflict between the Americans with Disabilities Act and the Telecom Act of 1996 are resolved, any further action by the FCC to increase the radio frequency exposure of the citizen population is an assault on the human rights codified by the United Nations, including the United Nations Convention on the Rights of the Child.

U.S. FCC guidelines are essentially being used as a weapon against the citizen population to justify assault on human health in pursuit of financial gain. The FCC's intent to fuel economic growth and competition, with no independent investigation of health and environmental issues, is inhumane and immoral.

In addition to violations of human rights, the unrelenting consumption of resources to build out infrastructure to fuel the demand for faster, more powerful, more ubiquitous coverage is an assault on the planet's natural resources.

Evidence of harm already exists and has been emerging for decades, including historical documents compiled by Zory Glaser of the US Navy, and the EPA. In addition, other nations recognize harm at levels far lower than the FCC limits.

When these technologies are subsequently accepted as unsafe, (because proof already exists that they are not safe, including the NTP study) further consumption of resources will be required to address safety.

The FCC's vision for the future does not represent progress. It is stupefying that a nation like the US with such an abundance of intellectual and scientific resources could be operating on invalid, outdated, insufficient assumptions regarding radio frequency exposure for so long, while ignoring direct evidence of harm.

I experience pain and torture as the result of inadequate protections for microwave radio frequency exposure. The sustained stress has had a significant impact on my quality of life, and the dis-regulation of my nervous system will most like restrict the length of my life.

As an informed environmentalist I oppose any further expansion of wireless technology in the US until appropriate investigation of health and environmental issues can be conducted in a fully transparent manner, with independent oversight, with binding liability assigned for any health damages, and accommodation under the protections of the ADA.

Thank you,
Patricia Burke

Individual Rights; Transcript of Hearing, Vol. 10, Application 11-03-014, Application of Pacific Gas and Electric Company for Approval of Modifications to its SmartMeter™ Program and Increased Revenue Requirements to Recover the Costs of the Modifications, California Public Utilities Commission; Dec. 20, 2012

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

ADMINISTRATIVE LAW JUDGE YIP-KIKUGAWA, presiding

Application of Pacific Gas and Electric Company for Approval of Modifications to its SmartMeter™ Program and Increased Revenue Requirements to Recover the Costs of the Modifications. (U39M)	)	PUBLIC PARTICIPATION HEARING
And Related Matters.	)	Application 11-03-014; A.11-03-015; A.11-07-020

REPORTER'S TRANSCRIPT
Santa Rosa, California
December 20, 2012
Pages 982 - 1139
Volume - 10

Reported by: Thomas C. Brenneman, CSR No. 9554

PUBLIC UTILITIES COMMISSION, STATE OF CALIFORNIA
SAN FRANCISCO, CALIFORNIA

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SANTA ROSA, CALIFORNIA

DECEMBER 20, 2012 - 2:00 P.M.

* * * * *

ADMINISTRATIVE LAW JUDGE YIP-KIKUGAWA: We are on the record.

The Commission will come to order. This is the time and place set by the Commission for public participation hearings in Applications 11-03-014, 11-03-015, and 11-07-020 addressing cost and cost allocation issues related to providing an option for gas and electric residential utility customers who do not wish to have a wired smart meter installed at their location.

Good afternoon, everyone. I am Administrative Law Judge Amy Yip-Kikugawa. The assigned Commissioner to this proceeding is President Michael Peevey.

Public participation is exactly what the name implies. It is an opportunity for me to hear from all of you and for the Commissions to receive public comment from ratepayers. Therefore, if you wish to speak, you should have signed up with the Public Advisor's Office in the back, and if you have not done so, please do so now.

And before we begin I do want to go over a couple of ground rules. First, this

and security. They forced smart meters on us with more of a push as the protests grew and despite the fact that smart meters were never made mandatory by federal or state law. PG&E tried to disguise their trucks by hiring Wellington and by making installation surreptitiously where there were clear signs of individual and community opposition.

They infiltrated our web site. They knew we wanted to keep our analog meters, but they took the meters and discarded them knowing this and now want to charge us for getting them back.

During your opt-out hearing you forced PG&E to admit their meters did not pulse six times a day as they had claimed but anywhere from 10 to 190,000 times a day at a power of not 1 watt but 2.5 to 4 watts. PG&E continues to state erroneously that a cell phone is stronger than a smart meter. Meanwhile experts conclude that one smart meter is equivalent to ten to a hundred cell phones.

All in all, PG&E has acted unconscionably. Rather than profiting, PG&E should be fined for their repeated fraudulent stances, unethical and illegal behaviors. We need no-fee opt-outs for individuals,

apartment buildings, communities, government buildings, schools, and medical smart meter free zones for people with disabilities to shelter us all from the toxic environment created by smart meters. Thank you.

(Applause)

ALJ YIP-KIKUGAWA: Ursula Abee followed by Linda Brauner.

STATEMENT OF MS. ABEE

MS. ABEE: Good afternoon.

ALJ YIP-KIKUGAWA: Okay. Off the record.

(Off the record)

ALJ YIP-KIKUGAWA: Back on the record.

MS. ABEE: I am a resident of San Raphael and have been living in my house since 1956. I watched it being built on a lot that we have bought with the understanding that all utilities would be underground, when that did not happen and the City had not told the contractor responsible.

I have witnessed many changes not necessarily improving the environment. At the present PG&E forces and dictates customers to accept a new system that has not thoroughly been researched and besides penalizes us to pay $120 a year for something we never got. It is customary, ladies and

gentlemen, you pay for something you buy and not for something you have not received.

(Applause)

MS. ABEE: That is plain arithmetic and the law of the land. Ladies and gentlemen, the public should not have to pay to the utility companies that reap billions of profit, give millions to their CEOs and have no concern for our environment. We need to stand together and wake up. We should not pay for the mistakes that these highly paid executives of big utility companies have made.

(Applause)

ALJ YIP-KIKUGAWA: Linda Brauner followed by Amy Hartley.

STATEMENT OF MS. HARTLEY

MS. HARTLEY: Good afternoon. Thank you, your Honor, for being here and for putting in such hard work for so many weeks and for everything you wrote for us. We appreciate it.

There is a strange juxtaposition between the questions we are asked to address today and the reality of our experience over the last few years. First, the responses to the questions that must be addressed. One. Any opt-out option must include

noncommunication, no-cost analog meters. Vermont's precedent of free opt-out will prevail in California. It is unconscionable to extort money for safety from any one including those who cannot afford to pay to have this toxic product removed from their homes.

Two. All opt-out true costs must be born by shareholders and those opting in to the SmartMeter program. Three. Any fees must be on a per-location basis because, for example, tenancy in an apartment building can turn over frequently and create a cash cow simply for PG&E while on the other hand providing nothing that was not in place for new tenants.

Four. There should be no exit fee. Rather, the only fee should be for those opting into the SmartMeter program. Five. The future of energy is sustainable and therefore local. Opt-out must be community wide including apartment buildings, condo associations, governments, cities, schools, counties, and therefore any conglomerate of persons.

In fact, for the reality, we all know there can be no opt-out for none of us have opted into the SmartMeter program. For

the last two years PG&E has without warning many times forcibly trespassed upon our property, invaded our privacy, endangered our safety, installed cancer-producing, heart-damaging, DNA-breaking surveillance devices upon our property without informed consent instilling psychological terror in our hearts and our minds, setting us up for posttraumatic stress disorder.

For many years I have made my living assessing the probability of dangerous behavior. One of the prime predictors is present and past dangerous violent behavior. PG&E has a long history of corporate violence. We are asking for your protection. Please, do this for us as communities. Thank you.

(Applause)

ALJ YIP-KIKUGAWA: Ami Hartley followed by Deborah Tavares.

STATEMENT OF MS. HARTLEY

MS. HARTLEY: Good afternoon, Judge. My name is Ami Hartley, and I'm a San Francisco resident. I've always slept like a baby until several months ago I started experiencing insomnia and darting headaches in 10 second intervals. Did I mention that I don't get headaches. After discussing

various possibilities with my friends, I decided to go check my meters, and lo and behold, there they were, 11 newly installed smart meters. No coincidence here.

I'm concerned about health, safety, and privacy. This is an outrage. The federal government never made smart meters mandatory. Residential customers should have the option to not receive service pursuant to time variant pricing and to incur no additional charges. Analog meters should be included in the opt-out program. People who choose to opt out should not be required to pay increased fees. Customers who elect to have smart meters installed should pay costs of the new meters and installation. All who live within buildings that are in proximity to any populations including persons with disabilities should be mandated to not have smart meters installed in these public facilities including schools and public government buildings.

In Maine the Supreme Court has determined that smart meters are illegal because they never did a health study. In Vermont there is a no-fee opt-out program. Why has a health study never been conducted here in California? We need one here now and

surveilling and irradiating us, it is an indication that the public is ripe for surrender and is consenting to enslavement and legal encroachment. This is the silent weapons, quiet wars document, and that is a document as well which I will be handing to you as part of the record when I finish.

Something is very, very, wrong. We know that when we accept the intolerable, we wake up to a nation that is enslaved. The utility companies along with our government are engaged in illegal lethal assaults upon us, period. Using microwave frequencies that the military adopted as weapons described in the Fort Meade military documents through a Freedom of Information Act. The [inaudible] document also discusses this as well.

Many people are sick, and you want to discuss opt-out fees. We cannot negotiate our rights, safety and health away. Giving up these things damages us. This is layer upon layer of disinformation, misinformation and secrets.

But concerning the costs, even the I triple E smart grid thought leaders are questioning and asking why politicians and public agencies have not discussed the unknown costs of the grid to the people.

Certainly their concerns would give rise to why the increases are being discussed today. This is cover up to extort more money from us to fund this diabolical assault. Therefore, Phase 2 of these hearings --

ALJ YIP-KIKUGAWA: Ms. Tavares.

MS. TAVARES: Are you planning to broaden --

ALJ YIP-KIKUGAWA: Off the record.

(Off the record)

MS. TAVARES: There's no record.

ALJ YIP-KIKUGAWA: There is a record. We're on the record right now. You may give that to the Public Advisors.

MS. TAVARES: And they're located?

(Applause)

ALJ YIP-KIKUGAWA: Back on the record.

Pat Sworsen followed by Dannean Farris.

STATEMENT OF MS. FARRIS

MS. FARRIS: Your Honor, I represent 101 residents of a low-cost, three-story senior complex in Marin County. May of 2012 most of us collectively agreed to opt out of the SmartMeter program because the meters are clustered in five locations between four buildings. For example, my apartment lies 12 feet between a total of 89 meters. Many of

us have been treated with cancer, have pacemakers and may have -- the radiation treatments may have extended my life, but the effects from the treatments are debilitating. Certainly I do not need additional EMF and the RF radiation from a nearby 89 meters.

What I am imploring you is to take into consideration the additional impact multiple meters clustered together can have on human health. We feel assaulted, and the last latest assault arrived in our bills warning us that by opting out of the SmartMeter program fees may rise for all customers opting out or not.

We opt-outs have already been penalized by what we feel are illegal fees, and now PG&E wants to impose fees on every one. For many of the seniors living in our complex the opt-out fee was a serious hardship. Can't we not ask for a moratorium until all of these issues can be scientifically resolved and reasonable fiscal responsibility be implemented. Thank you.

(Applause)

ALJ YIP-KIKUGAWA: Dannean Farris followed by Sangita Moskow.

MS. MOSKOW: Sangita Moskow from -- oh.

STATEMENT OF MS. FARRIS

(Applause)

ALJ YIP-KIKUGAWA: Angela Flynn followed by Lois Robin.

UNIDENTIFIED SPEAKER: Sorry. Couldn't hear you.

ALJ YIP-KIKUGAWA: Angela Flynn.

STATEMENT OF MS. FLYNN

MS. FLYNN: Good afternoon. Angela Flynn from Santa Cruz County. I first had a wi-fi router in my bedroom for two years before I realized that I was suffering symptoms from microwave exposure. I couldn't sleep. I had muscle aches. I had creaky joints. I was in my mid-30s. I worked as a landscaper, a very healthy life-style. It took me moving into a house next to a cell tower and getting more severe symptoms to realize what had happened.

I've gone to a lot of work to eliminate microwave transmitters from my home. I can do that to a large degree. However, smart meters are a toxic trespass that I can't keep out of my home. Even though I don't have one in my house, my neighbors have one. It gets on to the wire and it puts transients on to the wiring that gets carried all through everyone's homes. I also work as a house-sitter, and this has

unprecedented application of the tax.

Digital smart meters are aggravating existing disabilities and medical conditions. It's a violation of the ADA to discriminate against people with disabilities by charging them more for essential services. These meters are causing life-threatening house fires, injuries, disabilities, and toxic eviction. Charging people who protect themselves from assault and displacement is a protection racket and against the law.

The meters also mine personal data without permission, which constitutes illegal search and seizure. It's illegal to charge a fee to protect one's constitutional rights. PG&E has a long history of injuring workers, the public, and the environment including lost plutonium, toxic waste dumping, diverting maintenance funds to profits, and on and on and on and on and on.

People have been dying because of these mistakes, and now it's the smart meter fiasco. Why do you keep letting them get away with it? It's time that the CPUC does the job it's supposed to. Prove to us that you are truly a watch dog for the public, not a lap dog of corporate utility CEOs. If you are serving the public, then the justice to

week.

First year and a half: fatigue, insomnia, pain. Blood pressure dropped to 75 over 55. Doctors are baffled. Next six months: physical breakdown, electricity in my limbs from working computer, ringing in my ears. I discovered the 22 smart meters. Eventually unable to sleep at all. I moved to my house in Fairfax to escape the smart meters.

Yet my health breaks down further. I feel as though I'm being electrocuted in my bed a few times each night. I never know when it will start or stop. I am finally being tortured. I discover a cell phone tower is hidden on a hill above my house. I close my business. My marriage is worn very thin.

Verizon will soon install an enormous 4,000 cell foot tower on the opposite hill from my house. PG&E is still trying to install digital meters in our house. Having already undergone extensive radiation poisoning, I need to move. I am now, however, too sensitive to live near a digital meter and a cell phone tower or a satellite dish. I cannot go to any public building without increasing pain. I cannot

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for Approval of Modifications to its SmartMeter™ Program and Increased Revenue Requirements to Recover the Costs of the Modifications. (U39M)	)	Application 11-03-014; A.11-03-015; A.11-07-020
And Related Matters.	)	

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

I, Thomas C. Brenneman, Certified Shorthand Reporter No. 9554, in and for the State of California do hereby certify that the pages of this transcript prepared by me comprise a full, true and correct transcript of the testimony and proceedings held in the above-captioned matter on December 20, 2012.

I further certify that I have no interest in the events of the matter or the outcome of the proceeding.

EXECUTED this 20th day of December, 2012.

_____
Thomas C. Brenneman
CSR No. 9554

Individual Rights; Letter of Complaint and Appeal, and Notice of Liability Regarding 'Smart Meter' and Wireless Networks, Julienne Battalia, Washington State, Dec. 1 2013

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ACLU
Washington State Bar Association

NOTICE OF LIABILITY CONCERNING THE INSTALLATION OR ACTIVATION OF SMART METERS AND OTHER WIRELESS NETWORKS IN AND AROUND THE AREA KNOWN AS WASHINGTON STATE

TO: Office of Attorney General Bob Ferguson
1125 Washington Street SE
PO Box 40100
Olympia, WA 98504-0100

FROM: Karen Nold
Means For Change
P.O. Box 1461
Snoqualmie, WA 98065
Karen@MeansForChange.com

NOTICE

Whereas, it would appear there is a global agenda to implement comprehensive wireless network coverage, using radio waves instead of copper or fiber optic cable and transmitting radio signals through antennas, and is also known as "Wireless Networks"; and

Whereas, it would appear there is a global agenda to implement a so named "Smart Grid"; and

Whereas, it would appear the said agendas are being, or are to be implemented, in the landmass known as the State of Washington and or Washington State; and

Whereas, it would appear there is an agenda of false information of various kinds regarding health, safety, privacy, and other various concerns or considerations, due to the direct or indirect effects of "Wireless Networks" and or some of its components, sometimes referred to as "2G", "3G", "4G", "LTE", "Wi-Fi", "WiMax", etc.; and

Whereas, it would appear there is an agenda of false information of various kinds regarding health, safety, privacy, and other various concerns or considerations, due to the direct or indirect effects of the so named "Smart Grid" and or some of its components, including but not limited to, the wireless digital electrical devices utilized to measure electrical consumption, among other things, sometimes referred to as "Smart Meters"; and

Whereas, it would appear the agendas of false information are being utilized to deceive lawmakers and safety regulatory organizations, et al., or in the alternative give plausible deniability to the same groups for those members of said groups, et al, that appear to be complicit with the "Wireless Networks" agenda and or said "Smart Grid" agenda; and

Whereas, it would appear that "Wireless Networks" and or some of its components, including but not limited to "2G", "3G", "4G", "LTE", "Wi-Fi", "WiMax", etc., do cause harm of various kinds; and

Whereas, it would appear the so named "Smart Grid" and or some of its components, including but not limited to, "Smart Meters", do cause harm of various kinds; and

Whereas, it would appear some or all of the various forms of harm caused by "Wireless Networks" and or its various components, and the so named "Smart Grid" and or its various components, can be considered a tort and are compensable by law; and

Whereas, it would appear there is no bond of record, nor any source of indemnification regarding "Wireless Networks" and the so named "Smart Grid", and their various effects that may be considered as causing harm of various kinds; and

Whereas, a person with full knowledge of a potential harm, whether caused directly by the person or not, and that person is endowed the ability and or duty to act upon the said knowledge in a way to avoid or otherwise mitigate the potential harm, and fails to do said actions, is liable for the inevitable harm caused, and or may be considered negligent at law.

Therefore you, Mr. Bob Ferguson, Washington State Attorney General, have been given this notice, inclusive of the enclosed Means For Change Letter of Complaint and Appeal, and *Take Back Your Power* DVD, all of which constitute full disclosure of the "Wireless Networks" agenda and so named "Smart Grid" agenda as of the date of this notice. This notice in full will be made available to anyone who chooses to use it in a subsequent claim regarding "Wireless Networks" and or the so named "Smart Grid" and any effect thereof, directly or indirectly causing harm of any kind to anyone or anything.

Respectfully, govern yourself accordingly.

Karen Nold, Means For Change

_____
October 7, 2013

Terry Losansky, Witness

_____
October 7, 2013
San Juan Citizens for Safe Technology, Signatures
Washington Wireless Awareness, Signatures

'Smart Meter' and Wireless Networks Letter of Complaint and Appeal

October 7, 2013

TO: Washington State Government and Professional Leaders,

I am writing to address the serious public health concern of Radiofrequency radiation (RFR) exposure from the unprecedented, reckless employment of wireless technology in Washington State, which has driven me from my home, community and lifestyle; and to seek leadership of State regulators in the absence of Federal Communication Commission (FCC) commitment to public health, observed with the recent reclassification of "the ear as an extremity, subjecting it to nearly three times the level of radiation previously allowed." (1) This document serves as a:

1. Formal complaint to the Attorney General against the:

    a. Washington Utilities and Transportation Commission (WUTC) for authorizing Puget Sound Energy (PSE) to negligently install wireless smart meters without prior safety testing; and continuing to approve the mandatory and involuntary exposures to a known Group 2B Carcinogen from said smart meters; and

    b. Washington State Board of Health (WSBOH), Department of Health (DOH), and 37 local boards of health (LBOH) for failing to recognize that "beyond any reasonable doubt…adverse human health effects occur at far lower levels of RF/MW radiation exposure than those that cause noticeable heating" (the gauge for federal public exposure guidelines), "some…at several hundred thousand times below…public exposure guidelines." Recognition of the hazards and abatement of non-ionizing radiation belongs in WSBOH, DOH and 37 LBOH programs and publications; lack thereof may constitute a violation of RCW 43.20.050(2)(d)(f); RCW 43.70.130(2), RCW 70.05.060(3) for allowing exposures to multiple and chronic RFR, a known Group 2B Carcinogen, and possible neurotoxin and genotoxin. (2)

2. Formal appeal to all State Legislators for:

    a. An allocation of funds for an immediate safety review of RFR, given the FCC reclassification of the ear further degrades public safety, and neglects full body radiation exposures from involuntary, cumulative, and mandatory RFR sources; and

    b. A moratorium on the installation and or activation of non-transient wireless networks including, but not limited to, Wi-Fi, WiMax, 4G, LTE, and smart meter infrastructures, until determined safe, including, but not limited to, Seattle City Light's 2014/2015 smart meter program, and the Broadband Wi-Fi Canopy over the San Juan Archipelago.

This document is evidence of the health and safety issues associated with RFR wireless networks and 'smart' meters. "Take Back Your Power," an investigation of the 'smart' grid program, was sent with this document to the Attorney General; Representatives Ross Hunter, Dawn Morrell, Christopher Hurst, Jeff Morris; Senators Doug Ericksen and Andy Hill, to further exemplify the health, safety, and privacy issues of the 'smart' meter infrastructure. Others can view this documentary at www.TakeBackYourPower.net. Smart meter wireless technology creates cyber security problems - leaving homes and communities vulnerable to hacking; privacy issues - real-time data on energy usage reveals private activities within the home, with no guarantee of who will have access to that data; and higher bills. In Canada, "80% of Smart Meter users complain of higher bills within a year of installation, often more that 50% higher." (3)

"Scientific certainty is not the benchmark for intelligent action…" (4) "Apply the precautionary principle to protect the world's richest resource – our children." (5) "The literature raises serious concern regarding the levels of radio frequency… exposures produced by 'smart meters' to warrant an immediate and complete moratorium on their use and deployment until further study can be performed." (6) While the FCC, with clear ties to industry, has taken steps to loosen already lax RFR exposure standards, and the WSBOH, DOH and 37 CBOH do not recognize the hazards of non-ionizing radiation, Washington State residents are left unprotected against this biologically harmful radiation.

The Communications Industry is the Largest Lobbying Industry in Politics – Three Times More Powerful than Big Pharma (7) and ''…if measured by GNP… would rank as the 46th largest country in the world." (8) Its products employ radio frequencies of the electromagnetic spectrum, including microwave (MW) radiation and can be analog or digital, as well as modulated and/or pulsed. Some of the popular wireless devices using MW radiation include cell phones, cordless phones, DECT phones/products (*reaching up to 1000 feet*), Bluetooth, iPads, wireless interactive white boards, paging systems, countless home automation applications, (9) cell towers, masts, antenna (*littering the landscape*), smart meter infrastructures (*blanketing entire neighborhoods*), Wi-Max (*reaching a radius of 30 miles*), TETRA, and Wi-Fi (*reaching up to 300 feet*) - with schools using Wi-Fi power densities and frequencies similar to those used as Cold War weapons. (10)

Our society is saturated in RFR, spreading like wildfire, in schools, libraries, hospitals, daycares, retirement homes, businesses, malls, grocers, diners, hotels, campgrounds, ferry boats, cars, buses, and homes. Microwaves are preferred for communication over radio waves due to "*superior penetrative properties,"* of living tissues and most structures. No safe level is known for a child, embryo, or fetus. (10) Chronic microwave radiation exposure is quite harmful to plants, animals and humans, particularly children, pregnant women, the elderly, and those with preexisting illness. (2)

People are being driven to society's edge as they succumb to widespread, chronic RFR exposures.

In an effort to study the safety of its product, the cell phone industry hired Dr. George Carlo in 1993 to head their $28.5 million program. He found the microwave radiation from cell phone antennas could affect pacemakers, penetrate the developing skulls of children, compromise the blood-brain barrier, and inflict genetic damage. His research funds were terminated in 1999, and the industry sought to discredit him and suppress his findings. In his book, *Cell Phones: Invisible Hazards in the Wireless Age,* Dr. Carlo examined "the hard science and the shady politics of a reckless high tech industry now mired in personal injury and class-action litigation." (11)

Many people love the benefits of this Wireless Age, as many did of other earlier advancements, but today very few would choose DDT, or asbestos, lead pipes or paint, or a smoke-filled airplane, once touted as safe in our culture. So was having radioactive wrist watches with glowing digits (in the 1950s), having children's shoes fitted in a strong X-ray machine (in the 1940s), keeping radium in open trays on scientist's desks (in the 1930s), and X-raying our friends at physician's garden parties (in the 1920s). "The knowledge at the time was deficient, as was a competent risk analysis coupled to a parallel analysis of public needs." (12) Thankfully, our culture changed.

Wireless Standards are Unsafe and Misleading, even though industry and our government assured us for many years that cell phones were completely safe. Electronics customarily receive Underwriters Laboratory safety testing which wireless devices lack. (13) The World Health Organization (WHO), in May 2011, classified all types of RFR as possibly carcinogenic, (14) "including the radiation emitted by base-station antennas, radio/TV towers, radar, Wi-Fi, smart meters, etc.," (15) This same determination was made for DDT in 1991 and lead in 1987, both State-listed contaminants. In 1999 the US NIEHS National Toxicology Program cited RFR a 'potential' carcinogen; safety standards were termed 'not protective of public health' by the Radiofrequency Interagency Working Group (FDA, FCC, OSHA, EPA, etc.). (6) The wireless industry funded most of the "two dozen case-control studies of mobile phone use" reporting no increase in cancer. Flawed, these studies followed groups that "were too small and for a too short period of time." (16)

Lack of government funded programs leaves industry with the most influence over RFR guidelines. FCC standards are 17 years old, based on limited data from one set of experiments in the 1980's; (17) apply to 30-minute exposures to a 6-foot tall man; are believed to protect us from burns and shock, not damage to health; (2) and protect us "from whole-body heating" not exposure to critical organs like the brain and the eyes. (18)

"Cell and cordless phone radiation closely resembles that of Wi-Fi," however Wi-Fi is more dangerous due to frequency, duration, and involuntary exposure. (2) Children spend over 35 hours/week bathing in possibly cancerous Wi-Fi at school; saturate at the library, mall, or work; then sleep immersed in radiation from smart meters, Wi-Fi, incoming cell

towers, and for many, a cell phone alarm near their head. Most of the damage from incoming cell phone radiation occurs at night, "when the parasympathetic nervous system is active…," (7) and for the pregnant, or young, may lead to "neurological impairments in children, including autism." (19)

The U.S. Lags in Public Health Standards and Actions for RFR Exposure. The current RFR standard in Switzerland, Lichtenstein, and Luxembourg is 9.5 $\mu W/cm^2$, and 10 $\mu W/cm^2$ in China, Poland and Russia, while in the U.S. and Canada the standard is 600-1000 $\mu W/cm^2$ (20). Federal action to protect public health is long overdue.

The federal government's ability to take swift and effective action in the name of public health was observed in the case of ephedra: After California, Illinois, and New York banned ephedra supplements, and after medical groups and Congressional members called for the ban, the FDA in 2003, announced its intentions with a Consumer Alert "to stop buying and using [ephedra] products immediately." The Secretary of Health and Human Services said , "They are simply too risky to be used," he was, "pleased…to take the strong action against ephedra," and "the FDA could not have acted any sooner because DSHEA does not require manufacturers to prove a product safe prior to bringing it to …market." (21)

The WUTC, in the case of smart meters, 'does not require manufacturers to prove a product safe prior to bringing it to market.' How can the voluntary purchase of risky herbal products be more epidemically dangerous than the involuntary and mandatory exposure of Americans to a known Group 2B Carcinogen – 24/7? I implore State Legislators, the WSBOH, DOH, and 37 CBOH to exert their authority and 'take a strong action' against smart meters and wireless networks, because they are 'simply too risky.' Smart meters are subsidized and promoted by our government when safer, more secure metering exists – as former CIA Director James Woolsey points out, on security grounds alone, the Smart Grid is "…a really, really stupid grid." (22)

Examples of RFR reduction: Deputy Health Minister of Israel implored the Education Minister to immediately stop wireless Internet installation in schools (23); India High Court gave service providers two months to remove telecom towers near play grounds, schools and hospitals (24); Italian Supreme Court confirmed ruling — National Institute for Workmen's Compensation must compensate worker with head tumor due to long-term, heavy mobile phone use (25); and in the U.S., the GAO in July 2012 recommended the FCC reassess the current RF energy exposure limit and its human health effects (26).

Even with a history of legislative efforts and world-wide appeals, the FCC responded with industry in mind. In March 2013, the FCC issued an Order, Notice of Proposed Rulemaking and a Notice of Inquiry, as a single document, resulting in numerous comments being filed requesting the FCC reduce current exposure standards. One in particular was filed jointly by B. Blake Levitt – a medical/science journalist, and Henry C. Lai – U.W. Research Professor. (17) Making RFR exposure limits more lenient is not in the interest of public health. "…It is obvious why the IEEE, as an industry group with no medical training, would push for this [ear] reclassification but a complete mystery why the FDA went along with it," Levitt and Lai said. "…No agency takes chronic exposure or cumulative effects into consideration. Therefore, today's true exposures are unknown." Additionally, the smart meter/smart grid, forces involuntary RFR into homes and businesses creating blanket low-level exposures at ground level. Levitt and Lai said:

> In the case of smart meters, RF couples with domestic wiring and travels throughout a building. Because of such coupling with conductive material, no distance from the transmitting source would be effective regulation here. And peak exposures during the device's duty cycle, which is the most pertinent exposure parameter, is time-averaged away. This is not protective of public health.

"We have now filled in most of the lower nonionizing bands with commercial, private, and military use; split the signals; digitized them; and are now branching into higher frequencies such as infrared to be used in communications," Levitt and Lai explained. Harmful to humans, plants and animals, RFR affects bird breeding, nesting, and roosting, plumage deterioration, locomotion, and death in various species. Bird species abandoned areas with highest RF backgrounds from cell phone base stations. Also affected are invertebrates, insects, bats, domestic animals, bushes and trees. Levitt

and Lai advise, given the ever-increasing voluntary and involuntary background levels of RFR, with no regulatory oversight, "we can no longer afford a presumption of safety." They suggest the FCC decrease maximum permissible exposures, reminding the FCC they are there to enforce safety first, and assist industry thereafter.

Adverse Health Effects of RFR are well documented including "reproductive disorders, immune dysfunction, and electromagnetic hypersensitivity." (27) "Chronic exposure to [pulsed] MW radiation harms every individual in a population in some ways," even if the person doesn't recognize it or attribute it to the responsible radiation sources. Based on the tens of thousands of studies on EMF science and RF/MW radiation since the 1920's, many public health experts believe, in the future, society will likely face epidemics of cancers, and neuro-and-genotoxicities. (2)

The main symptoms in all of Dr. Klinghardt's patients include a loss of zest, sex drive, enthusiasm and joy. People are still living, but it's more of a "half-life." Colleagues in other practices in the U.S., Canada, and Europe report consistent findings. Chronic neurological illness has increased exponentially, including insomnia, low grade depression, fatigue, muscle aches and pains, and symptoms of numbness, tingling and vibration. Autism, ALS, MS, Parkinson's, learning disabilities and behavioral problems in children are all neurological diseases which have increased exponentially in the last 15-20 years. "The only thing that fits from an environmental…[and]…epidemiological perspective… is the increased exposure to man-made electromagnetic fields, largely in the high frequency range…" (7)

Using RF meters, Canadian researcher, Dr. Magda Havas, demonstrates the biological effects of Wi-Fi, and "how wireless household appliances such as portable phones, Wi-Fi base stations and DECT baby monitors broadcast constant microwave radiation that are similar in intensity a few hundred meters away from a large cell phone tower." (28)

What will be the long-term consequences of this exposure?
Today's children are the first generation to be exposed to constant, long-term microwave radiation.

Children absorb "as much as twice the microwave radiation as adults," and their risk from exposure to a carcinogen and neurotoxin, like RF MW radiation, increases "as age decreases." (29) While Washington State works to protect children from the 'possible carcinogen' lead; it fails to recognize the 'possible carcinogens' Wi-Fi, smart meters, and other wireless networks, which are authorized in schools, homes and public areas. (30)

Symptoms Of *Microwave (RadioWave) Sickness* include: "Insomnia, headaches, dizziness, nausea, memory loss, difficulty concentrating, irritability, respiratory illness (bronchitis, sinusitis, pneumonia), flu-like illness, asthma, fatigue, weakness, pressure or pain in the chest, increase in blood pressure, altered pulse rate (usually slowed), pressure behind the eyes, other eye problems, swollen throat, dry lips or mouth, dehydration, sweating, fever, shortness of breath, muscle spasms, tremors, pain in the legs or the soles of the feet, testicular or pelvic pain, joint pain, pains that move around the body, nosebleeds, internal bleeding, hair loss, digestive problems, skin rash, ringing in the ears, impaired sense of smell, pain in the teeth (especially with metallic fillings)." (31)

Effects Of Low-Level (Below Thermal) Microwaves: "arrhythmia, heart attack, cell death, diseases of the blood, interference to bone marrow, brain tumours, DNA damage, altered calcium level in cells,… suppression of the immune system, arthritis, rheumatism, skin problems, lymphatic diseases, vaginal discharge, vascular system disease, tinnitus, leukaemia, childhood cancer, sleep problems, mental problems involving depression, irritability, memory loss, difficulty in concentrating, headache, dizziness and fatigue, suicidal tendencies, miscarriage and infertility," (10) "changes in brain function including… retarded learning, performance impairment in children,… neurodegenerative conditions,… melatonin suppression…hormonal imbalances, immune dysregulation such as allergic and inflammatory re sponses, cardiac and blood pressure problems,… and more." (2)

The WUTC Does Not Require Safety Testing and PSE was Misleading when I spoke with them in December 2012. After a daunting exchange of words I learned that a Cellnet Data Systems, Automatic Meter Reading

(AMR) system was installed on both our gas and electrical meters just months before we moved into our home in 2001. All of the over 1.2 million customers, but the extreme rural, have them as well. A third wireless device was installed by the City of Snoqualmie water department who promptly forwarded their Sensus product spec sheet. I did not receive the same accommodation from PSE and had to research Cellnet Data Systems for a contact, who would not help me because of their relationship with the utility.

Evasive communications continued with PSE as they told me I didn't have a smart meter – like in California. They said our meter only sends a one-way signal, whereas smart meters send two ways. A manager said our AMR system "puts out less rays than a smart meter – about the same as a phone module." I was told a signal is transmitted up to 4x/day or 1x/day near midnight, only to hear from another that our meter sends a signal 1x/5minutes. Actually, "the smart meter sends a microwave impulse at 900 megahertz, between 17,000-190,000 times a day…" through the entire home. This radiation has been measured "up to 600 times higher" than the existing already high standards. (7)

PSE told me the location of the routers, or "pole top storage devices," cannot be released for security reasons. Those living near the routers have a right to this information as they receive more radiation. When I asked if I could forward a video about the health effects of smart meters, PSE said they have all the information out there and their meters are not smart meters. By definition, a smart meter is an electrical meter measuring consumer energy usage which is sent back "to the utility by a wireless signal in the form of pulsed frequencies within the 800 MHz to 2400MHz range." (32)

Furthering their evasive tactic, PSE would not address the Switching Mode Power Supply (SMPS) which all smart meters use to change the grid AC to DC, thereby generating dirty electricity. PSE admits they do NOT track this information. **It appears utility companies are not required to track thorough health and safety data of devices they force upon us.** After written placation, PSE verbally acknowledged their awareness of the issue, but said there were no opt-outs since there were no analog meters. PSE emailed me methods other customers had shared to protect themselves from radiation, evidence that other customers **are** experiencing health effects from their smart meters. After having many of the Microwave Sickness effects myself, including cancer, PSE, attempting to reassure me of their product safety, **chose** to cite the 2011 California Council on Science and Technology [CCST] report, "Health Impacts of Radio Frequency Exposure From Smart Meters"; (33) However, this was discredited at least five times when:

1. California radiation expert and UCSD instructor, Daniel Hirsch wrote that "rather than being an independent, science-based study, the CCST largely cuts and pastes estimates from a brochure by the Electric Power Research Institute…It is strongly recommended that CCST revise its Draft Report and conduct actual measurements of cell phone, microwave oven, and SmartMeter RF cumulative whole body power densities." (34)
2. Santa Cruz County Public Health Officer wrote, "…CCST did not account for the frequency of transmissions, reflection factors, banks of SmartMeters firing simultaneously, and distances closer than three feet…[and]…it has been aptly demonstrated by computer modeling and real measurement of existing meters that SmartMeters emit frequencies almost continuously, day and night, seven days a week…. it is not possible to program them to not operate at 100% of a duty cycle (continuously) and therefore it should not be possible to state that SmartMeters do not exceed the time-averaged exposure limit…" (32)
3. Greek researchers countered "…any relation with health hazards has been bypassed. It is however 'common secret' between the researchers in the field of electromagnetic biology that such a statement has absolutely no scientific validity…" (35)
4. Sage Associates rebutted with, "Conclusions Are Not Supported by" FCC Compliance and "Disregard Evidence in the Report for Possible Health Risk" and are "inconsistent with the report's…warnings [of] possible risks to health…overall legitimacy… cast into doubt…; FCC Violations and Excessively High RF Exposures are Ignored; Misleading Comparisons Are Made to Cell Phones; RF Levels from Smart Meters are Unreconciled and Need Assessment; Cumulative RF is Not Assessed Prior to Meter Installation…" (36)

5. Senior Research Fellow of the Environmental Health Trust, L. Lloyd Morgan, countered, "the exposure standard is based on acute (short-term/immediate) thermal (measured temperature change) effects…not…on chronic (long-term) effects… With human, animal and cell studies all showing harmful effects [of non-ionizing, non-thermal electromagnetic radiation], it is hard to imagine why the exposure standard has not been changed." (37)

The WUTC vetted and approved PSE's AMR system, but did not require UL certification, only FCC compliance. When I asked WUTC their position, in January 2013, about smart meter negative health impacts, mandatory exposure, lack of biological testing, and PSE's admittance to having no replacement analog meters – they did not reply.

Changing Public Perception of this Wireless Age is documented with the 2013 AAEM *Open Letter to the Superintendents of the School Districts of the United States* – "While more research is being conducted children must be protected" (38); When Rep. Boland recalled people asking for cigarette warning labels and Big Tobacco made all the same arguments, delaying public health policy "to the grief and economic costs of our people." She warned, "There should be no industry so powerful or so proud as to compromise our health and safety" (39); and numerous public groups, including *EMR Policy Institute*, *Citizens for Safe Technology*, *Cellular Phone Task Force*, *WEEP,* and many more…

Safety Review and Public Health Program Essentials for the protection of public health from RFR:

1. An effective RFR safety review will **document the funding of each study;** avoid reports funded by the wireless industry; and include the longstanding global scientific consensus (40), national legislative efforts (41), and worldwide RFR reduction efforts (42) compiled at MeansForChange.com.

2. An effective public health program will mandate the WSBOH, DOH, and 37 CBOH to recognize and publish the adverse health effects of non-ionizing radiation; draft and implement RFR reduction rules for public areas; implement awareness programs of the dangers of RFR, which products employ it, and such information as:

    a. To turn off cell phones and PDAs (Personal Digital Assistant or hand-held computer device) when not in use, while in pocket, holster, on belt near body, and while sleeping. Keeping away from head and body, and using for emergencies only, text, or use speaker phone for calls. Avoid using phones in elevators, cars, buses where radiation is higher.

    b. Keep cell phone, wireless toys/games out of front pocket, which can affect male fertility and female reproduction; and away from developing children and pregnant women.

    c. Replace Wi-Fi with wired Internet; or at least disable when not in use.

    d. Replace cordless phones with corded models.

    e. Using wired keyboard, keep laptops away from body. Disable built-in, default-Wi-Fi in laptop.

Washington State is blanketed in mandatory and involuntary, possibly neurotoxic, carcinogenic and genotoxic RF MW radiation, under the jurisdiction of the WSBOH, DOH, 37 LBOH, and State Legislature. The dangers of RFR are no longer a secret. Given there is a safe alternative for connecting to the Internet and phone, and for utility metering, there is no good reason to have widespread, chronic RFR exposures in our communities. An immediate moratorium on installation and or activation of non-transient wireless networks including, but not limited to, Wi-Fi, WiMax, 4G, LTE, and smart meters, until determined safe, is in the best interest of public health.

Thank you for your time. I look forward to your reply.

Respectfully,

Karen Nold

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Precautionary Principle; Mobile Phone Infrastructure Regulation
in Europe: Scientific Challenges and Human Rights Protection,
Professor Susan Perry, (international human rights law)
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Mobile Phone Infrastructure Regulation in Europe: Scientific Challenges and Human Rights Protection

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Abstract
As the progress of mobile phone technology accelerates throughout Europe, the regulatory framework necessary for its safe and extended use has been slow to develop. This article analyses the relationship between scientific knowledge and regulation concerning the heath effects of increasing emissions of electromagnetic fields (EMF). From a conservationist perspective, no other example of industrial impact on the natural environment has achieved such extended penetration so quickly. From a theoretical standpoint, stakeholders are faced with a difficult choice between comprehensive risk assessment versus immediate application of the precautionary principle. By exploring the interaction between citizens, governments, and international bodies, we first analyse the challenges faced by regulators in the presence of uncertain scientific knowledge and standards of measurement. We then highlight the inadequacy of current risk assessment parameters. Lastly, within the context of State and European regulation of EMF exposure, we expand scholarship on the human rights framework to protect vulnerable populations from environmental pollution. We conclude that, because scientific knowledge is incomplete, a precautionary approach is better suited to State obligations under international human rights law.

Keywords: EMF, Human Rights, Technology and Health, Mobile Phones

1. Introduction

The use of mobile phones is ubiquitous, and is estimated to have reached 96% penetration worldwide (ITU, 2013, 1). Mobile broadband, used for wireless access to the Internet, has more than 2 billion subscriptions worldwide, with penetration levels that reach 68% in Europe (ibid. 6). Scientific research has attempted to determine whether exposure to Electromagnetic Fields (EMF) during mobile phone use is dangerous to human health. Yet, while the public remains focused on the possible dangers of the mobile device itself, the rapidly growing infrastructure necessary for mobile communication is interfering with human physiology, as 'the antennae of broadcast stations are the most powerful continuous sources of RF energy intentionally radiated into free space' (ICNIRP, 2009, 11). From a conservationist perspective, no other example of industrial impact on the natural environment has achieved such extended penetration so quickly.

Base Transceiver Stations (BTS) – equipment normally connected to elevated structures that relay electromagnetic signals between mobile devices and a network – emit electromagnetic energy. EMF emission is widespread; the European Union, for example, requires maximal coverage for its citizens.[1] However, virtually no national legislation exists to protect the same consumers from the possible effects of prolonged EMF exposure via BTS, nor do most governments require public hearings concerning the placement and number of BTS. Such hearings are mandatory for many other potential sources of environmental pollution. The International Agency for Research on Cancer (IARC), a World Health Organization's (WHO) specialised agency, recently classified EMF as Group 2B: possibly carcinogenic to humans (IARC, 2013). The Lancet Oncology (Baan et al., 2011) reports that the IARC committee mainly focused on two types of exposures: those due to use of personal devices and those due to occupational sources. A third type of exposure, due to environmental sources, such as BTS, was not included because the committee found 'the available evidence insufficient for any conclusion' (ibid. 625). This is of obvious concern because a large part of the population is exposed to the compound effect of radiation from BTS, handsets radio transmitters, WLAN, Wi-Fi, portable computers, and other devices; more importantly, children are at higher risk according to many studies (e.g. Blank and Goodman, 2009; ICNIRP, 2009).

As scientific research on possible health effects of exposure to EMF sources continues, we aim to contribute to existing scholarship on European environmental policy by (1) explaining the current biological research on the impact of EMF on the living environment and the difficulty in establishing EMF protection standards in Europe due to a complex, controversial risk assessment procedure and measurement paradigm; (2) evaluating the extent of the resulting inadequacies in national regulatory systems (France is our example); and (3) expanding the human rights construct to 'protect, respect and remedy' vulnerable populations by including State and European regulation of EMF

[1] The Digital Agenda for Europe (DAE) required Member States to devise and make operational by 2012 national broadband plans with the objective of meeting the broadband targets for Europe by 2020.

exposure within a "due diligence" environmental pollution framework. From a theoretical standpoint, the regulator's dilemma encompasses a choice between the principle of precaution and long-term risk assessment. This article suggests that, due to the lack of scientific consensus and contradictory standards of measurement, the international and European human rights frameworks on the protection of vulnerable populations may oblige States to adopt a precautionary approach in the short and medium term, until a majority of peer-reviewed scientific publications establish the danger, or safety, of electromagnetic wave emissions.

2. The Regulator's Dilemma

Regulators may draw upon two bodies of theoretical knowledge in formulating a viable policy strategy to protect vulnerable populations from the potential health risks associated with EMF exposure. One set of theories underpins risk assessment, developed primarily in the fields of economic, financial, and behavioural theory, while the other draws from the German concept of *Vorsorge*,[2] an expansion of 19th century British law and its evolution into an obligatory due diligence framework for governments and the private sector.[3] In their work on prospect theory, Tversky and Kahneman (1981) demonstrate that human beings are hardly rational when it comes to risk assessment: the majority of respondants in one of their studies, for example, found that the certain death of 400 people is less acceptable than the two-in-three chance that 600 will die, despite the fact that the statistical risk is nearly identical. Scholarship over the course of the past ten years has attempted to address human irrationality in risk assessment by integrating due diligence and risk evaluation into a coherent paradigm that allows regulators to know when and how to favour one over the other. Economist Christian Gollier presents what he calls a "reasonable interpretation" of the precautionary principle (Gollier et al., 2001). When the basic scientific data of the decision problem are uncertain, Gollier suggests that the "learn then act" principle should be applied only when a careful costs-benefits analysis establishes that current and future preventative actions are close substitutes for one another. In all other circumstances, there is a clear benefit in acting to prevent long-term risk.

In the case of EMF exposure from BTS, preventative action would require application of the ALARA (As Low As Reasonably Achievable) principle to curb BTS emissions, an action that resembles reduction in exposure to tobacco smoke: the earlier reduction to exposure occurs, the fewer potential health problems. Thus, current and future preventative actions are not close substitutes; Gollier's normative paradigm would suggest application of the precautionary principle in these circumstances. This approach is reinforced by scholarship on the Dutch government's vigilant response to EMF generated by electric pylons (de Jong et al., 2012). Environmental history points to the importance of acting sooner, rather than later to protect vulnerable populations and ecosystems from air and

[2] 'Foresight' in German, an idea developed in the 1930s by German social scientists.

[3] *Heaven v. Pender* (1883) 11 QBD 503, Court of Appeal, United Kingdom, introduced the 'duty of care', a wider duty to be responsible in tort to those who might be injured if 'ordinary care and skill' were not exercised.

water pollution.[4] Hence, from a theoretical point of view, the regulator's dilemma may well be resolved.

3. Contested Science and Technology

From an empirical standpoint, however, three questions underlie the debate about the safe use of mobile phones and BTS: Do EMFs generated by mobile phone technology affect human health? If so, what are the appropriate safety standards? And finally, who is responsible for BTS installation, implementation and monitoring? This section explores the controversies associated with the first two questions, while latter sections examine the third question.

In mobile telephony, electromagnetic waves of a certain frequency range are generated by a source that introduces information in the form of changes to the waves. A receiver, capable of interpreting the information, then picks up the waves. Electromagnetic waves are propagating EMF, and their strength is measured in terms of their fields (electric and magnetic). EMF of different frequencies interact with the body in different ways depending on the amount of energy associated with the electromagnetic waves. Gamma rays and x-rays have frequencies (and energies) high enough to knock an electron off its atom and break bonds between molecules; this phenomenon is called ionizing radiation. Fields at lower frequencies produce non-ionizing radiation.

All electrical devices, power supply networks, and telecommunications technology generate EMF in frequencies lower than those of ionizing radiation (unless they are purposely designed to do so). Therefore, everyone is exposed to multiple EMF radiations in the non-ionizing frequency range. For example, power grids and electrical devices are a source of Extremely Low Frequency (ELF) fields, while wireless devices and BTS are a source of Radio Frequency (RF) radiations. These exposures induce currents within the human body and cause two types of effects: either thermal or non-thermal. The WHO explains that 'the strength of these currents depends on the intensity of the outside magnetic field. If sufficiently large, these currents could cause stimulation of nerves and muscles or affect other biological processes.' (WHO, 2012).

3.1 Measuring the Biological Impact of EMF

Both the telecoms industry and the public sector have multiplied peer-reviewed scientific studies to determine whether prolonged exposure to electromagnetic waves poses a danger to human health. Biologists concede a wide range of opinion on the subject. While numerous scientific studies report that exposure to EMF has an impact on human tissues and cell development (reviews are provided in: Bioinitiative Report, 2012; Genuis, 2008; IARC 2013; Kostoff and

[4] The 1972 Oslo Convention on dumping waste at sea and the 1974 Paris Convention on land-based sources of marine pollution were early attempts to protect the marine environment. It took another twenty years for Europe to ramp up regulation through the 1992 OSPAR Convention on protection of the marine environment in the North-East Atlantic, an initiative reinforced by the promulgation of REACH in 2010. Asbestos is another striking example of the lag-time between knowledge of the danger, first recognized by courts in the 1970s, protection of workers in 1983 (Council Directive 83/477/EEC) and an outright European ban on its use in 2005 (Parliamentary Directive 2003/18/EC). In both cases, one to two generations of citizens were sacrificed before definitive legislative action was taken.

Lau, 2013; Levitt and Lai 2010), experts do not agree on how much exposure may lead to health risks for adults or children and some research results seem to contradict previous results (e.g. Consales et al. 2012; Feychting and Forssen, 2006; Gaestel, 2010; Merhi 2012; Sommer et al. 2009). One trend is clear, however - the number of recently published, peer-reviewed scientific studies that link EMF exposure to health risks is expanding rapidly and appearing in extremely well-respected journals; see, for example, (Foliart et al. 2006; Green at al. 1999; Lowenthal et al. 2007) for ELF effects; (Aldad et al., 2012; Aslan et al. 2013; Christ et al. 2010; Gutschi et al. 2011; Hardell et al. 2005, 2013; Panagopoulos and Margaritis 2010) for RF effects caused by the use of wireless devices; and (Abdel-Rassoul et al. 2007; Khurana et al. 2010; Levitt and Lai, 2010; Otitoloju et al. 2010; Shahbazi-Gahrouei et al. 2013) for RF effects caused by exposure to BTS stations.

Effects have been reported on the reproductive system (Agarwal et al. 2009; La Vignera et al. 2012; Otitoloju et al. 2010; Panagopoulos and Margaritis 2010), on foetal and neonatal development (Aldad et al., 2012; Divan et al. 2008; Li et al., 2012), on increased risk of childhood leukaemia, adult brain tumours and acoustic neuromas (Hardell et al. 2005, 2013; Kheifets et al. 2010; Levis et al. 2011), on breast cancer (Chen et al. 2013; Erren 2001), and on neurodegenerative diseases (Hug et al. 2006); EMF exposure has also been linked to sleep disturbance (Abelin et al. 2005; Shahbazi-Gahrouei et al. 2013) headaches, memory changes, and depressive symptoms (Abdel-Rassoul et al. 2007; Hagström et al. 2013); numerous effects on plants and animals have also been reported (Cucurachi et al. 2013). Although more studies report effects on human health due to mobile phone use rather than proximity to BTS radiation, scientists indicate that 'the two kinds of radiation are very similar and effects produced by mobile phones at certain distances, can be extrapolated to represent effects from base station antennas, of the same type of radiation, at about 100 times longer distances' (Panagopoulos 2011, 12).

Scientific studies may focus on exposure to EMF with specific characteristics (e.g. frequency range; source position relative to the subject; emission duration). However, as indicated by Blank and Goodman, the same biology may occur across the range of the electromagnetic spectrum: 'While low energy EMF interacts with DNA to induce the stress response, increasing EMF energy in the RF range can lead to breaks in DNA strands. (…) The intensity of EMF interactions with DNA leads to greater effects on DNA as the energy increases with frequency' (Blank and Goodman, 2009, 71 and 76) and the effects of simultaneous exposure to several EMFs could be additive. The same authors explain that DNA has the structural characteristics of fractal antennas and therefore the same wide frequency range of interaction with EMF. This would 'contribute to greater reactivity of DNA with EMF in the environment, and the DNA damage could account for increases in cancer epidemiology' (Blank and Goodman, 2011).

In addition to the nature of EMF exposure, the characteristics of the exposed subject (e.g. age, gender, general health state) have an impact on the possible health consequences of radiation. Particularly relevant to our argument are

studies about the age-related differences in tissue response to EMF exposure and the impact on children (e.g. Byun et al. 2013; Davis et al. 2013; Divan et al. 2012; Hardell et al. 2013; Peyman et al. 2009; Sudan et al. 2012; Wiart et al. 2008). A research team led by Andreas Christ suggests that, 'in general and on average, children suffer a higher exposure of their brain regions than adults. This higher exposure is due to differences in anatomical proportions' (Christ et al., 2010, 1780). In a study where clinical and growth pattern data were collected for up to 13 years from 733 children whose mothers carried a magnetic field (MF) measuring meter during pregnancy, De-Kun Li and colleagues conclude that 'Maternal exposure to high MF during pregnancy may be a new and previously unknown factor contributing to the world-wide epidemic of childhood obesity/overweight.' (Li et al., 2012, 1). Even those scientists who believe there is no causal effect between mobile phone use and health problems for the general population have called for further studies and suggest caution with respect to childhood exposure to EMF (Aydin et al., 2011; Valentini et al., 2010).

Levitt and Lai conducted an extensive literature review of studies related to the biological effects from exposure to EMF radiated by BTS and other RF antennae. They reported that children are impacted differently than adults by electromagnetic wave emissions from mobile phones and BTS:

> *Children absorb energy differently than adults because of differences in their anatomies and tissue composition.. … For instance, radiation from a cell phone penetrates deeper into the head of children … The same can be presumed for proximity to towers, even though exposure will be lower from towers under most circumstances than from cell phones. This is because of the distance from the source. The transmitter is placed directly against the head during cell phone use whereas proximity to a cell tower will be an ambient exposure at a distance (Levitt and Lai, 2010, 373).*

Determining the risks of ambient exposure at a distance highlights a key issue in the regulatory framework discussed in greater detail below. In mobile phone communication, BTS distribute a signal, received by a landline, and send it to a receiver (mobile phone) within a certain area using the available frequency spectrum (bandwidth). The broader the available bandwidth, the more information can be transmitted in a given unit of time. This means that increasing download speed, increases emission[5]. Accessing an online movie or playing an online game, for example, requires more bandwidth than accessing a web site with still images and text. Users employ their smartphones to access services requiring high data transmission rates and they expect their connection to be maintained in a variety of locations including indoor and on public transport. Consequently, as demands for bandwidth and connectivity coverage have increased, telecom companies have responded by augmenting the number of BTS to partition each area into smaller coverage areas so that the available bandwidth is reused, the capacity is increased and more people can be served at the same time within the original area.

[5] As the download speed increases, the number of bits per second increases. Since the energy per bit must remain the same in order to maintain the same quality of service, there is an increased energy per second, which is an increased radiated power.

Thus, as the number of BTS increases, more people are living in close proximity to a mobile phone tower than ever before.[6] The only way to reduce the biological impact of exposure to electromagnetic fields is either to reduce the number of BTS or their transmission power. This means that either fewer customers will be served at the same time, which could be a problem in densely populated European cities, or that these same customers will be served, but with a lower data transmission rate.[7] A lower data rate may imply, for example, that access to Web sites and emails is available, but video download is not. Consequently, the application of the ALARA principle regarding health risks needs to be weighed against the benefits of accessibility required by the Digital Agenda for Europe (see footnote 1). On the one hand, regulators will need to evaluate which technologies are safe to use for delivering the desired accessibility, and on the other hand, where, when, how much and what type of information or services need to be made available to citizens. Protection measures may include: reducing exposure limits, prohibiting specific "windows" of exposure (Belyaev, 2010; Blackman, 2009; Kostoff and Lau 2013), establishing age limits for the use of mobile communication devices, barring installations from sensitive areas such as schools and hospitals, requiring maximisation of wired rather than wireless networks, and establishing procedures for citizens' exposure measurements. In order to define which measures should be implemented, regulators need accurate and comprehensible information allowing them to weigh the trade-offs between large data services availability and the protection of human health. When the health risk cannot be determined with sufficient certainty, the precautionary principle should be applied as recommended by Council of Europe Resolution 1815.

3.2 Setting Standards

In order to establish regulations and recommendations, several national and international bodies have used guidelines made available by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).[8] ICNIRP offers two types of guidelines: *basic restrictions* on 'exposure to time-varying electric, magnetic, and electromagnetic fields' (ICNIRP, 1998, 495) and *reference levels* 'provided for practical exposure assessment purposes […] Compliance with the reference level will ensure compliance with the relevant basic restriction' (ibid. 495).

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[6] France's Agence Nationale des Fréquences (ANFR, 2013a) reports that in January 2012, 157,000 installations had been authorized – this number includes installations on French territories overseas, but it does not include installations of the defence, civil aviation or interior ministries. Of the 157000 installations, the ones dedicates to mobile communication include 52600 for GSM 900 or GSM 1800, 47600 for UMTS and 1300 for WIMAX. For example, according to ANFR data (ANFR, 2013b), the first arrondissement of Paris, which only extends over 1.83Km^2, hosts 107 GSM 900, 173 GSM 1800, and 355 UMTS antenna units. The map, available on the Web site in the reference, shows that no location in the arrondissement is more than 500 meters away from a BTS, with most installations hosting more than one antenna. In the period November 2012 – August 2013 the approved installations for 4G communication in France have increased from 507 to 6931 (ANFR 2013c)

[7] Although alternative technical solutions are being explored (Ezri and Shilo, 2009).

[8] The IEEE also provides similar guidelines (IEEE, 1999; IEEE, 2005).

As summarized in Table 1, which only covers the frequency range typical of BTS operation, *basic restrictions* for human exposure are expressed in terms of Specific Absorption Rate (SAR), and power density (S). SAR defines the rate of energy absorption per unit mass (how much energy the body absorbs), is expressed in Watts per Kilogram (W/kg), and is not directly measurable. Power density represents the rate of energy flow through a given surface area and is measured in watts per square meter (W/m2). For practical purposes however, the values used to establish regulations are those in the *reference levels* column of table 1. Emission limits are frequently indicated in terms of the electric field strength in Volts per meters (V/m).

< insert Table 1 >

There is a good deal of controversy over the reliability of the ICNIRP guidelines (as well as other, less referenced, guidelines), which are questioned on several grounds:

1) A possible conflict of interest exists between the ICNIRP and the telecoms industry and has been raised in the report to the Council of Europe (Huss, 2011) that eventually led to the adoption of Resolution 1815 [9]
2) It has been argued that ICNIRP's *reference levels* don't actually ensure that corresponding *basic restrictions* are met. In particular, Georgiou explains that using the electric field strength reference level for expressing EMF radiation exposure limits, as several countries do and the Council of Europe recommends (Council of Europe, 2011), may misrepresent the SAR basic restrictions[10] (Georgiou, 2010).
3) The measures used to define *basic restrictions* are contested. Some scientists argue that both SAR and power density measures have several limitations, including the fact that 'the existing standardized phantom is not optimal for SAR measurements of large base station antennas' (Hansson et al., 2011, 664), that current SAR recommendations do not take into account 'the smaller size and greater physiological vulnerability and increased absorption to the heads of children and females' (Han et al., 2010, 301), and that SAR needs to be integrated with other measures in order to be a useful tool for the evaluation of health risks associated with EMF exposure (Belyaev, 2010; Fragopoulou et al., 2010).
4) Most contentious, the ICNIRP guidelines do not offer protection against non-thermal effects of EMFs, particularly with respect to prolonged

[9] In his report to the council Rapporteur Jean Huss states 'it is most curious, to say the least, that the applicable official threshold values for limiting the health impact of extremely low frequency electromagnetic fields and high frequency waves were drawn up and proposed to international political institutions (WHO, European Commission, governments) by the ICNIRP, an NGO whose origin and structure are none too clear and which is furthermore suspected of having rather close links with the industries whose expansion is shaped by recommendations for maximum threshold values for the different frequencies of electromagnetic fields'. (Huss 2011: Section B Explanatory Memorandum by Mr Huss, Rapporteur, point 29)

[10] 'For a 250-fold exposure increase from 0.01 to 2.5 mW/m2, the corresponding exposure increase in mV/m (from 61 to 955) is only 16 fold. Radiation exposure misrepresentation using V/m gets even worst at lower exposure values' (ibid. 79).

> exposure (Belyaev, 2010; Bioinitiative Report, 2007, 2012; Blackman 2009). In fact, current restrictions are based only on short-term thermal health effects, because the ICNIRP committee concluded that 'Whilst it is in principle impossible to disprove the possible existence of non-thermal interactions, the plausibility of various non-thermal mechanisms that have been proposed is very low'. (ICNIRP 2009, 260)

Thus, the fundamental question of what constitutes sufficient evidence for setting restrictions is still open. Some scientists argue that current standards for risk assessment are inappropriate (Bioinitiative Report, 2007, 2012; Fragopoulou et al., 2010) and that long-term effects on citizens' health are due to a heightening, over time, of exposure to several EMF sources, a phenomenon normally more difficult to measure than acute effects (Belyaev, 2010; Kostoff and Lau, 2013). So, while certain experts deem the epidemiological studies on long-term effects of EMF exposure inconclusive on the basis of their potentially biased results or an unconvincing demonstration of risk, other scientists argue that studies of this type should be considered more carefully (Axelson, 2004; Blair et al., 2007; Georgiou, 2010). This is similar to the IARC assessment of environmental risk mentioned above, which found 'the available evidence insufficient for any conclusion' (Baan et al., 2011, 625) and highlights the current paucity of studies addressing the complex problem of interaction amongst effects of multiple agents (Kostoff and Lau, 2013). We are facing a conflict of epistemic cultures of non-knowledge (Böschen et al., 2010) with some scientists placing a higher value on more controlled experiments, but disregarding 'contextual factors or persisting real-world uncertainties' (ibid. 792) - such as exposure to multiple EMFs and long-term effects – and others who attempt to address the complexity and context of the problem, but at the cost of scientific reproducibility and predictability.

Regulatory bodies that are tasked with appropriate protective actions for EMF exposure are in a difficult situation: research aimed at assessing its potential danger has so far produced mixed results (especially for long-term exposure), and controversies are not limited to the magnitude of values that would limit health hazards, but also extend to the definition of what should actually be measured. The difficulty in establishing measurement standards, as well as the scarcity of long-term impact studies of EMF on the living environment, may explain why the WHO has only recently recognized the danger related to radiofrequency fields and maintains a classification of 'possibly' carcinogenic to humans (IARC-WHO, 2011). And yet, issues remain, such as which policy framework should be applied when evidence of risk is inconclusive, and whether the burden of proof should be on demonstrating risk or on demonstrating the safety of the technology (the latter being regularly applied to medical products). In section 4, we examine how European bodies and States have addressed the former issue, albeit with non-binding norms, and in 5 we propose that the latter, infrequently addressed issue be resolved on the basis of State compliance with binding international human rights law.

4. Legislative Dearth

As mobile-phone technology has progressed from first to fourth generation, requiring ever more powerful antennae, the Council of Europe responded in 2011 with Resolution 1815 (Council of Europe, 2011), a set of non-binding norms defining an emissions limit of .6V/m for wireless devices, along with recommendations to reduce 'threshold values for relay antennae in accordance with the ALARA principle and install systems for comprehensive and continuous monitoring of all antennae' (ibid. section 8.4.3). Resolution 1815 also articulates strategies for better protection of children. But, these guidelines do not have the power of law. The Council must thus rely on its 47 members to regulate electromagnetic emission levels at the national or municipal level.

Moving from recommendations on standards of measurement to legislation is a slow process[11]. Throughout Europe, no new national legislation on BTS emissions has been established since national governments aligned their norms (e.g. Direction Générale de la Santé, 2002) with recommendations fixed by the European Union at 41-61 V/m (Council of Europe, 1999).[12] These recommendations were based on the ICNIRP guidelines discussed above. Given the controversies surrounding the guidelines, grassroots organizations have demanded more protective regulation from their national and local governments. Government responses have often been contradictory, since public officials are guided by the conflicting needs of protecting citizens' health, responding to the commercial logic of the telecom companies (frequently major employers within their jurisdictions), and meeting the obligations of information accessibility under the Digital Agenda for Europe. The analysis of the case of Paris, presented below, clearly illustrates these competing demands and the inadequacy of current regulation.

4.1 French law and jurisprudence

The principle of precaution, inscribed in the French Constitution in 2005, functions as a guiding standard when determining how to evaluate environmental risk, especially with respect to the most vulnerable members of society, such as children. Unfortunately, the precautionary principle has been substantively weakened by a series of court rulings over the course of 2011-2012. In October 2011, the Conseil d'Etat, the highest court overseeing French administrative matters, handed down a decision that circumscribed the role of mayors in determining whether a BTS installation was appropriate in their commune or municipality. Instead, the Council indicated that responsibility for BTS installation was in the hands of the Autorité de Régulation des Communications Electroniques et des Postes (ARCEP) and the Agence nationale des fréquences (ANFR), two national bodies that regulate the emission of electromagnetic waves and the placement of mobile phone towers, with a mandate to assure full coverage throughout France (Conseil d'État, 2011). The decision would have garnered less national attention had the rapporteur of the Council's decision not been a former affiliate of a leading French telecom

[11] The authors of one of the major studies that prompted the IARC carcinogenic classification recently remarked that the measure 'does not seem to have had any significant impact on governments' perceptions of their responsibilities to protect public health from this widespread source of radiation.' (Hardell et al. 2013, 85)

[12] Limits are set at 41V/m for GSM 900; 58V/m for GSM 1800; and 61V/m for UMTS.

company (Thénard, 2012), and had the state not just pocketed 968 million euros in licensing fees[13] for fourth generation bandwidth for mobile phone towers (Chicheportiche, 2011; ARCEP, 2011).

Another example is a series of rulings in May 2012 by the French Jurisdictional Court, a hybrid super-court that is called upon to decide whether France's civil or administrative courts have jurisdiction in the event of a dispute. After losing a seminal Court of Appeals decision in 2009 that required a telecom company to pay minor damages and dismantle a contested mobile phone tower,[14] the company decided to challenge the jurisdiction of the First Instance Court and its appellate court to adjudicate the installation of BTS. Claiming that the authority to dismantle was under the jurisdiction of the administrative, rather than the civil court system, the plaintiff brought a suit that rightly emphasized the lack of pertinent national legislation on this issue. The Tribunal rendered an odd decision, declaring that the civil court was competent to determine financial damages for health risks incurred due to exposure to emissions from a BTS, whereas only the administrative court could order the dismantling of a mobile phone tower, concluding that it is the administrative court that has policing jurisdiction in this domain under French law (Tribunal des conflits de la cour de cassation, 2012). With these two decisions - the first of which places the obligation to protect in the hands of a national body mandated to provide full coverage, and the second of which provides the administrative court with the power to adjudicate what is essentially a civil matter – the French judicial system appears to have rendered jurisprudence that is at odds with the constitutional principle of precaution.

4.2 Regulation in Paris

Paris has been considered a leader in calling for extremely low levels of electromagnetic wave emission from BTS, with a ten-year norm of 2 V/m from 2003-2011 (Ville de Paris, 2003). This Charter of Voluntary Compliance was suspended in Fall 2011 as the City moved to decrease emissions in accordance with the Council of Europe Resolution 1815 cited above, while the operators hoped to increase their emissions to accommodate fourth generation (4G) mobile phone technology (Maussion, 2011). In October 2012, despite the determined opposition of local NGOs and the Green Party, the Mayor's Office ceded to the demands of the telecom companies, and raised emission limits to 5-7 V/m (Ville de Paris, 2012). A 2013 report from the French government has indicated that citizen exposure to EMF is expected to rise 50% due to 4G emissions from BTS (DGRP, 2013, 95).[15]

[13] A further, significantly larger, licensing fee has been collected recently with the attribution of frequencies in the 800MHz range (ARCEP, 2012).

[14] Cour d'Appel de Versailles, *S.A Bouygues Telecom v. Eric Lagouge*, R.G. N° 08/08775, 4 February 2009.

[15] According to the report, the average simulated exposure for the cities under study was increased by approximately 50% with the addition of 4G (LTE) antennas. For example, in the 14th arrondissement of Paris, the simulated ground exposure levels rose from approximately .6 V/m to 0.9 V/m (DGRP 2013,95, authors' translation)

France has four telecom companies that compete for installation sites on Parisian rooftops. The city was home to nearly 2053 base transceiver stations in 2012 (Ville de Paris, 2012, 2). Zoning regulations are extremely strict and focus on aesthetics, or what the French call l'aspect.[16] Thus, mobile phone towers are virtually invisible, hidden by camouflage structures resembling chimneys or brick walls. Equally invisible is the type of public information sharing that citizens have come to expect for the installation of high-impact structures, such as wind-parks or power plants.[17] Public property rights allow building cooperatives to approve rooftop installations in exchange for an annual fee, without prior consultation with their neighbours, many of whom live on the upper floors in surrounding buildings and will be exposed to stronger EMF than those who actually approved the installation. Once the project has been endorsed by a home-owners' cooperative, the ANFR must vet the level of emissions and the technical capacity of the BTS, while the aesthetic aspect is scrutinized by the Monuments Nationaux de France. Once approved at the national level, the project is examined at the municipal level, where a Preliminary Declaration is filed with the Département d'urbanisme. Only once the Preliminary Declaration has been approved, does the first indication of a BTS installation appear in the public domain. A small white sign posted on the building door informs passers-by that a construction project will take place, in this case the installation of a new BTS. In several instances, especially when the white sign has appeared near schools or day-care centres, citizens have mobilized to insist on the removal of the installation to a different location.[18] The fact remains, however, that the State safeguards the aesthetic beauty of Paris and obliges the telecom companies to provide maximal coverage to consumers, while providing no regulation to protect children from the potentially harmful effects of EMF exposure from BTS.

5. Extending the Regulatory Framework

International human rights law constitutes a possible means to address the current regulatory impasse. The painstaking work after the end of the Second World War to build an edifice of binding international treaties, ranging from the international bill of human rights to more specific protection for women, children and minorities, culminated with the entry into force of the Convention on the Rights of the Child in November 1989. Recent international instruments, such as the OECD Guidelines for Multinational Enterprises or the Ruggie Report, oblige State parties to 'protect, respect and remedy' human rights violations by businesses against individuals or groups, bringing corporations into the international human rights paradigm through State compliance with binding treaty law.

In this section, we argue that (1) because protection of children is a high threshold norm in HR law and (2) the binding language of the Convention on the Rights of the Child obliges States Parties to provide a higher standard of protection for children than adults, any widespread or systematic form of

[16] Historic zoning is especially strict. See Art. R111-21, amended by decree no. 2007-18 of 5 January 2007, *Code de l'Urbanisme*.

[17] Commissariat Générale au Développement Durable 2009, 73/1 and 84/1.

[18] See, for example, the *Collectif Rue Lobineau*: www.ruelobineau.org

environmental pollution that poses a long-term threat to a child's rights to life, development or health may constitute an international human rights violation. Thus, when EMF exposure is too high, the State must legislate to implement the 'protect, respect and remedy' framework.

5.1 BTS Installations and Children Rights

Articles 3, 6 and 24 of the UN Convention of the Rights of the Child (United Nations High Commissioner for Human Rights, 1989) constitute a legally binding responsibility on the part of States Parties to protect children from verified and potential threats to health and safety. We have argued, in a submission to the UN Committee on the Rights of the Child, that electromagnetic pollution poses a critical threat to the 'highest attainable standards of health' for children, as articulated in article 24 of the Convention on the Rights of the Child, and can be analysed using constructs similar to those employed to assess trafficking and forced labour violations involving minors (Perry et al., 2012). Scientists from both industry and the academy recognize that children's physiology places them at greater risk to electromagnetic pollution from mobile phones and BTS (see Section 3.1 above), triggering stricter legal thresholds and precautions under articles 2 and 3 of the Convention. Regular testing of emission limits by an independent body of experts, with 'appropriate sanctions' for widespread or systematic pollution under article 32 of the Convention, coupled with regular monitoring of both voluntary and legally binding compliance by the telecoms industry, constitutes a minimum level of protection as required by the Convention (ibid.). According to the Convention, decisions on where to place BTS and on what constitutes safe levels of EMF exposure for children should be made by competent health specialists guided by viable national legislation that requires public consultation and the lowest emissions possible in proximity to day-care and schools. The principle of precaution thus functions as a guiding standard when determining how to evaluate environmental risk with respect to children.

The question of accountability is complicated by the problem of multiple sources of environmental pollution, a reality which means that a business may bear no legal responsibility as a corporate entity because the impact is cumulative. The rapid increase in all sorts of environmental pollutions, ranging from diesel particle emissions to multiple sources of EMF, renders it difficult to isolate the precise cause of a particular environmental cancer or disease. But, what if EMF exposure constitutes one environmental pollutant too many for the infants and toddlers exposed to a disputed installation? While the main difficulty in legislating to protect has to do with the science - both the complex measurement paradigm for EMF emissions and the on-going biological research on EMF impacts on the living environment – theory and practice suggest that the lack of agreement on scientific knowledge can only be addressed through the principle of precaution. Moreover, Council of Europe Resolution 1815 and the Convention on the Rights of the Child ratified by all EU members oblige Member States to protect the most vulnerable from this relatively new form of environmental pollution.

6. Conclusions

We have explored the difficulties inherent to EMF emission regulation and argued that they are due to a lack of scientific knowledge on long-term impact, along with a contested understanding of what constitutes appropriate assessment of risk. We have demonstrated how inadequate regulation on BTS emissions has generated contradictory policies at the national and local level, and has failed to reassure citizens that their health and the health of their children is sufficiently protected. Given this situation we have posited that the human rights framework to 'protect, respect and remedy' vulnerable populations from corporate violations of international law should also apply to State and European regulation of EMF exposure. In particular we have explained how the dearth of legislation to regulate the installation of BTS in close proximity to children's facilities and schools clearly constitutes a human rights concern according to the language of the Convention on the Rights of the Child, a treaty that has been ratified by all European States.

If we are to deliver on the promise of digital technology to enhance democratic dialogue and facilitate human lifestyles, then we have to make sure it is environmentally safe to use – particularly for the generations to come.

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Biographies

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Table 1 – Guidelines for the frequency range of BTS

<table>
<tr><th>Frequency</th><th>Basic Restrictions (ICNIRP 1998)</th><th colspan="5">Reference Levels[a] (ICNIRP 1998)</th></tr>
<tr><td>100 kHz–10 GHz</td><td>Restrictions on Specific energy absorption rate (SAR) prevent whole-body heat stress and excessive localized tissue heating

0.08 W/kg</td><td colspan="5"><table>
<tr><th>Frequency range</th><th>Electric field strength (V/m)</th><th colspan="2">Magnetic field strength</th><th>Electrom. field strength</th></tr>
<tr><td></td><td></td><td>H-field (A/m)</td><td>B-field (μT)</td><td>power density (W/m²)</td></tr>
<tr><td>3–150 kHz</td><td>87</td><td>5</td><td>6.25</td><td></td></tr>
<tr><td>0.15–1 MHz</td><td>87</td><td>0.73/f</td><td>0.92/f</td><td></td></tr>
<tr><td>1–10 MHz</td><td>87/f^1/2</td><td>0.73/f</td><td>0.92/f</td><td></td></tr>
<tr><td>10–400 MHz</td><td>28</td><td>0.073</td><td>0.092</td><td>2</td></tr>
<tr><td>400–2000 MHz[b]</td><td>1.375f^1/2</td><td>0.0037f^1/2</td><td>0.0046f^1/2</td><td>f/200</td></tr>
<tr><td>2–300 GHz</td><td>61</td><td>0.16</td><td>0.20</td><td>10</td></tr>
</table></td></tr>
<tr><td>10–300 GHz</td><td>Restrictions on power density (S) prevent excessive heating in body tissue
10 W/m²</td><td colspan="5">Same as 2-300 GHz range above</td></tr>
</table>

[a] The limits reported are those for public exposure; different (higher) limits are specified for occupational exposure.
[b] If calculated, the E-field strength level ranges between 27.5 and 61.5 V/m (sqrt(400) * 1.375 = 27.5 and sqrt(2000) * 1.375 = 61.49).

Precautionary Principle; Wi-Fi - Children; Saying Good-Bye to WiFi A Waldorf School Takes a Precautionary Step, Dr. Ronald E. Koetzsch, PhD.

Saying Good-Bye to WiFi

A Waldorf School Takes a Precautionary Step

BY RONALD E. KOETZSCH, PhD

In the summer of 2010, a prospective parent walked into the office of Caroline Askew, admissions director at the City of Lakes Waldorf School in Minneapolis. The parent was an attorney with two young daughters. Caroline is accustomed to answering all kinds of questions from parents, but this mother had questions and concerns that Caroline had never heard before.

The parent first inquired whether or not the school utilized a WiFi system—an array of wireless transmitters that allows persons with laptop computers or smartphones to access the Internet and their email from any location in the building. On learning that WiFi was in use, she asked Caroline, "Would the school be open to the possibility of removing the system?" WiFi transmitters constantly emit pulsed radio frequency radiation (RFR), and this mother was concerned about the possible effect on the health of her children. She had done much research and had compiled a collection of documents—articles from scientific journals and abstracts of scientific papers—that pointed to the possible dangers of microwave radiation in a WiFi environment. She asked Caroline if the school would be willing to consider those documents in order to make an informed judgment.



A WiFi router, which typically can transmit radio frequency radiation about 150 feet in all directions indoors and about 300 feet outdoors

City of Lakes first installed a WiFi router in 2004 in preparation for an accreditation team visit by the Association of Waldorf Schools of North America. WiFi use was limited until 2008, when the school hosted the Association's annual summer conference. In time, staff members came to depend on the wireless network to work throughout the day on personal laptops. The majority of faculty and staff did not question the safety of the WiFi system. One class teacher was an exception and frequently caused havoc and frustrated his colleagues by intentionally disabling the system. This teacher was very sensitive to electrical influences (electrosmog) and tried to raise awareness about the problem. He left his class in the middle of fourth grade due to health issues.



The City of Lakes Waldorf School building was originally an insurance company building, built in 1923. Its brick walls minimize WiFi penetration from external sources into the building.

At the close of her interview with the concerned parent, Caroline Askew, herself a mother of young children and a person with broad interests, agreed to read through the binder of material. Most of the documents were abstracts of scientific studies on the effects of cell phone use and exposure to the pulsed radio frequency radiation emitted by cell phones. The studies also included research on possible health concerns related to WiFi routers, cordless phones, and cell phone towers. The research had been conducted at various universities and research centers in Sweden, Australia, China, the United States, and other places around the world.

Two documents from the Parliamentary Assembly of the Council of Europe expressed deep concern about the "potential dangers of electromagnetic fields and their effect on the environment." One article mentioned that the World Health Organization had identified pulsed radio frequency radiation as a class two carcinogen. Another reported that some public school systems in Canada had removed WiFi from their schools out of concern for the health of the children. A letter from David O. Carpenter, MD, Director, Institute for Health and the Environment, University at Albany–SUNY, strongly advised against the use of WiFi in schools. One recurring point was that whatever ill effects pulsed radio frequency

All school photos courtesy of City of Lakes Waldorf School

emissions may have, children, because of their size and ongoing, rapid growth and development, would be particularly vulnerable.

Caroline shared the concerns with her colleagues. She asked Betsy Leighton, director of IT at the school, and Bob Amis, a science teacher, to read through the material and offer additional perspectives. In February 2011, Caroline and other City of Lakes staff attended the regional Great Lakes conference at the Chicago Waldorf School. The keynote presenter was Michael D'Aleo, a highly respected Waldorf high school science teacher. Caroline asked Michael if he thought the concerns about WiFi were credible. He answered in the affirmative and added that he is one of the small percentage of the population (about 3%) who are electrosensitive (ES), i.e., extremely sensitive to electromagnetic and radio frequency influences.

Following the regional conference, a presentation of the issue was made at a City of Lakes weekly staff meeting. Most staff members were open to further investigation, although there was significant reluctance to eliminate the convenience of WiFi. Some people had recently purchased iPads, which cannot function without a wireless connection to the Internet. A few faculty and staff were and remained staunchly skeptical.

At this point, the mother who had initially raised the concern and was now a parent in the school offered to pay for an inspection of the school building by a company called Intentional Environment. The company specializes in creating healthy environments by identifying and eliminating energetic interference created by electromagnetic fields (EMFs), pulsed radio frequency radiation, and other factors.



Marti Stewart, administrator, and Caroline Askew, director of admissions, at City of Lakes Waldorf School

One weekend, the company's two owners spent many hours assessing electromagnetic fields and radio frequency radiation throughout the school building, using a variety of electronic meters and measuring devices. In many places they found high levels of RFR from the school's WiFi routers as well as from WiFi transmitters outside the building.



A sign in the school lobby

When the building WiFi was turned off, they were able to assess the levels of the AC (alternating current) electric fields coming from building wiring, appliances and other electronic devices. In some areas, they detected what is called "dirty electricity." This is AC current that has tiny energy spikes in the sine wave of the current flow. Dirty electricity is also considered a possible health risk.

The team discovered other problematic factors:

- Fluorescent lights emitting unnecessary RFR
- Electric cords wrapped around metal water pipes and creating very strong electromagnetic fields
- A strong EMF created by a large transformer located on a pole right outside one of the lower-grade classrooms
- "Dirty electricity" being generated by the motor for the school elevator

Following the assessment, the company gave the school a sixteen-page report, describing the problems present and recommending measures for remediation. The first and most important recommendation was to remove the WiFi routers from the school and have staff and faculty connect to the Internet by Ethernet cables instead. Other recommendations included rewiring lights, putting long extension cords in metal conduits, using outlet filters to eliminate dirty electricity, installing metal window screens to prevent radio frequency radiation from coming in from the outside, and not placing student desks in particular areas of certain classrooms. The recommendations were not particularly costly, and the school was able to implement many of them. Additional improvements have been made each year since.

City of Lakes Waldorf School has not chosen to publicize its decision to remove WiFi. Staff and faculty have adapted to the nonwireless environment. Parents and visitors to the school are not surprised when they discover they cannot get a WiFi connection to the Internet with their laptop or smartphone. There are, after all, "Cell Phone Free Zone" signs in the school lobby. A visitor with a laptop can, if necessary, access the Internet via a hardwired connection.



This window in the second-grade classroom is now equipped with metal screening, which shields the room from WiFi radiation from outside the building.

Is WiFi Really Harmful?

In the binder presented to the school by that first concerned parent, there were about fifty abstracts of scientific studies. Some focused on the effects of cell phone use: the combined impact of the heat and the pulsed radio frequency radiation that cell phones generate. Those studies indicate the following problematic effects of relatively long-term (ten years or more) cell phone use:

- Oversecretion from the parotid (saliva) gland on the side used for the cell phone
- Increased risk of tumors in the parotid gland
- Increased risk of glioma (a brain tumor that develops from glial cells)
- Increased risk of acoustic neuroma (a tumor in the ear that develops from nerve cells)
- A correlation between the amount of cell phone use and behavioral and mental health problems

Most of the studies involved the effects of short-term exposure to pulsed radio frequency radiation on human beings, on animals (rats, mice, rabbits), and on plants. Some of the studies were carried out on the actual subjects (in vivo), and others involved cells taken from the subject and exposed while in a test tube or other vessel (in vitro). These various studies indicated that exposure to pulsed radio frequency radiation does the following:

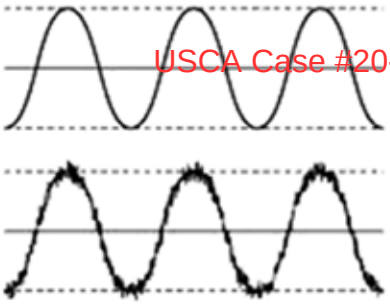
- Changes electroencephalogram (EEG) patterns in the brains of human beings—in particular, a reduction in alpha waves, associated with relaxation, with women being more affected than men
- Reduces the ability of human adults to do tasks involving spatial memory
- Decreases the attentiveness of young adults when performing memory tasks
- Affects melatonin levels during sleep
- Affects the changes in blood chemistry related to the circadian rhythms of waking and sleeping
- Causes breakdown in DNA strands and thus changes the structure and functioning of genes, i.e., is genotoxic (an in vitro study of human cells and an in vivo study involving brain cells of rats both indicated this effect)
- Adversely affects the quality, viability, duration and motility of sperm cells (this effect also was observed with human cells in vitro and rat cells in vivo)
- Negatively affects the function of the thyroid gland (in rats)
- Decreases the function of endocrine cells that secrete digestive hormones (in rats)
- Affects the function of the inner ear (in rabbits)
- Affects the function and structure of normal human hemoglobin (in vitro)
- Disturbs the normal functioning of worker honeybees
- Causes genetic damage in mung beans and inhibits their germination and root formation
- Compromises the blood-brain barrier (the BBB is a selective permeable barrier that allows into the brain fluid the nutrients, water, and other things the brain needs, but keeps out potentially toxic substances; the relevant study involved rats)

These and many other studies are readily available on the Internet. The website of the National Center for Biotechnology Information, whose mission is to advance science and health by providing access to biomedical and genomic information, can be found at www.ncbi.nim.gov/pubmed

It should be noted that there are also studies that indicate little or no ill effect from cell phone use and exposure to WiFi. These studies, like the studies just cited, are of necessity short-term studies. Even a study focusing on the effects of ten years of cell phone use is, in the context of a normal human life span, a short-term study. In any case, there is as yet no unanimity in the scientific community about these issues. Studies funded by the communications industry tend to find no harmful effects.

Rudolf Steiner, founder of Waldorf Education, considered electricity a realm of "subnature." Early in the 1900s, Steiner predicted that by the end of the century there would be so much electrical influence in the environment that it would be detrimental to human health.

Dr. Michaela Glöckler, who is head of the Medical Section at the Goetheanum, the center of the world anthroposophical movement located in Dornach, Switzerland, has for some years been warning about the dangers of WiFi. This past February at a conference on technology in education at Rudolf Steiner



Wave profile of normal alternating current (above), contrasted with the wave profile of "dirty electricity" (below)

College in California, she addressed the issue. Dr. Glöckler explained that a WiFi router, even when it is not in use, is constantly emitting a very regular high frequency pulse of energy. The human body also operates with electrical energy, and the cells communicate by means of electromagnetic fields. However, the pulsation is slightly random and irregular and not exactly the same speed as that of the router. Thus, the pulsed WiFi signal can interfere with the natural, optimal functioning of the body.

Dr. Glöckler stated that we can and should use electronic technology. However, we should use it only when it is necessary. She strongly advised against the use of WiFi in schools when wired connections can serve the same purpose. She emphasized that children, due to their small size and rapid development and growth, are particularly at risk. Dr. Glöckler also advised people with serious health problems to avoid WiFi environments, since exposure may compromise the immune system. She pointed out that work spaces can usually be arranged to provide Internet access via a cable and, if WiFi is an absolute necessity, at least the router can be turned off when not in use.



Dr. Michaela Glöckler, internationally known medical expert and pediatrician

In Dornach, Switzerland, the Goetheanum contains many offices, lecture rooms, a cafeteria, and other spaces where one would expect to find WiFi. However, WiFi is available only in a limited area on the ground floor of the building and only for visiting conference participants. In talks and private conversations, Dr. Glöckler has often speculated that WiFi may be the asbestos of the twenty-first century—something universally accepted as perfectly safe and then, in time, after much harm has been done, discovered to be a serious hazard.

Recent research has provided some evidence of the possible short-term effects of electromagnetic fields and pulsed radio frequency radiation. At this point, however, no one can know or predict the long-term effects. WiFi networks and the continuous exposure to radio frequency radiation are recent—only within the past fifteen years—factors in our daily lives. Long-term studies have not yet been possible. Until time allows such studies to be conducted, we and our children are subjects in an extended biological experiment.

In the decision to have WiFi in a school or in our homes, it is perhaps wise to apply the Precautionary Principle. This principle, developed in the early 1980s, is meant to guide decision making regarding ecological and health policies. In the agencies of the European Union, the Precautionary Principle is officially recognized as a determinative guideline in making decisions that affect the environment and public health.

The Precautionary Principle states that when a new device, activity, or policy is proposed, and before it is implemented, those who will provide and profit from it must prove conclusively that it is not harmful. The burden of proof should be on those proposing and promoting the innovation. Those who question or oppose the innovation should not be required to prove that it is harmful.

At this time, no one, including the very powerful electronic communications industry, has proven conclusively that exposure to WiFi is safe. There is no proof that short- or long-term exposure to WiFi for children or for adults is benign.



An outlet filter that reduces dirty electricity

City of Lakes Waldorf School took a courageous and perhaps prescient step in eliminating WiFi and going back to hardwired access to the Internet. The school ran the risk of being perceived as alarmist and for taking a side in an unresolved scientific controversy. However, the school chose to act out of concern for the health and well-being of the students entrusted to its care.

The school is in good company, though. The Israeli Department of Education, the French National Assembly, the European Environmental Agency, the Council of Europe, and the German government are but a few of the many governments, government agencies, and scientific authorities which are now warning about and/or banning WiFi in schools. ❍

Precautionary Principle; Wireless Devices, Standards, and Microwave Radiation in the Education Environment, Dr. Gary Brown, Ed.D. (Instructional Technologies and Distance Education)

Wireless Devices, Standards, and Microwave Radiation

in the Education Environment

By Gary Brown, Ed.D. in Instructional Technologies and Distance Education

from Nova Southeastern University

and

Public School District Educational Technology and Distance Learning Specialist

Introduction

Since there is a shortage of space in schools, many school districts often use portable trailers to serve as classrooms for school students. Up to this point in their technology upgrade program, many school districts have not funded the broad scale deployment of technology within portable classrooms. Schools must decide whether such deployment will utilize the same building wiring standards that have guided efforts within the permanent campus or utilize wireless local area networking technology. To make this decision, public schools are analyzing the feasibility of placing wireless computers into classrooms, especially portable classrooms (portables) used by schools with rapidly-expanding enrollments. Such computers would interact with servers in the central processing site via the proposed Wireless Local Area Network (WLAN). Promoters of wireless technology state that it is less expensive, and can be installed easily and quickly because there is no need to dig trenches or open walls and ceilings to install cables as would be required for hard-wired systems. Another element favoring the utilization of wireless technology is its inherent mobility; that is, devices can more easily be moved and reactivated in other portables or conventional classrooms.

However, on the flip side, there are many negative aspects to "going wireless" in schools related to health and safety. This analysis provides information regarding health effects associated with wireless radiofrequency/microwave (RF/MW) radiation transmitting technologies, specifically the WLAN.

How the Technology Works

Digital Bits – Conduction of Pieces of Information Via Electric Pulses
Technology builds on this foundation. Thus, in principle, the purpose and requirements of the Wireless Local Area Network are like that of Morse code. In this electronic age, instead of mechanically tapping codes, computers use digital bits (electric pulses) that signal: Yes (1), I am carrying data; or No (0), I have nothing. Several million electric pulses (megabits) travel in streams of invisible energy (radio waves) carrying true characters (1) that form words, or spaces (0) that separate words. Morse code consisted of intermittent tapping that produced sound which was transported in slow rolling waves of air particles. But digital pulses of radio waves move fast at the speed of light . They are precise, consistent, and travel along specially engineered waves. Therefore, data moves rapidly and smoothly through the digital system.

Wireless Local Area Network (WLAN) – Movement of Data in Air to Remote Devices
Wireless computers rely on transmitters to push data to and through the air, which offers resistance, and are therefore inherently less reliable than wired networks. Computer transformers operate at several thousand volts. In a wireless computer system, transformers send millions of bits of information to transmitters atop the desk or through the lap top antenna. In turn, the data is packaged onto a signal and sent to a microwave antenna that is usually perched on the wall of a room or mounted on doors or on tall structures. The wall antenna downloads the data into its attached waveguide, which channels the information, via outdoor and indoor antennas, to users in the WLAN or to the antenna(s) receiver/transmitter located on the main campus building for further processing. The transmitter's receiver located on the main campus building is connected to the school's wired network. Since WLANs would be on during the school day, the RF/MW transmitters attached to these wireless systems are transmitting continuously. Electric pulses in the RF/MW region (radio waves), the band of the electromagnetic spectrum used for communications, can pass through nearly all types of matter, including children.

Standards, Rules, and Guidelines
Commercial wireless products are designed to comply with industry-based standards that are created by industry-appointed professional associations for industry use in achieving uniformity and compatibility in the manufacture and application of wireless communication technologies. These standards are different from government rules that are enforced by the government agency with regulatory authority over signal interference between licensed carriers, i.e., the Federal Communications Commission (FCC). Since the FCC is only a licensing and engineering agency it does not test, fund, or conduct biological research. FCC does not monitor communications installations to ensure compliance with FCC guidelines governing human exposure to RF/MW radiation. The FCC relies on other agencies to recommend safety standards for wireless technologies.

The organizations responsible for developing RF/MW safety standards include the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE) associations. The committee that sets RF/MW exposure standards was first sponsored by ANSI and then by IEEE. It is basically the same group

of people. It is important to understand that industry standards and government guidelines are two different things. The IEEE committee is mainly comprised of engineers and physicists who deal with the non-living sciences. They have traditionally been charged with the task of making these technologies work, not with the understanding of health effects from the technologies' RF/MW radiation exposures that are within the purview of the living sciences of biology and medicine. The health physicists who serve on these committees have traditionally been active in high intensity (energy) radiation research primarily from defense-related industries. These scientists have conducted research on the ionizing band and are not as knowledgeable about physical and biological effects related to exposure to non-ionizing RF/MW radiation used in wireless technologies. There are many biologists working in the field of bioelectromagnetics, the study of non-ionizing radiation in living organisms. But somehow most of them have left these committee.

FCC Guidelines- Human exposure to Radiofrequency/Microwave Radiation
In August 1997, following the enactment of the Telecommunications Act of 1996, the Federal Communications Commission (FCC) published revised guidelines governing human exposure to RF/MW radiation. These guidelines are difficult to enforce because the FCC lacks the man-power and the necessary funding to carry out monitoring and enforcement from exposure to wireless technologies' radiation. These guidelines were adopted by the FCC to protect the health and safety of the general public and certain high risk occupational groups, such as telecommunications workers. For example, the guidelines outline the power density exposure level permitted for the general public (1mW/cm2 for 30 minutes) and workers (5mW/cm2 for 6 minutes). The rationale for the difference in permissible exposure levels is that workers are aware of the presence of radiation and can protect themselves, whereas the public is considered to be unaware of radiation, and would not be aware that protection is needed. We add that children would be even less apt to understand the concept of "awareness" when studying or playing near to transmitting signals from a WLAN to wireless classroom computers.

WLAN technologies are regulated by the FCC under Section 47 Part 15 rules. Section 47 Part 15 rules specify compliance with FCC rules regarding RF/MW interference. FCC Part 15 rules for WLAN applications are concerned primarily with RF/MW power output as it relates to the prevention of RF/MW interference with other electronic devices. [See FCC 99-149 pl, sec 2.]

Depending on its intensity, RF/MW radiation can cause heating of body tissues. No heating will occur if theexposed body can compensate for the heat load. In general, the intensity of exposure to radiation from cell phones, cell towers, and WLANs is low and does not cause significant tissue heating.

X-rays are classified as ionizing radiation. Ionizing radiation exposures are also regulated by government and industry standards. Unfortunately, when setting guidelines for products emitting RF/MW radiation, industry uses only the thermal level of radiation where the body increases in temperature and would go into shock or burn if over-exposed as a basis for defining adverse biological effects. It is important to note that WLANs

operate in the non-ionizing, RF/MW part of the electromagnetic spectrum. The FCC RF/MW exposure guidelines apply for wireless devices operating in the non-ionizing part of the electromagnetic spectrum which includes devices such as mobile phones, wireless internet, and mobile phone base stations (often called cell towers).

How could the FCC guidelines for wireless devices operating in the non-ionizing, RF/MW spectrum be based upon standards that are not internationally accepted nor proven safe? That question can best be addressed by this statement from the international electromagnetics research and policy publication*, Microwave News*:

> *Standard setting bodies do more or less as industry wants. Their members are often current, past, or future employees of the very companies they are supposed to regulate. Meanwhile government agencies have no appetite for confrontation.*

While the wireless industry has stated that its standards and the FCC guidelines are safe and do not pose a risk to workers or the general public, many in the wireless community do not agree. Morton Bahr, President of the 600,000-member U.S. Communications Workers of America (CWA), a national union with a membership dominated by telecommunications workers, filed a legal challenge in November, 1997, in the U.S. Court of Appeals against the FCC rules on human exposure to RF/MW radiation. Mark Wilson, CWA's legal representative, stated recently, "The President of CWA is very concerned about protecting the health and safety of our workers who are exposed to wireless radiation on a daily basis." The CWA is objecting to the hazardous radiation exposure levels its workers are subjected to under FCC's RF/MW exposure guidelines.

A November 30, 1998, letter from David Nghiem, Ph.D., president and CEO of USA Wireless Inc., a manufacturer of mobile phone components, to FCC Chairman William Kennard, raises questions regarding the current industry standard and FCC guidelines. The letter suggests the need for a "much more stringent standard than the established Specific Absorption Rate (SAR)."

> *Although there is no question that the SAR measurement is important for establishing how much radio-frequency (RF) power is deposited in human\ tissues, the SAR level relates only to the electricfield inside the tissue, and ignores any possible biological effects from the magnetic field. We must take into account, however, that the SAR only relates to thermal effects; it does not take into consideration the possible non-thermal effects.*

U.S. exposure guidelines are not universally accepted in many parts of the world. See: http://www.emrnetwork.org/regulation/charts.htm According to the FCC, "Some published exposure limits in Russia and some eastern European countries have been generally more restrictive than existing or proposed recommendations for exposure developed in North America and other parts of Europe." Russian limits for RF/MW radiation exposures are up to 100 times stricter than those in the U.S. and Western Europe. In January 2000, Swiss health and environmental officials adopted strict rules for public exposures from new sources of RF/MW radiation. Switzerland has

one of the most stringent exposure guidelines in the world requiring power levels effectively 100 times lower than those of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and ANSI. Salzburg, Austria's standard is approximately 5800 times lower than the FCC guidelines forRF/MW base station radiation.

Health officials in Canada are also concerned with regulations governing potentially harmful RF/MW radiation in the air over Toronto. Dr. Sheela Basrur, Medical Officer of Health (November, 1999) urged the Toronto Board of Health to increase the safety margin a hundred-fold. It is recommended, as an added margin of safety, that exposures to the public be kept at least 100 times below Canadian federal exposure limits. Basrur said RF/MW radiation has been demonstrated to have adverse effects on the blood brain barrier, and some evidence suggests a link to leukemia and other cancers. On December 6, 1999, the Board of Health approved the Prudent Avoidance Policy recommended by Basrur. That policy would impose an output limit on cellular base stations 100 times more stringent than the current Canadian Safety Code 6.

The FCC rules suggest that manufacturers of transmitters that have antennas located next to individual(s), as in the application of the WLAN transmitter antennas, provide certain operating and warning usage instructions. Those instructions should be included in the operator's manual to caution users to maintain a specific distance from the transmitter/antenna. In addition, FCC advises that a warning label should be affixed to the transmitter/antenna to caution users or other persons close to the transmitter/antenna to limit exposure duration and/or maintain certain specific usage conditions.

IEEE 802.11 Standard -- A Boilerplate or Matrix for an Engineering Design?
To ensure the compatibility of electronic systems, the IEEE agreed on specific and uniform criteria, an industry standard, for the design of wireless technology. In the hierarchy of rules for the design of the products in its domain, IEEE assigned Section 802.11 to WLAN components. This section stipulates that WLAN antennas are required to have a certain number of channels; data can move at the rate of a specified number of bits (electric pulses) in each antenna channel. This frequency range is non-licensed, which means that industry is not required to obtain a construction or operation license from the FCC before deploying WLAN systems..

Presentations made by industry to this writer referenced the IEEE 802.11 industry standard. Many industry representatives mistakenly inferred that since their products comply with the IEEE 802.11 standard, their products automatically are safe and without the threat of health issues from RF/MW exposure. This writer also contacted members of the IEEE 802.11 industry standards committee requesting information on the health and safety aspects. This writer specifically requested information pertaining to specific absorption rates (SAR) and power density of WLANs. Mr. Vic Hayes of Lucent Technology and member of the IEEE 802.11 standards committee supplied an IEEE.802.AA document. The second and third paragraphs of the document address the industry's opinion on health and safety.

> *No verified reports exist of injury to human beings who have been exposed to electromagnetic fields within the limits of frequency and (specific absorption rate) specified by previous ANSI standards, including ANSI-C95 1-1982. Measurements have shown that routine exposure of users and other persons to low-power portable, mobile-power portable, mobile transceivers, and cellular telephones do not induce rates of radio frequency absorption that exceed any of the maximum permissible rates of energy absorption defined by these guidelines (ANSI/IEEE). Therefore, based on present knowledge, the exposures from low-power transceivers are considered to be without risk for the user and the public."*

The August 2000, Volume 37, Number 8 edition of *IEEE SPECTRUM* online states (See Attachment P) the following: http://www.goaegis.com/articles/ieee_spectrum_0800.html

> *The body of research is controversial in several respects. It includes many reports of effects of RF fields on cells and animals, sometimes at low exposure levels, which are understood and often not reproducible. It also includes a scattering of reports of human effects from low-level exposure to RF-fields. Standards-setting committees while acknowledging this research, has concluded that it provides insufficient basis for exposure guidelines.*

In a letter to the FCC (available on request), Margo T. Oge, Director, Office of Radiation and Indoor Air with the U.S. Environmental Protection Agency (EPA) made the following responses concerning ANSI/IEEE standards, including ANSI-C95 1-1982.

> *Therefore the generalization that the 1992ANSI/IEEE guidelines protect human beings from harm by any mechanism is not justified.* ***The 1992 ANSI/IEEE standard is based on literature published before 1986,*** *except for a few papers on shock and burn. While studies continue to be published describing biological responses to non-thermal ELF modulated RF radiation****, the effects information is not yet sufficient to be used as a basis for exposure criteria to protect the public against adverse human health effects."*** (Emphasis added.)

On June 17, 1999, the federal Radiofrequency Interagency Work Group (RFIAWG) issued a RF Guidelines Statement. RFIAWG members come from the U.S. agencies responsible for RF/MW safety policy including: the Food and Drug Administration (FDA) Radiation Biology Branch, National Institute for Occupational Safety and Health (NIOSH), EPA, Occupational Safety and Health Administration (OSHA)Health Response Team, and the National Telecommunications and Information Adminstration (NTIA)/Department of Commerce. In particular, the RFIAWG emphasized that current RF/MW exposure guidelines:

- Do not take into account chronic, as opposed to acute exposures
- Do not take into account modulated or pulsed radiation (digital or pulsed RF/MW radiation that is employed in WLAN systems)

- Rely on time-averaged measurements that may erase the unique characteristics of an intensity-modulated RF radiation that may be responsible for reported biologic effects

- lacked a comprehensive review of current, long-term, low-level exposure studies, neurological-behavioral effects and micronucleus assay studies (showing genetic damage from low-level RF/MW radiation).

This writer also spoke with W. Gregory Lotz, Ph..D., Chief, Physical Agents Effects Branch Division of Biomedical and Behavioral Science (MS C-27) for NIOSH and NIOSH's representative to RFIAWG. When questioned about the health and safety concerns of the WLAN computer in the classroom environment, Dr. Lotz stated his personal opinion**: "While we still don't have all the answers on this issue, it would be advisable to use the Precautionary Principle."** (Emphasis added.) "The Precautionary Principle is an important guiding principle in handling inevitable scientific uncertainty, especially in situations of potentially irreversible or catastrophic impacts" (UNESCO, 1999). Consistent with the Precautionary Principle, Dr. Lotz also indicated that a hard-wired portable classroom connected to a rooftop antenna would be a safer option than wireless-laptops, work stations, and base stations in a classroom environment.

The author also spoke with Senior Scientist Norbert Hankin, of theEPA Office os Radiation and Indoor Air and Chairman of RFIAWG. The writer discussed possible wireless portable classroom scenarios with Mr. Hankin. When questioned about the health and safety concerns of the wireless computer in the classroom scenario, Mr. Hankin said: **"In my personal opinion, I wouldn't do it."** (Emphasis added.) He further stated that there are animal studies showing health issues with short-term exposures to non-ionizing RF/MW radiation. Mr. Hankin expressed concern about children who would be close to transmitting antenna(s) (wireless-laptops, work stations, and base stations) and exposed to prolonged low intensity transmissions. He likened it to being in a room of cellphones running all day long. Mr. Hankin suggested that the hard-wired portable classroom scenario, connected to a rooftop antenna, was a safer way to go.

In May 2000, the American Cancer Society bulletin stated: "No solid evidence yet exists regarding cell phones and cancer". Cell phone technology is new, "data from large studies are not yet available on long term use." The bulletin also states, "that a scientific panel that was commissioned by the government of Britain to evaluate research to date on health risks of cell phones, warns that children may be at greater risk of injury from cell phone radiation because their central nervous system, including the brain is still developing. The group, The Independent Expert Group on Mobile Phones (IEGMP) contends that: **" While most studies have found few, if any, health risks from cell phones, research has not proven conclusively that cell phones are safe, particularly for children."** (Emphasis added.)

According to the conclusion of Britain's IEGMP Summary & Recommendations- Report -Mobile Phones and Health:

> ***We conclude therefore that it is not possible at present to say that exposure to RF radiation, even at levels below national guidelines, is totally without potential adverse health effects, and that the gaps in knowledge are sufficient to justify a precautionary approach.*** (Emphasis added.) Available at: http://www.iegmp.org.uk/

In February 2000, Russell D. Owen, Chief of the Radiation Biology Branch of the Center for Devices and Radiological Health, FDA, commented that there is: "currently insufficient scientific basis for concluding whether wireless communication technologies pose any health risk. . . Little is known about the possible health effects of repeated or long-term exposures to low level RF of the sort emitted by such (wireless communication) devices. . . Some animal studies suggest the possibility for such low-level exposures to increase the risk of cancer…" Although Dr. Owen's comments appear to be directed primarily to users of cell phones, the same questions are pertinent for long-term RF/MW exposure from antenna sites (*Epidemiology:* Vol. 1, No. 2, March 2000, Commentary).

A recent federal district court decision in Louisiana opined that FCC and FDA have no programs in place to assure safety. This means that the public cannot depend on either the FDA or the FCC to protect people. Additionally, Dr. David Feible, Chief of FDA Center for Devices and Radiological Effects, stated in his letter dated January 16, 2001, accompanying the fiscal 2000 annual report: **"We don't have the money to protect consumers from wireless technology."** *RCR News,* February 19, 200l, "FDA ill-equipped for health issue," by Jeffrey Silva.

> The National Toxicology Program (NTP), is a part of the National Institute of Environmental Health Sciences (NIEHS), National Institutes of Health (NIH). NTP has requested comments on whether to add RF/MW radiation to its list of substances to be tested as carcinogens. The FDA made a recommendation to the NTP urging that RF/MW be tested for carcinogenicity (www.fda.gov.us). It is based in part on FDA's written testimony stating:
> *Animal Animal experiments are crucial because meaningful data will not be available from epidemiological studies for many years due to the long latency period between exposure to a carcinogen and the diagnosis of a tumor. . . There is currently insufficient scientific basis for concluding either that wireless communication technologies are safe or that they pose a risk to millions of users. . . FCC radiofrequency radiation guidelines are based on protection from acute injury from thermal effects of RFR exposure and may not be protective against any non-thermal effects of chronic exposures.*

Further, the FDA notes that for mobile phone users:

> *The 84 million mobile phone subscribers and the 25,000 that sign up daily translates into a potentially significant health problem should the use of these devices even slightly increase the risk of adverse health effects."*

Areas of Concern

Wireless technology is relatively new and many diseases, especially cancer, have latency periods of 6 to 10 years or more before tumors and other symptom surface. Research has demonstrated that biological effects from RF/MW radiation exposure are dependent upon several compounding factors.

1) The first exposure factor is the length of time a person is exposed to RF/MW transmitters. In the WLAN classroom environment, the exposure to children from RF/MW radiation starts the moment the students enter the classroom. The exposure to RF/MW radiation does not end until students leave the classroom or move outside the perimeter of the wireless network of RF/MW radiation antennas and transmitters that most likely extends beyond the boundaries of the classroom.

A child entering the school system in Kindergarten could face the potential for 13 years of RF/MW radiation exposure emanating from WLAN transmitters while attending K-12 schools. Teachers and other school district personnel, many of child bearing age, might have an even longer exposure period resulting from a professional career in a wireless school district environment. Wireless school campuses that are in close proximity to nearby residential areas risk exposing the children and their families to RF/MW radiation in their homes depending on how those wireless networks/antennas and power output are implemented.

2) The second exposure factor of concern is the distance between the transmitters and the person. Exposure and absorption of non-ionizing RF/MW radiation are greatest next to a transmitting antenna. In the wireless classroom WLAN environment, transmitters and antennas can be located on the computer, printer, ceiling, walls, on the outside of the portable classroom, and on the outside of the main campus building. The exposure distances a child might encounter from a transmitting antenna(s) could vary depending on how the classroom environment is designed. A child can be as close as 1.5 feet when operating a wireless computer or when playing near an outdoor omni-directional transmitting antenna.

Outside antennas can also expose children in a classroom to RF/MW radiation even though the antenna is mounted outside. RF/MW radiation radiates through the walls of most structures depending on construction materials. A good example of this fact is the cell phone. In many instances, cell phones can be used within a building because the wireless RF/MW signal radiates through the walls of the building. The U.S. government recommends affixing exposure warning labels to each transmitter and antenna of RF/MW transmitting devices, warning people to keep safe distances from transmitters/antennas. The government also has requested the wireless industry to include information in their owner's operating manuals about overexposure. Children who would be exposed may not be able to read or follow these instructions.

Dr. Neil Cherry, Ph.D. in Physics, senior lecturer at Lincoln University in Canterbury, New Zealand, and an elected member of the Canterbury Regional Council, has written that studies indicate that non-ionizing RF/MW radiation causes everything from cancer in lab rats to neurological changes in humans. Dr. Cherry describes human beings are

very good conductors of RF/MW transmitted signals. This means that most RF/MW signals radiate through us and **are absorbed** with very little going to the main transmission point. He further states that wireless technology should be redesigned not to radiate into us, but rather go directly to the main transmission site. Living organisms are themselves electromagnetic instruments of great sensitivity that can support a variety of electrical vibrations; these can be interfered with by external radiation - both at RF/MW and at very much lower (ELF) frequencies - in a number of ways, from which adverse health effects can follow. http://www.nzine.co.nz/thesis.html

3) The third exposure factor is the frequency of the RF/MW radiation. The RF/MW radio signals that are being discussed for classrooms are located in the 2.4 GHz frequency range. The 2.4 GHz frequency is two to three times higher than a cell phone. In some instances, this technology can also operate in the 5 GHz frequency range. Researchers are concerned that these higher radio frequencies compounded with power density, length of exposure, distance from antennas, and absorption rates may produce adverse health effects. The body is comprised of 65% water by weight and has a high absorption rate to RF/MW radiation. Radiation absorption in body tissue is commonly referred to as Specific Absorption Rate (SAR). The rate of absorption of RF/MW radiation into the body increases as the frequency of the radiation climbs. See: http://www.emrnetwork.org/schools/curry_broward.pdf

Research scientists, such as Dr. Martin Blank of Columbia University, are calling for biologically based standards rather than thermally based standards in order to prevent harmful exposure conditions which occur at certain frequencies. According to a study conducted by University of Utah scientist, Om Gandhi published in 1996, greater distribution and penetration of RF/MW radiation was found in the heads of 5- and 10-year-old children using a cell phone than in those of adults using a cell phone. Significantly larger amounts of the radiation were absorbed by children when compared to the absorption rates of adults.

At the University of Washington, researchers Lai and Singh (1996) showed single and double DNA breaks and long- and short-term memory loss in laboratory animals exposed to RF/MW radiation. Lai said, “Because mobile phone RF penetrates deeper into a child's brain, more brain tissue would be exposed.” He added that not all brain cells have been developed in children, with some cells in the cerebellum (in the back of the brain) taking 10 years to develop. Cumulative damages in DNA may in turn affect cell functions. DNA damage that accumulates in cells over a period of time may be the cause of slow onset diseases, such as cancer (Lai letter available on request). The Motorola funded group headed by Joseph Roti Roti was unsuccessful at duplicating Lai's findings when using a different, less sensitive method to measure DNA breaks. However, during his study Roti Roti unexpectedly found an effect from the RF/MW radiation (an oncogene, genes related to cancer development).

Research has shown that exposure to RF/MW emissions from a transmission tower demonstrate **significant differences in visual reaction time and reduced memory function in students in a close-by school** (Chiang, 1989). Studies by Dr. Lai at the

University of Washington (1996, 2000) showed long- and short-term memory loss in rats from exposure to 2.45 GHz RF/MW radiation, the frequency used in WLAN systems.

In 1997, a study conducted by Professor Leif Salford, a Swedish neurologist, stated: "We saw the opening of the blood-brain barrier (BBB) even after a short exposure to radiation at the same level as mobile phones. We are not sure yet whether this is a harmful effect, but it seems that molecules such as proteins and toxins can pass out of the blood while the phone is switched on and cross into the brain. Within two minutes of exposure, the rat's brain tissue was found to be opened up to proteins and toxins contained in the blood after the defense mechanism (BBB) was disabled. " **Salford found that the blood brain barrier opened at exposure levels 4,000 times lower than the current FCC guidelines.**

4) The fourth exposure factor is the power output levels from the wireless RF/MW radiation devices. The conventional method of measuring exposure is called power density. Power density is defined by the FCC as "power per unit area." Power density is expressed in terms of milliwatts per square centimeter or microwatts per square centimeter.

When industry vendors, engineers, and marketing officials were questioned during their presentations to this writer, they were unfamiliar with key health and safety aspects of their products. Industry representatives were unaware or confused regarding the standards and guidelines. None of the vendors knew the power density of their products nor were they familiar with the term. One vendor admitted wireless technology was new to him, while another commented that they were aware of health effects but claimed none.

Health and Safety Issues

The wireless industry conducted extensive research on cell phone health and safety risks for six years, under contract with the Wireless Technology Research Group (WTR) in Washington, D.C. Dr. George Carlo, Ph.D., M.S., J.D., former Director of the WTR, a now defunct organization, recently gave an advanced look on his research results in a series of multimedia interviews. A formal report has yet to be released. To the surprise of the wireless industry which funded the $27 million research program, the results indicated health issues from exposure to wireless technologies. The lack of responsiveness by industry to the WTR report caused Dr. Carlo to write to the Chairman and CEO of AT&T, Mr. C. Michael Armstrong.

The following sentences were extracted from Dr. Carlo's letter dated October 7, 1999:

> *The rate of death from brain cancer among hand held phone users was higher than the rate of brain cancer deaths among those who used non-hand held phones that were away from their head. Today, I sit here extremely frustrated and concerned that appropriate steps have not been taken by the wireless industry to*

protect consumers during this time of uncertainty about safety. The question of wireless phone safety is unclear. Therefore, from a public health perspective, it is critical for consumers to have the information they need to make an informed judgment about how much of this unknown risk they wish to assume in their use of wireless phones.

In October, 1998, seventeen scientists of international standing signed the Vienna EMF Resolution, stating that the biological effects from low-intensity exposures to RF/MW radiation are scientifically established, a statement which undermines the validity of current FCC safety guidelines. http://www.irf.univie.ac.at/emf/

In June, 2000, in Salzburg, Austria, an international conference was convened to discuss RF/MW radiation studies relevant to wireless voice and data communications. Researchers and public policy makers who participated at that conference signed a resolution which included this statement on the biological effects of exposures to RF/MW radiation from mobile phone base stations:

http://www.land-sbg.gv.at/celltower/english/start_e.html

4. *Presently the assessment of biological effects of exposures from base stations in the low-dose range is difficult but indispensable for protection of public health. There is at present evidence of no threshold for adverse health effects.*

   Recommendations of specific exposure limits are prone to considerable uncertainties and should be considered preliminary.

The Los Angeles Unified School Board as of June 2000, passed a resolution opposing the future placement of cellular telecommunication towers on or adjacent to school property because of the potential health effect. California PUC (Public Utility Commission) issued an advisory on siting towers near schools and residences in 1995 which is not being enforced. http://www.lausd.k12.ca.us/lausd/board/secretary/html/agendas/mt/mt06-27-00.html Scroll down to Agenda Item IX. Motions and Resolutions for Action

Libby Kelley, former public health policy analyst at the U.S. Department of Health and Human Services, who now directs the Council on Wireless Technology Impacts, calls for greater caution regarding the introduction of wireless signals and devices near our children. She states: "Until we know beyond the shadow of a doubt that this technology can be safely used by children, we are behaving like irresponsible adults by treating our children as guinea pigs in this uncontrolled experiment."

Liability and Lloyd's of London

In an article entitled, " UK Insurers Balk at Risks of Phones," Sarah Ryle,a consumer affairs correspondent for *The Observer*, London, describes concerns about the safety of mobile phones which has prompted a leading Lloyd's of London underwriter to refuse to insure phone manufacturers against the risk of damage to users' health. The move comes amid mounting concern about the industry's influence on research into the long-term

effects of using a mobile phone. The London market provides insurance for everything from aircraft to football players' legs. But fears that mobile phones will be linked to illnesses, such as cancer and Alzheimer's disease, have prompted John Fenn of underwriting group Stirling, to refuse to cover manufacturers against the risk of being sued if mobiles turn out to cause long-term damage. New research published last year by Bristol University scientist Dr. Alan Preece showed a 'highly significant' effect from mobile phone signals on brain function. http://www.goaegis.com/articles/observer_041199.html

Another opinion comes from journalist Charles Moore of the on-line *Mac Opinion.* Mr. Moore writes software reviews and features for *MacToday* magazine and does his best to endorse the Macintosh platform wherever and whenever he can in his writing. In his December, 1999, column entitled: "How Safe is Wireless Computer Networking?" he states the following: (Emphasis added.)
http://www.macopinion.com/columns/roadwarrior/99/12/09/index.html

> *However, I am suggesting that the issue of wireless networking ought to be addressed with a lot more prudent caution than seems to be the case.* ***The thought of classrooms full of schoolchildren using Airport equipped iMacs or iBooks day in and day out, being exposed to radio frequency emissions at close range, makes me distinctly uneasy given the level of ignorance on this issue . . .***
>
> *And this is the point that pertains most strongly to wireless microwave frequency computer networking. Until there is a lot more research available on this issue from disinterested third parties, my own personal policy of "prudent avoidance" will include prudently avoiding wireless LANs, the same as I refuse to use cellular and cordless phones. Happily, in my case that will not be difficult. For many others who will be exposed in work or educational settings, prudent avoidance will be virtually impossible.*
>
> *As I said at the beginning of this article, I expect that a lot of people who read it will be annoyed that I brought the topic up. There is understandable enthusiasm for the convenience of wireless technology (for a quite comprehensive resource on the topic, check out this Website -- http://hydra.carleton.ca/info/wlan.html), and getting rid of all those pesky wires.*
>
> ***It could be that I am being hyper-cautious about this, and if it can be proven beyond reasonable doubt that exposure to low-level radio emissions is safe, I'm willing to listen. However, I want to hear it from sources other than those financed by industry or politically-sensitive government regulatory agencies.***

The roll out of WLAN technology appears to be in the early stages of development, hence WLANs have not, at this stage, fully matured. Industry standards for both hardware and software have been under debate for years. Industry standards are still evolving. One example is the frequency hopping/direct sequence ruling process now before the FCC (FCC ET Docket No.99-231) . The FCC will be issuing its ruling on ET Docket No.99-231 on or after June 2000. The ruling will decide the issue of frequency expansion requested by some manufacturers and contested by others. The FCC adopts

guidelines for the health and safety aspects of this wireless license-less technology. Please note that guidelines are voluntary.

Presentations made to this writer by industry representatives demonstrated the newness with many aspects of this technology, especially the health and safety aspects. The writer has requested power density and specific absorption rates of each company's wireless product. The requests were made during and after wireless vendor presentations, phone calls to vendors, and e-mails. **So far, all wireless companies have failed to furnish this writer with the requested information.**

School District Liability Questions

1. In light of the current scientific controversy surrounding RF/MW radiation, what kind of financial liability would a school district incur if long-term exposure to wireless communications is found to cause cancer or other disorders? See: "CIOs warned of cell phone risks."
http://www.computerworld.com/cwi/story/0,1199,NAV47_STO47766,00.html

2. If a decision is made to move forward with WLANS, what is the responsibility of the school district relative to disclosing any potential risks to parents, employees, and the public at large?

3. Since the level of risk is yet to be defined, what procedures should be adapted by a school district to integrate this technology into the classroom in the safest possible manner?

4. The issue of exposure of children and others to RF/MW radiation is currently being discussed by those in the legal profession. A plaintiff could request punitive damages on the grounds that the defendants knew or should have known that RF/MW radiation is harmful to human health, and that defendants failed to take affirmative steps to prevent exposure that was at harmful levels. Thus how great could the potential liability for doing nothing be?

5. Are there safer alternatives?

6. On what criteria should the school district base the decision to place wireless technology within its classrooms and schools?

7. If cost savings is the determining factor in this decision, what level of health risk is acceptable and supportable in a broad-scale deployment of wireless technologies in environments populated largely by children who will subjected to long periods of exposure to RF/MW radiation?

Precautionary Principle; Dr. Richard H. Conrad Reply Comments, Nov. 18, 2013

FCC 13-39

Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of:

Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies	ET Docket No. 13-84
Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields	ET Docket No. 03-137

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

As officially presented in the Federal Register/ Vol. 78, No. 107 / Tuesday, June 4, 2013 / Proposed Rules. Federal Communications Commission, 47 CFR Parts 1, 2, 15, 24, 25, 27, 73, 90, 95, 97, and 101 [ET Docket Nos. 03–137 and 13–84; FCC 13–39], Reassessment of Exposure to Radiofrequency Electromagnetic Fields Limits and Policies, Federal Communications Commission

Reply Comment Filed by: Richard H. Conrad, Ph.D. Biochemist

84-1330 Mauna'olu St.
Waianae, HI 96792

November 18, 2013

Reply Comment, to comment to FCC filed by Richard Tell in September 2013:

Richard Tell has freely admitted (to the author over the phone) that he knows nothing about biology or medical science, and yet in his September 2013 comments to the FCC on safe levels for human exposure (what is this if not biology), he sets himself up as qualified to judge the research on non-thermal effects, summarily discounting all research showing non-thermal effects. He commented (text in italics below):

227. In a practical sense, the only real hazard of RF exposure is the production of RF burns. This is particularly true when considering RF fields with magnitudes in the range of the present FCC MPE values.

228: ……..RF burns are the only known and demonstrated hazard related to RF exposure that are associated with field strengths equivalent to the present FCC MPEs

In his paragraphs 227 and 228 above, Tell has cherry-picked what is "known and demonstrated". Paragraphs 227 and 228 are simply not true, as shown by many hundreds of peer-reviewed research papers demonstrating non-thermal effects. The vast majority of the research showing effects was publicly funded, whereas the vast majority of research showing absence of effects was funded by the telecom industry (see the attached document: "Business Bias as Usual", particularly Fig 1. on page 21).

240: The suggestion by some of applying extremely stringent, precautionary limits would have the severe consequence of impacting broadcasting and telecommunications as they are currently known and appreciated in the U.S. For example, a recent proposal to apply an RF power density limit of 0.3 nW/cm2 is, simply, not practical.

Tell's comment in his paragraph 240 above about precautionary limits impacting telecommunications reveals that he feels communications are the only priority of concern, and human health and well-being (aside from outright burns) do not even enter into the equation.

243: There is no need to recommend minimizing exposure below present SAR based limits. The safety factor of 50 associated with the present SAR based lower tier exposure values, for the general public, are already so far below the threshold of established adverse biological effects as to represent a practical zero probability of harmful effect.

In Tell's paragraph 243 above, his: *threshold of established adverse biological effects* is **the current FCC position**, which is based on not cooking (bulk heating) flesh. This is completely out of line with reality, and **is analogous to a hypothetical FDA approving all drugs that aren't acid enough to burn, regardless of side effects (and automatically discounting all side effects, because after all, the acidity is not high enough to cause burning)**. In the light of the many demonstrated non-thermal effects of EMF, Tell's statement: *a practical zero probability of harmful effect* is totally erroneous, rash and irresponsible.

Richard Tell is a highly competent (in electronics) engineer who mindlessly defends the FCC's current standards without giving any credence to the huge amount of biological evidence of possible and actual harm. He does not want it to exist, and it does not make sense to him - he can't imagine a mechanism. Well, in addition to his not knowing enough molecular biology to do this, it is a myth that in good science one must be able to imagine a mechanism before accepting a demonstrated phenomenon. Often mechanism only comes later, after much research. We don't yet know how smoking causes lung cancer.

If the FCC and telecom industry would cease denial and face the truth, they could sponsor extensive honest research into non-thermal effects on humans and come up with biologically safer ways to accomplish their goals. For example, by finding the least harmful frequencies and modulation schemes. That would be a lot more sensible and

humane than hands on ears, eyes squeezed shut and screaming in denial like the response of a child being told something he doesn't like.

Precautionary Principle; Smart Meters-Firefighters; Letter from Susan Foster to San Diego Gas & Electric, California Public Utilities Commission; Nov. 8, 2011

Susan Foster , MSW

15957 Avenida Calma
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November 8, 2011

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Jessie J. Knight, Jr., Chief Executive Officer
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Gentlemen:

I am writing with a matter of great concern regarding my neighbor, Patricia Manion, and I want answers as do her family members as to why SDG&E picked Mrs. Manion's home, a 91-year old neighbor of mine, for what appears to be an undocumented and unauthorized experiment by SDG&E.

I am writing on Mrs. Manion's behalf because 1) I have dealt with SDG&E on the issue of avoiding a smart meter on my home due to my own cardiac problem, and 2) I am a medical social worker/medical writer and therefore have medical knowledge and can describe to you that you made what could have been a deadly mistake by picking out Patricia Manion's home for this highly questionable installation of an unidentified meter in Whispering Palms, Rancho Santa Fe, California 92091.

I am also writing this letter and copying it to people who I know will find the following fact of

urgent and utmost importance. It has to do with comparing the readings from Mrs. Manion's meter with a cell tower outside a firestation for over 5 years -- and the insight we gained from a medical study of 6 firefighters in California who had lived with a large cell tower 9 feet from their front door for over 5 years. All of the men exposed complained of neurological symptoms following the installation of the tower that beamed over their living quarters 24/7, and all firefighters tested with SPECT brain scans and TOVA testing were found to have brain abnormalities, delayed reactions time, lack of impulse control and cognitive changes. I am very familiar with this study because I organized it, and it was conducted by Gunnar Heuser, MD, PhD.

The reason this is so important is because **the cell tower outside the firestation was only a fraction of what we measured from the "unknown Itron telemetering Remote " that was attached to an existing gas meter outside Mrs. Manion's home.** It would appear the level of radiation from the "unknown meter" or the combination of meters in very close proximity in the neighborhood outside Mrs. Manion's home is **10x more powerful** than that of the cell tower at the firestation.

Why is that significant? Those previously healthy firefighters -- the strongest of the strong among us -- had a lower exposure than Mrs. Manion, and still displayed measurable brain and other neurological damage upon objective testing. This is alarming information.

Here are the facts surrounding the application of an "unknown **additional** meter" for Mrs. Manion's home, her ensuing decline, and our resulting actions which I considered urgent from a medical and humanitarian point-of-view: On June 16, 2011 an unsolicited man showed up at Mrs. Manion's residence. He was in a brown van with "VSI" on the side. He spoke to a gentleman who was working at the Manion home and said he was there to install "a free upgrade for Mrs. Manion that would connect her meter directly to a satellite."

Following installation of this experimental meter, which our investigation shows was the only such "free upgrade" in a neighborhood with 400 homes, Mrs. Manion was clearly not feeling well, and her symptoms of lethargy, complaints regarding her vision, and a subtle but general lack of clarity in her speech and focus, and constant ringing in her ears did not let up. Unfortunately, her bedroom is the room closest to the smart meters. During what we believe was the first week after the installation of the mysterious meter, Mrs. Manion fell for no apparent reason. She did not trip on anything, but went down hard in the bathroom and necessitated cleaning and dressing of several cuts and abrasions. She also sustained severe bruising. The change in Mrs. Manion was perceptible and unexplained.

We obtained equipment for taking measurements of the smart meters at the side of the house. I have read and heard from SDG&E employees that your smart meters take readings hourly, or several times a day. What we discovered at the side of Mrs. Manion's house was shocking. There appeared to be burst of radiation emitted constantly. The analyzer did not have time to recover between rapid-fire bursts of radiation. Readings were far in excess of what is allowable for the total ambient surroundings of 1000 $\mu W/cm^2$. Studies show biological changes at 1/10th of 1 μW or microwatt. What were you people thinking at SDG&E to put this on a 91-year old woman's home?

We immediately made a decision this meter had to come down, and having been deceived by the unsolicited man in the "VSI" vehicle, and having been given this extraordinarily odd information about the unidentified meter "communicating with a satellite" when SDG&E never informed any of your customers satellites were part of this mesh grid, we strongly suspect Mrs. Manion's home was being used, and maybe even Mrs. Manion was being used, to test this yet unidentified meter *added onto* the existing meter and connected with a thick electrical cord.

If this is your meter that we have taken off the Manion home, please, by all means, claim it. We would like to know who is responsible for this 91-year old woman feeling as if, over a period of four or five weeks, that she was: 1) going blind, 2) suffering sudden onset and unrelenting lethargy and those who observed would say "confusion", 3) edema of her legs indicative of the heart slowing, 4) unexplained high blood pressure 5) unexplained collapse/fall in the home causing cuts, abrasions, severe bruising, 6) constant ringing in her ears.

Within 24 - 48 hours of this meter being removed, Mrs. Manion returned to the reasonably good health she was in for a 91-year old woman prior to June 16, 2011. This letter is being copied to Prosecutor Greenwood because we suspect Mrs. Manion's home was selected for what appears to be a horrible experiment *because* she is elderly; and by herself, indeed Mrs. Manion would never have identified the source of her sudden onset symptoms. She still has a hard time grasping how something could be toxic if it is odorless, invisible, and is provided by SDG&E, her reliable utility provider.

SDG&E is hiding behind the FCC threshold of 1000 microwatts per centimeter squared ($\mu W/cm^{2)}$), but that does not mean a smart meter or any wireless product is safe under 1,000 microwatts per centimeter squared, or $\mu W/cm^2$. Even at these high levels permitted by the FCC, our measurements indicate **the smart meters are not in compliance with the FCC limit.**

The utility companies are frequently known to answer questions about smart meters "safety" by assuring their consumers that the smart meter limits are "well below the FCC standard." Considering the US limit is the second highest in the world (Britain is higher), it is irrelevant if the arbitrary limit set primarily by engineers and a far-too-cozy relationship between the FCC and the telecommunications industry. The FCC standard was originally intended to prevent interference between pieces of electronic equipment. It was later modified to protect workers exposed to microwaves from heating effects (the only effects recognized at the time; we now know there can be profound biological changes at non-thermal levels). The US standard of 1000 $\mu W/cm^2$ was not created to protect the general public, including those most vulnerable (the unborn, children, the elderly, those with compromised immune systems). Therefore, none of us should feel reassured that the smart meter output of microwave radiation pulsing through our homes is below the FCC standard. Smart meters emit the worst kind of radiation for the body to handle -- pulsed digital RF (microwave) radiation. The cells do not have time to recover between these rapid spikes of radiation.

The FCC standard is unrealistically and I would argue recklessly high. Many countries do not permit levels anywhere near the FCC standard, (*See chart below*).

Country	Exposure level ($\mu W/cm^2$)

United Kingdom	1000–10,000
Canada, Germany, Japan, New Zealand, U.S.	200–1000
Australia	200
Auckland, New Zealand	50
Italy	10
China	7–10
Bulgaria, Hungary, Russia, Switzerland	2–10
Salzburg, Austria (pulsed transmissions)	0.1
New South Wales, Australia	0.001

Source: *Radio Wave Packet*, Cellular Phone Taskforce

What the FCC standard protects you from is high thermal levels of radiation. It does not offer protection for the brain which is the first major organ adversely affected. Symptoms of cognitive impairments, balance, vision, tinnitus (ringing in the ears), lethargy, depression, and vertigo or loss of balance are all brain functions.

Because FCC standards are set for workers in the industry, and that was later "adapted" for the general public, the measurements were for heat only, and often for 6 minute exposures, not 24/7 exposure to pulsed, digital microwave radiation. The telecom industry ignores this fact—billions of dollars are at stake and no industry will voluntarily admit that its product could cause adverse health effects. But we are indeed finding adverse health effects. With great concern for Mrs. Manion and the high readings we were getting with an analyzer, I called the Office of Engineering & Technology at the FCC.

What I learned was shocking. With so many health complaints, misrepresentations of the truth, and false reassurances by utility companies, do you know how many times the FCC has gone out in the field to measure the RF from smart meters attached to most people's homes? Zero. Not once have they checked a single smart meter attached to the side of someone's home. Something is horribly wrong with the sort of experimentation and deception perpetrated by the installer of the "free upgrade" on Mrs. Manion's home that "beamed up to a satellite."

- If this meter belongs to SDG&E and was installed by a representative of SDG&E, we would like to know if this unidentified smart meter truly does communicate with a satellite?
- How does that work? What are the risks?
- Why don't you inform your customers of the possible cancer causing effect of the RF (microwave) radiation as per the World Health Organization's recent classification of RF radiation as a Group 2B "possible human carcinogen? DDT, chlordane, and diesel exhaust are in the same category.
- What testing do you have, by an independent source that is not associated with the industry that is reaping billions in profits by installing smart meters, that proves smart meters are safe? I believe you will find none.

- Shouldn't SDG&E be held criminally responsible for harm caused to anyone who becomes ill following installation of a smart meter?
- Could the experimentation on a 91-year old woman's home be considered elderabuse? After all, if Mrs. Manion had died from cardiac arrhythmia, high blood-pressure, or a fall when her balance was disturbed following installation of the meter, SDG&E could have shrugged and chalked it up to old age.
- How was Mrs. Manion's home chosen for this experiment? Who made the selection? The man who installed the meter did this to Mrs. Manion's house and no others in the neighborhood. Did SDG&E make Mrs. Manion's home the "hub" or central collections home for the entire neighborhood?

We want answer to these questions, but our concerns go way beyond what has happened to Patricia Manion. The FCC is not a health agency, the EPA had admitted that RF radiation has never been proven to be safe, and many people are suffering disabling symptoms following smart meter installations. SDG&E has been defending these meters as "safe" when not a single smart meter has been tested by the FCC in the "real world."

I therefore urge and implore an immediate moratorium on the installation of smart meters in California until the infinitely safer option of either no smart meters or smart meters using fiber optics can be deployed.

The Manion family is asking for and deserves an explanation. I am profoundly sorry this has occurred, but I am extremely glad Mrs. Manion is recovering following our removal of this meter. This case highlights two things to us. First, your meters are still in experimental stages, and second, you are experimenting on human beings -- in this case, an elderly woman living alone.

Attached please find a copy of Dr. Olle Johansson's letter to the CPUC dated July 9, 2011. Dr. Johansson is one of the world's foremost authorities on the health impacts of RF (microwave) radiation. He has profound concerns about the looming health consequences from deployment of wireless smart meters.

I again urge and implore an immediate moratorium on the installation of smart meters in California until the infinitely safer option of either no smart meters or smart meters using fiber optics can be deployed.

It is not too late to create a better system.

Sincerely,

SUSAN FOSTER, MSW
15957 Avenida Calma
Rancho Santa Fe CA 92091

cc:
Dr. Olle Johansson, Karolinska Institute, Stockholm, Sweden
Gunnar Heuser, MD, PhD
Cindy Sage, Sage Associates

Karolinska Institutet
Department of Neuroscience
Experimental Dermatology Unit

FILED
08-01-11
04:59 PM

Stockholm, July 9, 2011

California Public Utilities Commission
Cc Susan Brinchman, Director, Center for Electrosmog Prevention, P.O. Box 655, La Mesa, CA 91944-0655, USA

To: The California Public Utilities Commission,

I understand that you at present are concerned about the fast deployment of smart meters on homes in California, without adequate sharing of information with the public.

I work as an associate professor at the Karolinska Institute; we are world-famous for our Nobel Prize in Physiology or Medicine, which we many times have awarded to your fellow countrymen and –women. I also uphold a professorship at the Royal Institute of Technology; it being closely tied to the Nobel Prizes in Physics and Chemistry. For many years I have been studying health effects of wireless gadgets, such as Smart Meters.

Wireless communication is now being implemented in our daily life in a very fast way. At the same time, it is becoming more and more obvious that the exposure to electromagnetic fields may result in highly unwanted health effects. This has been demonstrated in a very large number of studies and includes cellular DNA-damage (which may lead to an initiation of cancer as well as mutations that carry down generations), disruptions and alterations of cellular functions like increases in intracellular stimulatory pathways and calcium handling, disruption of tissue structures like the blood-brain barrier (which may allow toxins to enter the brain), impact on vessel and immune functions, and loss of fertility. It should be noted that we are not the only species at jeopardy, practically all animals and plants may be at stake.

Because the effects are reproducibly observed and links to pathology can not be excluded, the precautionary principle should be in force in the implementation of this new technology within the society. Therefore, policy makers immediately should strictly control exposure by defining biologically-based maximal exposure guidelines also taking into account long-term, non-thermal effects, and including especially vulnerable groups, such as the elderly, the ill, the genetically and/or immunologically challenged, children and fetuses, and persons with the functional impairment electrohypersensitivity (which in Sweden is a fully recognized functional impairment, and therefore receives an annual governmental disability subsidy).

Prompted by all this, a group of international experts recently published a very important paper, The Seletun Scientific Statement (2011). Among its points are:

1) Low-intensity (non-thermal) bioeffects and adverse health effects are demonstrated at levels significantly below existing exposure standards.

2) ICNIRP/WHO and IEEE/FCC public safety limits are inadequate and obsolete with respect to prolonged, low-intensity exposures.

3) New, biologically-based public exposure standards are urgently needed to protect public health world-wide.

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4) EMR exposures should be reduced now rather than waiting for proof of harm before acting. It is not in the public interest to wait.

5) There is a need for mandatory pre-market assessments of emissions and risks before deployment of new wireless technologies. There should be convincing evidence that products do not cause health harm before marketing.

6) The use of telephone lines (land-lines) or fiber optic cables for SmartGrid type energy conservation infrastructure is recommended. Utilities should choose options that do not create new, community-wide exposures from wireless components of SmartGrid-type projects. Future health risks from prolonged or repetitive wireless exposures of SmartGrid-type systems may be avoided by using fiber-optic cable. Energy conservation is endorsed but not at the risk of exposing millions of families in their homes to a new, involuntary source of wireless radiofrequency radiation, the effect of which on their health not yet known.

Many smart meters are close to beds, kitchens, playrooms, and similar locations. These wireless systems are never off, and the exposure is not voluntary. The smart meters are being forced on citizens everywhere. Based on this, the inauguration of smart meters with grudging and involuntary exposure of millions to billions of human beings to pulsed microwave radiation should immediately be prohibited until 'the red flag' can be hauled down once and for all.

The recent determination of the World Health Organization (WHO) to include radiofrequent radiation on the 2B list of carcinogens also applies to devices such as smart meters. Already September 4, 2008, the European Parliament voted 522 to 16 to recommend tighter safety standards for cell phones (Europ. Parl. resolution on the mid-term review of the European Environment and Health Action Plan 2004-2010). In light of the growing body of scientific evidence implicating cell phone use with brain tumors, the Parliament said, "The limits on exposure to electromagnetic fields [EMFs] which have been set for the general public are obsolete." The European Parliament "was greatly concerned at the Bioinitiative international report concerning EMFs, which summarises over 1500 studies on that topic and which points in its conclusions to the health risks posed by emissions from mobile-telephony devices such as mobile telephones, UMTS, WiFi, WiMax and Bluetooth, and also DECT landline telephones, and now it is again – and more firmly and seriously - repeated in the form of WHO's recent cancer classification.

With my very best regards,
Yours sincerely,

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Precautionary Principle; Letter to the Montgomery County Board of Education Members, Theodora Scarato, Feb. 8, 2016

Montgomery County Board of Education
Montgomery County Schools
Carver Educational Services Center
850 Hungerford Drive
Rockville, MD 20850

February 8, 2016

Dear Montgomery County Board of Education Members,

I would like to bring to your attention the following- The MCPS Statement Concerning Deployment of Wireless Computing Technologies and Radiofrequency Monitoring Summary Report contains:

1. False Statements: This document details the over 32 false statement on the MCPR RF webpage and provides documentation to each erroneous statements. I personally made inquiries as to the factual nature of MCPS statements from agencies such as the FCC, FDA, NCI and the American Cancer Society. *These agencies all confirmed certain statements to be 100% inaccurate.*
2.Outdated Statements: Why is MCPS using decade old scientific reviews as "proof"? Each outdated document is cited. The MCPS community deserves best available science, not outdated reviews.
3.Wireless Funded Statements: MCPS copiously cites sources that are either directly *fully funded* by the wireless industry itself and/or by persons whose jobs involve consulting for the wireless industry or making money by designing products for the wireless industry. The funding source of such statements should at least be noted *if not removed*.
4. Misleading Statements: Statements are made that validate the opinion of MCPS but are not a true representation of the body of science nor the organization MCPS references. MCPS seems to be cherry-picking in that MCPS puts forth"quotes" which are missing *the rest of the statement the cited organization made.* Such selective information presentation is misleading to families and staff who should be given *all information in a transparent fashion.*
5.No Proof of Safety For Students and Staff: Multiple experts have written to MCPS detailing problems with the 14,000 dollar measurement report citing inadequate instrumentation, inprecise measurements and a lack of adequate documentation on exposure scenarios. There is a sufficient number of concerns that it seems this Measurement Report *cannot* be used to verify whether the radiation levels are safe for students and staff. The parents, teachers and staff of Montgomery County Schools deserve accurate responsible information on the radiation levels in MCPS schools.

For MCPS to put forth information such as is on their website as proof of safety is an egregious error. Comparing MCPS's measurements to FCC standards is meaningless as FCC limits are known to be hundreds of thousands times too high to protect public health.

A total of 15 experts have written MCPS about the health risks of wireless school networks and their concerns with the radiofrequency webpage and measurement report. They all recommend the schools use safe technology. Why are these expert letters not posted? Why is their information not integrated into the webpage for the public? Why isn't MCPS responding to the concerns they are raising?

Dr. Martha Herbert's Letter, Dr. Anthony Miller's Letter, Dr. Lennart Hardell's Letter ., Dr. Carpenters Letter Dr. Olle Johansson's Letter., Dr. Devra Davis' Letter , Cris Rowan, occupational therapist Letter Here, Dr. Martin Pall's letter Katie Singer's Letter ., Cindy Sage and Trevor Marshal Letter, Ellie Marks Letter , Arthur Firstenberg Letter., Mikko Ahonen PhD, Lena Hedendahl MD and Tarmo Koppel MSc PhDs Letter, Cece Doucette's Letter, Alisdair Philips Letter, Lloyd Morgan's Letter

The MCPS site was already changed twice after we repeatedly wrote MCPS to remove the unfactual statements. Only two statements were removed. The MCPS Statement *still contains an abundance of false and misleading statements- over 30 false statements in fact.* Once all of these false, misleading, and wireless funded statements are removed, MCPS *would have little text left on the webpage.*

MCPS did get one thing right. The webpage states *"It is not ethical to test a substance by exposing people to it and seeing if they get cancer from it.*" Right now MCPS students are the equivalent of guinea pigs and are being exposed to unprecedented levels of radiofrequency radiation without their knowledge or consent. We adults were not exposed to such levels as children.

Appendix V in this letter contains information on the mice and rat studies underway at the National Institute of Health Science (NIEHS) National Toxicology Program (NTP) where rats are being exposed to low level (FCC compliant levels just like MCPS) radio-frequencies at very low levels for hours a day *just like our children in schools.*

Wouldn't it be ethical *to wait* until the NTP research results are available before the school system is de-facto performing what is basically the same study but instead of rats *it is on children and teachers and staff.* The rats, the mice *and MCPS children are being exposed to* what the National Toxicology Program calls "chronic exposure to modulated radiofrequency radiation".

Our children are not lab rats. Yet, just like the NTP rats, today's schoolchildren will be "the statistics". I imagine that a decade from now, researchers will count up the numbers of young adults with cancer, neurological disease and infertility and look at the connection with lifetime wireless exposures.

It is unethical to knowingly post false information and not to act to protect children when such a serious matter is brought to your attention. You have a duty of care to every student and your job is to ensure their safety. Wireless is not safe and MCPS has yet to provide any documentation of safety.

Please remove the false and misleading information on the MCPS webpage. I ask that MCPS take **immediate action** to minimize radio-frequency exposures in classrooms. Please hardwire the chromebooks and tablets, install safe technology communication networks and teach students and staff how to minimize exposures to cell phone and wireless radiation to protect their health and future.

Sincerely,
Theodora Scarato LCSW-C

APPENDIX 1: False Statements Itemized with documentation
APPENDIX II: Outdated References
APPENDIX III Wireless Funded Research and Statements
APPENDIX IV: Misleading Statements including Details on Why the RF Measurement Report is Inadequate to Assess Student Safety

APPENDIX V: **The National Toxicology (NTP) Study on Rodents and Radio-Frequency**

APPENDIX 1 FALSE STATEMENTS
FALSE STATEMENT 1

On the Radiofrequency FAQ's MCPS states, "The FCC guidelines are not outdated."

MCPS's statement that the FCC regulations are 'not outdated" contradicts what the United States Government states about the over *twenty years old* regulations:

- T**he 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."* Read The 2014 Letter.
- **In 2012, the Government Accountability Office (GAO)** published a 2012 Report that states, "The Federal Communications Commission's (FCC) RF energy exposure limit *may not reflect the latest research"* and the report officially recommended that the FCC "Formally *reassess* the current RF energy exposure limit, including its effects on human health, the costs and benefits associated with keeping the current limit, and the opinions of relevant health and safety agencies, and change the limit if determined appropriate."
- **The FCC is formally in review of these 20 year old standards** and has stated it is not a health and safety organization and has called for expert comments. The FCC has so far received over 900 comments and they can be accessed at the FCC here: go to the FCC's web site for Proceeding Number 13-84: http://bit.ly/1aGxQiq.
- **The 2008 National Academy of Sciences (NAS) Report**, Identification of Research Needs Relating to Adverse Health Effects of Wireless Communication, was tasked to identify any inadequacies in the research upon which the current US Radiofrequency radiation (RF) safety guidelines are based. The NAS Report found numerous inadequacies in that research record. An inadequate research record results in safety regulations that fail to address all exposures encountered by the public. Based on the 2008 NAS findings it cannot be asserted that US RF safety policy protects all members of the public from all mechanisms of harm in all exposure scenarios.
- **The American Academy of Pediatrics** has repeatedly called on the government to update its regulations stating that "Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children." Read it here.
- **The California Medical Association** passed a Wireless Resolution that states :

  Whereas scientists are increasingly identifying EMF from wireless devices as a new form of environmental pollution with a growing body of peer reviewed scientific evidence finding significant adverse health and biologic effects on living organisms with exposure

to low levels of non-ionizing microwaves currently approved and used in wireless communication, and
Whereas peer reviewed research has demonstrated adverse biological effects of wireless EMF including single and double stranded DNA breaks, creation of reactive oxygen species, immune dysfunction, cognitive processing effects, stress protein synthesis in the brain, altered brain development, sleep and memory disturbances, ADHD, abnormal behavior, sperm dysfunction, and brain tumors; and...Resolved, That CMA support efforts to implement new safety exposure limits for wireless devices to levels that do not cause human or environmental harm based on scientific research. Read it here . Read a magazine article on their resolution here.

- **In May 2015, over 200 scientists from 39 nations** who have authored more than 2,000 articles on this topic appealed to the United Nations to address "the emerging public health crisis" related to cell phones and other wireless devices. These scientists state that "the ICNIRP guidelines do not cover long-term exposure and low-intensity effects, and are " insufficient to protect public health." They also state that "the various agencies setting safety standards have failed to impose sufficient guidelines to protect the general public, particularly children who are more vulnerable to the effects of EMF." See the International EMF Scientist Appeal at https://emfscientist.org.
- **The LA School District Uses a RF-EMF Exposure Threshold 10,000 Less Than the FCC Limits:** The OEHS supported a precautionary threshold level that is 10,000 times lower than the current Federal Communications Commission standard. Read the RF Report the LA School District Used to recommend a cautionary exposure level. If the FCC limits are "not outdated" then why would they do this? RADIOFREQUENCY (RF) EVALUATION REPORT Use of Wireless Devices in Educational Settings

Dr. De Kun Li sums up the problem with FCC regulations:
"In summary, we do not currently have scientific data to determine where the safe RF exposure level is regarding the non thermal effects. Therefore, it should be recognized that we are dealing with uncertainty now and most likely for the foreseeable future. The question for government agencies especially those concerned with public health and safety, is, given the uncertainty, should we err on the side of safety and take precautionary measures avoidance measures? *Unknown does not mean safe. "*
Letter from Dr. De-Kun Li, MD, PhD, MPH to the FCC

It is erroneous for MCPS to assert that FCC levels are "not outdated" when the US government and health authorities state otherwise. What scientific expertise does MCPS have in this area to make such a statement that contradicts the US government?

FALSE STATEMENT 2

MCPS states that, "Using the Group 2B classification of the entire spectrum of radiofrequencies as an indication that Wi-Fi is harmful when the classification came about due to extremely heavy cell phone use and not Wi-Fi does not accurately represent the intention of the classification."

What MCPS should be saying: The World Health Organization specifically and repeatedly has stated the carcinogenic classification is for radiofrequency radiation *from any source.* Note this documentation:

- Wireless *radiofrequency* radiation is classified as a "Possible Human Carcinogen" by the International Agency for Research on Cancer (IARC) of the World Health Organization(WHO) Read The Lancet's published statement by the IARC from 2011 on cancer risk of wireless radiation.
- The Class 2B classification includes wireless radiation from *any transmitting source* such as "cellphones, baby monitors, tablets, cell towers, radar, other wifi, etc". It applies to RF-EMF in the range of 30 KHz to 300 GHz *emitted from any device.* These statements are detailed in *The Lancet* article and in the related WHO IARC press release in 2011. All wireless electronic devices emit RF-EMF (wireless radiation). It *does not matter* what type of device is the source.
- Dr. Robert Bann, the World Health Organization International Agency for Research on Cancer Secretary has stated (on several occasions) how the WHO experts *specifically intended this classification to apply to the full range of radio frequency radiation which includes wifi as well as cell tower radiation.* Here Dr. Bann spell this out in his detailed lecture in 2011 found here and in his writing found here.

  > *"It should be noted that the working group in the overall evaluation decided to make a generic evaluation of radio frequency fields and did not want to limit it to mobile telephone use and all other exposures .. that was based on the diversity of the exposures in the animal cancer studies where different types of radiation with different frequencies across the radio frequency part of the emf spectrum were noted and the radiation from the environmental sources.(i.e Wi-Fi, Cell Towers etc) . and from the mobile telephones is basically and physically speaking the same type of agent ."*

I decided to write the World Health Organization's Head of the IARC Monographs Programme Dr. Kurt Straif *myself* last month about this. I asked him if the classification applies to Wi-Fi. I was told the following:

> *"IARC's evaluation of the cancer hazards from exposure to Radiofrequency Electromagnetic Fields covers all sources of RF-radiation." and "IARC classified radiofrequency electromagnetic fields (including Wi-Fi signals and mobile phone signals) as possibly carcinogenic to humans (Group 2B) "*

Read the Email exchange here.

FALSE STATEMENT 3 through 6

MCPS states that "The FCC, the American Cancer Society (ACS), the Food and Drug Administration (FDA), and the National Cancer Institute (NCI) all have conducted reviews as recently as 2013 and found that there is no basis to establish a different safety threshold."

This is false. I wrote the FCC, American Cancer Society, and the National Cancer Institute *and they all came back with the same response*. MCPS statement is false and and inaccurate. None of these institutions have done such a review nor do they have the mandate to speak to the issue of safety thresholds *just the FCC,* and that review was initiated because of the GAO report stating the "thresholds may not reflect latest research". The review has not been completed and at this time it is unknown if there has been acy action on the over 900 submissions by experts calling for more stringent regulations.

Here are the responses I got when I inquired into MCPS's statement asking if it was accurate that they had done a review that "**found that there is no basis to establish a different safety threshold."**

American Cancer Society

"I know of no ACS finding or statement regarding safety thresholds of radio frequency fields."
-Statement by Dr. Otis Brawley| Chief Medical Officer of the American Cancer Society

"First, the American Cancer Society was not the organization who conducted the 2013 scientific review. So, we suggest you go back to the source and clarify what organization the school district consulted to make that statement."
Read the Email from the American Cancer Society to Scarato here.

The Federal Communications Commission

"...we are not aware of any report attributable to the FCC that would support the statement that you quote."
"It looks like the statement you quoted might be a slight misinterpretation of an FCC consumer guide on RF radiation, in conjunction with FCC action in 2013 opening an Inquiry into its RF Safety rules."

Read the FCC Response to Scarato on December 15, 2015

The National Cancer Institute

The National Cancer Institute (NCI) wrote back that the "review" was in fact- a webpage content review, *not a review of research* and *certainly not* a review of the adequate protection from safety thresholds. Please read these excerpts from our email exchange with NCI.

"We are unclear as to the source of this language indicating that the NCI "conducted a review (on FCC) limits as recently as 2013 and found that there is no basis to establish a different safety threshold." This statement, as written, is incorrect. As I describe above, and as I have noted in our previous correspondence, NCI staff have conducted literature reviews to update our fact sheets and will continue to do so. Neither the literature reviews, nor the fact sheets, make safety determinations."

The literature reviews I describe above are not intended to establish or evaluate standards or set or evaluate recommendations."

Clearly, a website update or literature review of a few studies is not the same thing as a review of research to determine safety threshold adequateness.
Read the Email Exchange with the National Cancer Institute here.

The Food And Drug Agency

"After extensive research, we were unable to find any public information regarding a review of radiofrequency radiation."
Division of Drug Information | Center for Drug Evaluation and Research
Food and Drug Administration on Feb 2 2016

"FDA did not conduct a formal meta-analysis nor a formal review of RF studies in 2013."
Daniel Kassiday SME: Electronic Product Radiation Control
Read the FDA letters to Scarato Here.

In conclusion, no such review showing these safety thresholds has been done *by any of these agencies.* These statements are FALSE.

Such a statement by MCPS represents a myth many people have about our federal regulations in regards to wireless exposures. We think that our government health agencies have appropriately dealt with wireless. In fact, the US has not a single health and science agency mandated to focus on the issue. The EPA, FDA and NCI are not tasked to ensure the RF safety thresholds are safe. In fact , the EPA was working on this issue two decades ago, but then Congress gave jurisdiction to the FCC and told the EPA not to do anything more.

Please read the following by the FCC, "*is not a health and safety agency, we defer to other organizations and agencies with respect to interpreting the biological research necessary to determine what levels are safe. As such, the Commission invites health and safety agencies and the public to comment on the propriety of our general present limits and whether additional precautions may be appropriate in some cases, for example with respect to children.* Read that statement here.

Over 900 submissions with dozens of scientists have submitted to the FCC review. The FCC which is NOT a health agency and has no medical experts on staff, is supposedly tasked to deal with this issue *and defer to these organizations, but has not acted*. In fact, the Open Docket from 2013 that supposedly is a review is just sitting there, now three years old.
"We recognize our responsibility to both protect the public from established adverse effects due to exposure to RF energy and allow industry to provide telecommunications services to the public in the

most efficient and practical manner possible. In the Inquiry we ask whether any precautionary action would be either useful or counterproductive, given that there is a lack of scientific consensus about the possibility of adverse health effects at exposure levels at or below our existing limits. Further, if any action is found to be useful, we inquire whether it could be efficient and practical." Read it here.

Note that the FCC *can wait years* to do anything as there is no timetable they must follow. *It could be when the kids in kindergarten have all graduated.* The current FCC Chair Tom Wheeler is in charge of this decision and Wheeler was accused of suppressing the science showing harm from radiofrequency radiation in the 90's by his top scientist *when he headed the wireless lobby group, the CTIA.*

Read the Harvard Law publication *Captured Agency: How the Federal Communications Commission is Dominated by the Industries it Presumably Regulates* detailing how the Wireless Industry has unchecked influence on our government stating, *"It is these hardball tactics that recall 20th century Big Tobacco tactics."*

Read Harvard Book here.

FALSE STATEMENT 7

In the Memorandum by MCPS Office of Technology it states that "*All levels were below the Bioinitiative 2007 precautionary level . These are the very level the Safe Tech for Schools Maryland group has argued is safe for human exposure*." Read it here.

This is false. No one in our group has ever stated that the Bioinitiative 2007 level is safe and we challenge MCPS to show where any of the members of our group cited the Bioinitiative 2012 level as safe or where we have even presented that limit as a number for MCPS to follow. *Why would we use that outdated Report as it is superseded by the Bioinitiative 2012.* We certainly have used the Bioinitiative 2012 levels to share information on what that group advises. Such a false statement and should be removed.

FALSE STATEMENT 8 through 17

In the MCPS FAQs section, there is a list of what "public health organizations have to say about radiofrequency" . I have detailed here the information given on 8 countries which is erroneous and misleading to the reader. MCPS neglects to give the actual full statements, position and recommendations of these countries' expert reports. Additional, MCPS basically cut and pasted from a research review paper but cherry picked on which sentence to pull leading to a ninth false statement.

It is false to state something is a "concluding" statement *when it is not the conclusion of the agency.*

1. France: MCPS states that the French ANSES Report concludes "No new proven health effects".

MCPS has neglecting to state that in the conclusion of The French ANSES Report which specifically recommends precautions, it is stated,

- **ANSES details these health effects:** *"following exposure to RF fields, the following effects have been observed: various effects on neuronal cell death depending on the type of study (in vitro or in vivo): changes (increase or decrease) in the total number of neurones and increase of cells in apoptosis following chronic exposure in vivo (in a limited number of studies); an effect on the astrocyte marker (GFAP) related to inflammation (probably transient effect) following chronic exposure in vivo; an oxidative stress-type effect following prolonged exposure to radiofrequencies on mitochondrial DNA in neurones (on the basis of a single in vitro study). Mitochondrial DNA is particularly sensitive to oxidative stress due to a lack of histone-type protective proteins, a reduced repair ability, and proximity of the respiratory chain in the mitochondrial inner membrane. This could explain the discrepant results here compared to most studies that did not target this type of DNA; changes in electrical activity in the brain (especially the power of alpha rhythm)."*
- **ANSES made recommendations to reduce exposure to children**, to study the effects of cell towers and investigate how to reduce public exposures.[1] Read the **specific recommendations**.
- **This ANSES Report led to the passing of one of the most strong National EMF reduction Laws in any country whereby Wi-Fi is banned in France for young children,** companies are fined for not showing radiation reductions methods in advertisements and a public health awareness campaign is being developed.[2]

2. Belgium: MCPS only cites Belgium's Superior Health Council as concluding that "No proven health risks. Long-term health risks cannot be ruled out." This is inaccurate.

MCPS leaves out the following:

- "**Experts – including those on the Superior Health Council – advise everyone to limit their exposure to mobile phone radiation."**[3] **Read it here.**
- Belgium has banned cell phones for children: As of March 2014, mobile phones for young children were banned because of radiation concerns. [4] Also left out of the MCPS summary were the Council's statements that "The concern is also that the cumulative exposure of the current generation of children and adolescents in their adult lives will be much higher than that of the current adults. The recent classification of mobile phone radiation as possibly carcinogenic is an additional reason to be cautious."
- **The municipality of Ghent has specifically banned Wi-Fi for young children due to health concerns.**[5]

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[1] **ANSES issues recommendations for limiting exposure to radiofrequencies**

[2] France: New National Law Bans WIFI

[3] http://health.belgium.be/eportal/Environment/ElectroWavesAndNoise/ElectromagneticRadiation/MobilePhone/TipsForPrudentUse/index.htm?fodnlang=en#.VqwBIjYrJR4

[4] Belgium: **New regulation for the sale of mobile phones as of 1 March 2014** **http://www.health.belgium.be/eportal/Environment/19096020_EN?ie2Term=phones&ie2section=83#.VIpiON-rR2Q**

[5] **Ghent bans wi-fi from pre-schools and day carehttp://www.flanderstoday.eu/education/ghent-bans-wi-fi-pre-schools-and-day-care**

- **The government of Belgium recommends precautions: "**to reduce your exposure" which includes specific tips for Wi-Fi installations and I quote, " In order to limit the exposure, the following simple measures can be taken: Only switch on your wireless network connection when it is needed. This concerns the wifi adapter in your laptop in particular. Otherwise, your laptop tries to continually connect to the network, and that leads to unnecessary exposure and decreases the life expectancy of the batteries. Place the access point away from places where you spend lots of time." [6]

3. Australia: MCPS says the conclusion by ARPANSA is that "*No substantiated evidence for health risk for people living near base stations. Insufficient evidence for higher risk for children. No need to reconsider exposure limits."*

- Yet MCPS leaves out critical facts about ARPANSA recommendations to reduce exposure! In the published 2014 article **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields in the International Journal for Environmental Research in Public Health** the authors state than in Australia the "Radiation Protection and Nuclear Safety Agency (ARPANSA) : *"considers that the classification by IARC corresponds to the current ARPANSA advice, including its advice on practical ways in which people can reduce their exposure"*. ARPANSA has also recommended "*parents should encourage their children use the methods to reduce exposure*".[7]
- **ARPANSA recommends that parents encourage children to reduce exposure.** "It is recommended that, due to the lack of sufficient data relating to children and their long term use of mobile phones, parents encourage their children to limit their exposure by reducing call time, by making calls where reception is good, by using hands-free devices or speaker options, or by texting."[8]

- A**RPANSA details several specific recommendations to reduce exposure with other wireless devices.** Concerning wireless computer networks ARPANSA states that, "if you use them with their antennas very close to the body, you can be exposed to levels closer to the limits of the standard. You can reduce your exposure from these devices by: keeping them at a distance, for example placing the wireless router away from where people spend time reducing the amount of time you use them."[9]

4. Switzerland: MCPS quotes the Federal Office for the Environment FOEN as simply concluding "*No new confirmed health effects. "Absence of proof of health risks" does not automatically mean proof of their absence."*

Clearly MCPS quoted from the review paper but forgot to mention what the research review actually fully states which is *also,* "*In view of the fact that there are gaps in the available data, the absence of proof of health risks does not automatically also mean proof of their absence.* ***From the scientific point of view, a***

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[6] Belgiums Health, Food And Safety Agency Handout on Wireless Devices
http://www.health.belgium.be/internet2Prd/groups/public/@public/@mixednews/documents/ie2divers/19104272_en.pdf

[7] **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields**
http://www.mdpi.com/1660-4601/11/9/9376

[8] http://www.arpansa.gov.au/mobilephones/index.cfm

[9] ARPANSA RF FACTSHEET http://www.arpansa.gov.au/pubs/factsheets/ReduceExposure_wirelessDevices.pdf

cautious approach in dealing with non-ionising radiation is still called for. *There remains a need for extensive research into the potential long-term effects".*

In fact Switzerland goes *much further* than this and in fact has a very strong precautionary policy in place.

- MCPS leaves out the following 2015 Federal Office for the Environment FOEN Environmental Report Chapter on Electrosmog that states" Effects can also be detected for weak radiation intensity." and "here is no definitive answer, however, concerning the impacts of long-term exposure" and "Reliable data are needed to monitor the temporal and spatial development of radiation exposure and identify possible health impacts." and "Federal Council imposed stricter installation limit values in this ordinance as a precautionary measure. These values are intended to ensure that exposure is kept as low as possible in locations where people spend time regularly and for extended periods (e.g. in homes, offices and schools). This will help to reduce the risk of possible, as yet unidentified, impacts on health.

  "The federal authorities base the definition of the installation limit values on the precautionary principle enshrined in the Environmental Protection Act (EPA):2 radiation levels should be limited as much as technology and operating conditions allow, provided that this is economically acceptable. Because major gaps still exist in our knowledge about the health impacts of long-term exposure to weak non-ionising radiation, the adopted protective strategy should be pursued consistently."[10]

- **MCPS failed to note** that Switzerland specifically recommends to "Prefer wired over WiFi/WLAN in schools and/or pre-schools "
- **MCPS failed to note** that **Switzerland gives a** detailed description on how to reduce exposure including turning the Wi-Fi off when not in use, installing the access point one metre away from places where you work, sit or rest for long periods of time and keeping laptops off laps. They state that "It is currently not known whether the electromagnetic fields created by WLANs pose a risk to health. WLAN devices generally emit a low level of radiation, *and caution should be exercised primarily when using devices held close to the body, such as laptops, PDAs and Internet telephones.* We would offer the following advice to people who prefer to minimise their personal exposure by keeping the electromagnetic fields in their home or office as small as possible."[11]
- **MCPS failed to note** this full statement in the conclusion from their 2012 **Radiation of radio transmitters and Health** *"In view of the fact that there are gaps in the available data, the absence of proof of health risks does not automatically also mean proof of their absence. From the scientific point of view, a cautious approach in dealing with non-ionising radiation is still called for. There remains a need for extensive research into the potential long-term effects"*[12]

[10] 2015 Federal Office for the Environment FOEN Environmental Report Chapter on Electrosmog
http://www.bafu.admin.ch/publikationen/publikation/01794/index.html?lang=en&download=NHzLpZig7t,lnp6I0NTU042l2Z6ln1ad1IZn4Z2qZpnO2Yuq2Z6gpJCHd4R2gmym162dpYbUzd,Gpd6emK2Oz9aGodetmqaN19XI2IdvoaCVZ,s-.pdf

[11] Federal Office of Public Health on WLAN http://www.bag.admin.ch/themen/strahlung/00053/00673/03570/index.html?lang=en

[12] Switzerland FOEN 2012 **Radiation of radio transmitters and Health**
http://www.bafu.admin.ch/publikationen/publikation/01739/index.html?lang=de

5. Finland: MCPS quotes STUK as concluding that, "Mobile phone use is not detrimental to health"

This is inaccurate. The Radiation and Nuclear Safety Authority(STUK) website states that, '*The level of exposure to radiation from a mobile phone held next to user's ear can approach the exposure limits. Never before have humans been exposed to equally strong sources of radiation in their living environments. Identifying any health impacts is highly important because practically everybody uses a mobile phone today.*"

- "STUK recommends that unnecessary exposure to radiation from mobile phones be avoided. In particular, children's unnecessary exposure should be avoided as their life-long exposure will be longer than that of those who begin using mobile phone as adults and as only scant research exists on health effects to children."
- Read STUK Recommendations to Reduce cell phone exposure HERE: Use a hands free device, don't use phones reception is poor, the phone should be kept on a table or similar location instead of in the user's pocket.
- Read a news article from 2009 when STUK first recommended restricting the use of mobile phones by children.

6. Germany: MCPS quoted the German Federal Office for Radiation Protection in 2011 as concluding that "Risk perception is linked to media coverage". This is inaccurate. Note the following:

- The Federal Office for Radiation Protection (FORP) provides tips for reducing radiation exposure to smartphones, tablets and wireless devices stating, "*Since long term effects could not be sufficiently examined up to now the Federal Office for Radiation Protection (BfS) recommends to keep exposures to these fields as low as reasonably achievable.*" **Read the precautionary advice here.**
- The FORP recommends landline phone instead of mobile phone base stations and that schools should not connect wirelessly to the internet. **Read a 2015 statement here.**
- **See their poster "Less radiation when Telephoning" here.**
- The German Federal Ministry for Radiation Protection stated in 2007 ,"supplementary precautionary measures such as wired cable alternatives are to be preferred to the WLAN system." See original German Bundestag document here, and an English translation here.

MCPS quotes SSK the German Commission on Radiological Protection. All topics. 2011 as concluding that "*Discrepancy between scientific evidence and risk perception. No overall risks."*

Please note these conclusions by SSK in 2013

- A 2013 Report Electromagnetic Fields of New Technologies - ends its summary with the statement that "In the past, the Commission on Radiological Protection (SSK) has repeatedly emphasised that *devices should be designed with a view to minimizing emissions and user exposure, especially in cases in which technically and economically equivalent alternatives are available* (SSK 2001, SSK 2003).

Furthermore Germany has states that have banned wireless in schools. In Bavaria: The State Ministry of Education and Cultural Affairs: "For precautionary reasons the Federal Office for Radiation Protection recommends for schools that if a wireless network is used to place its components in suitable

locations and to prefer the use of wired network solutions whenever possible." In 2007 Parliament recommendation to all schools to *not* install wireless LAN networks. Frankfurt: "In Frankfurt's schools there will be no wireless networks in the short or mid term. The Local Education Authority did not wish to conduct a *"large scale human experiment,"* said Michael Damian, spokesperson of the Head of the School Department Jutta Ebeling.

7.England: MCPS once again selectively quoted from the research review. MCPS states of the ISLE of MAN Phone Masts/ Children that it concludes, "*no definite demonstrable effects on children", leaving out the full statement directly quoted in the review which is:*

"The Chief Minister of Isle of Man [122] in UK had set up a committee to review the scientific publications on health impact of mobile telephone masts. The recommendations of the committee in 2009 [123] were: "...although there are no definite demonstrable effects on children, it would be prudent not to site base stations in locations where children are likely to be exposed to the beams for a long duration". The committee also recommended "The use of precautionary principle in the siting of mobile phone masts".

8. MCPS cites Tanzania's TCRA as a "public health body" concluding "No substantial evidence for harmful health effects.Many benefits of modern technology."

First, TCRA is *not a public health body* but in fact **The Tanzania Communications Regulatory Authority (TCRA)** is a quasi independent Government body responsible for regulating the communications and broadcasting sectors in Tanzania and it is in no way a health and safety organizations with any Doctors on staff who have the credentials to make such a safety determination. Its mission is to develop an effective and efficient communications regulatory framework. Why is MCPS quoting *not a study* but simply a 'public statement' by the agency from 2010 that is nowhere to be found online anymore? This should be removed from the list as it is not a public health body and is outdated.

9. MCPS states of the countries they cite on their chart that, "In reviewing the large body of existing scientific evidence, health organizations across the world have all reached the same conclusion: there are no proven negative health effects from Electromagnetic Fields (EMF) that is within existing safety guidelines."
This is not even the conclusion of the paper they pulled the quotes from. In fact, the authors of **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields in the International Journal for Environmental Research in Public Health** end with their review by stating that *"In general, the expert groups suggested a reduction in exposure levels, precautionary approach, and further research."*[13]

What is the international policy response to children and radiofrequency fields?

[13] **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields**
http://www.mdpi.com/1660-4601/11/9/9376

I point you to *a more recent 2015 published review* on international advisories by Dr. Redmayne entitled International policy and advisory response regarding children's exposure to radio frequency electromagnetic fields (RF-EMF) which states that, "*Over 20 countries and municipalities have issued precautionary advice to the public concerning wireless exposures. This review of policy and advice regarding children's RF-EMF exposure shows a wide variety of approaches which I have categorized and tabulated ranging from ICNIRP/IEEE guidelines and "no extra precautions needed" to precautionary or scientific much lower maxima and extensive advice to minimize RF-EMF exposure, ban advertising/sale to children, and add exposure information to packaging.*" This review concludes with the statement, "*Therefore, minimum exposure of children to RF-EMF is recommended."*[14]

FALSE STATEMENT 18

MCPS has erroneously defined the Precautionary Principle. MCPS says, *"The "Precautionary Principle" dictates that unless something is proven absolutely safe, then it should be avoided."*

This is false and not the definition of the Precautionary Principle in any dictionary I am familiar with and by using such an inaccurate definition it misleads parents and the Montgomery County Community.

- **American Journal of Public Health Definition:** *"The precautionary principle asserts that the burden of proof for potentially harmful actions by industry or government rests on the assurance of safety and that when there are threats of serious damage, scientific uncertainty must be resolved in favor of prevention."* Read it here.
- **Wikipedia definition**: "The precautionary principle or precautionary approach to risk management states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is *not* harmful falls on those taking an action." Read it here.
- **Collaborative on Health and the Environment Definition:** "The precautionary principle is a guide to public policy decision making (Raffensperger and Tickner 1999, Schettler et al. 2002). It responds to the realization that humans often cause serious and widespread harm to people, wildlife, and the general environment. According to the precautionary principle, precautionary action should be undertaken when there are credible threats of harm, despite residual scientific uncertainty about cause and effect relationships." Read it here.

For MCPS to use a definition like this makes a mockery of those calling for it. If that were truly the definition then we would not use any product or go anywhere, as nothing can be absolutely proven safe.

The main point behind the precautionary principle is that there is **a large body of compelling research** pointing to evidence of serious harm from wireless *and* although it has not been 100% proven, it would

[14] International policy and advisory response regarding children's exposure to radio frequency electromagnetic fields (RF-EMF) http://www.ncbi.nlm.nih.gov/pubmed/26091083

be prudent to take action. **If we don't** take action now- we are talking about generations of children with cancer, fertility damage, neurological issues and illness *which could have easily been prevented.*

Over 20 countries are taking precautionary action because of the potential for serious harm.

FALSE STATEMENT 19 through 23
MCPS states, "However, it is important to note that, the "Precautionary Principle" is already implemented in the Wi-Fi guidelines and exposure limits set by WHO, FCC, Health Canada, Public Health England, and other public-health bodies."

MCPS's statement is nonsensical and false. How can MCPS state that there is no evidence wireless could be harmful and then states they already use precautions? Such a false statement also speaks to a lack of understanding of the complexity of this issue by MCPS . MCPS (in that sentence) has grouped the FCC with the WHO and Public Health England, *which are three very different entities with different expertise, different mandates and different missions.*

Nonetheless, technically neither the WHO, FCC, Health Canada or England have implemented the precautionary principle in regards to public exposure limits.

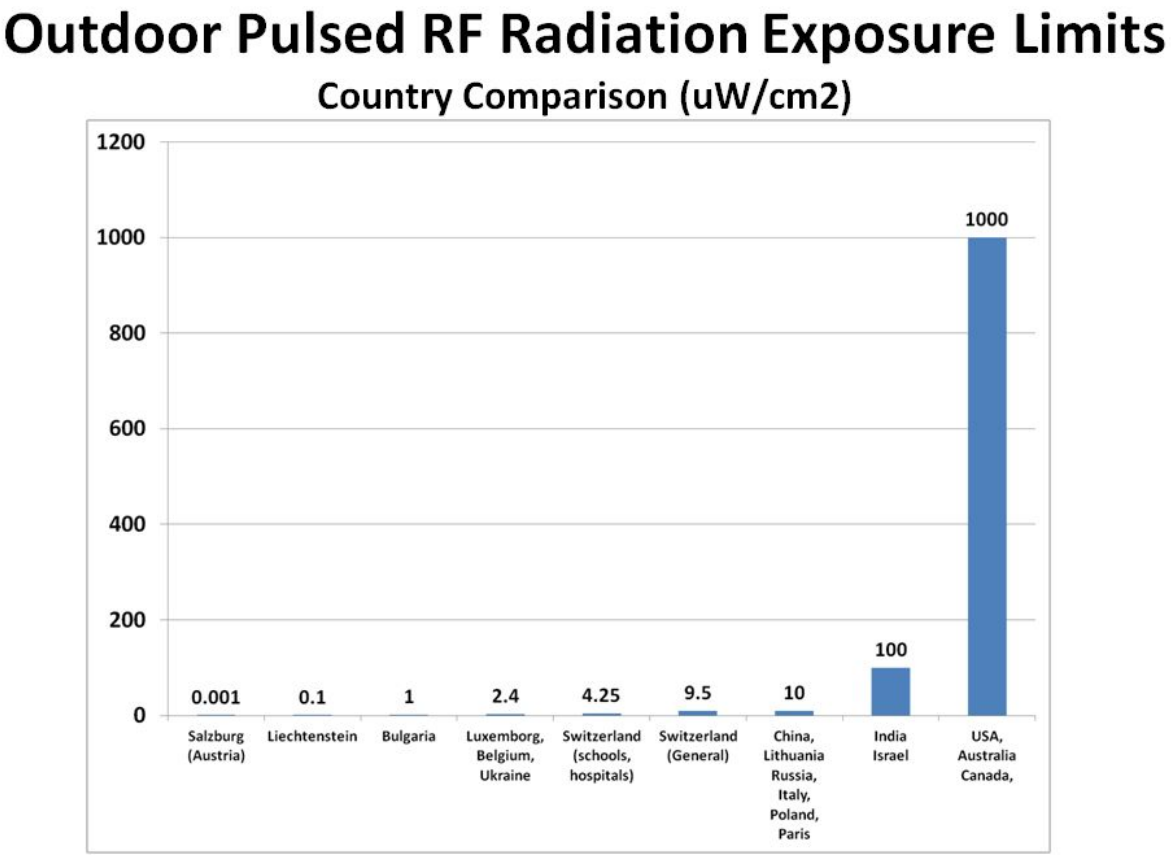
The World Health Organization (WHO)
The WHO is not tasked to implement anything and specifically states that its role is not to

Canada
See below documentation that Canada has certainly not implemented the precautionary principle.
"Currently, RF exposure guidelines in various countries (China, Russia, Italy, Switzerland), based on biological effects, are 100 times more stringent than the guidelines based on an outdated understanding of RFR that relies primarily on thermal effects that includes Health Canada's Safety Code 6. ...Furthermore, Health Canada does not adhere to the Precautionary Principle used by states when serious risks to the public or the environment exist but lack scientific consensus."

- **Scientific Declaration to Health Canada (International Doctors) 2014**

Why would Doctors write Health Canada asking them to utilize the precautionary principle if they were already doing it?

The FCC
The FCC (not a health and science agency) states that
Want proof? If the US followed the Precautionary Principle *then why do their regulations look like this below.*



FALSE STATEMENT 24 through 28

MCPS Technology Staff stated in a BOE meeting that *wireless RF-EMF is arguably "not radiation"* Watch it at the September 21, 2015 BOE meeting.

This is false. MCPS needs to be honest with the MCPS community that this is *non-ionizing radiation.*

- The FCC states that, "Radio waves and microwaves are forms of electromagnetic energy that are collectively described by the term "radiofrequency" or "RF." RF emissions and associated phenomena can be discussed in terms of "energy," "radiation" or "fields." Radiation is defined as the propagation of energy through space in the form of waves or particles. Electromagnetic "radiation" can best be described as waves of electric and magnetic energy moving together (i.e., radiating) through space…" [15]
- The United States Navy states very clearly that, "Radio waves and microwaves emitted by transmitting antennas, illustrated in Figure 3, areone form of electromagnetic energy. They are collectively referred to as "radiofrequency" radiation (RFR)."[16]

[15] https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf
[16] http://www.public.navy.mil/navsafecen/Pages/acquisition/radio_frequency-radiation.aspx

FALSE STATEMENT 29

In the FAQs section "What were the findings of the RF Monitoring conducted in MCPS schools?" MCPS states that "because students are not expected to be using their Chromebooks continually during the day, actual RF exposure for any given day is expected to be similar or less than the measured values."

- This is non-factual, conjecture and based on no science. Measurements presented were for 6-minute time-averaged, whole body exposure. Clearly, there is no documentation that the radiation levels can be *less.* Indeed, the power levels may be similar or more or less for every 6 minutes of exposure depending on various factors that MCPS neglected to detail in their "Report" . What is missing is that that different schools have different curriculum using Chromebooks. Many parents report children are on Chromebooks in several classes, some less. In some classes all may have cell phones on, actively transmitting adding to top RF exposure in the room. No where did MCPS document how many Chromebooks were on in the room nor what they were doing. When 30 kids are downloading a video, for example, the radiation exposure *will be more.* None of this was taken into account for the radiation readings and MCPS cannot state that RF exposures could be "less". That is false.

FALSE STATEMENT 30

MCPS quotes the 2003 Non-Ionizing Radiations–Sources, Biological Effects, Emissions and Exposures which is from the Proceedings of the International Conference on Non-Ionizing Radiation at UNITEN (ICNIR2003) Electromagnetic Fields and Our Health 20th –22nd October 2003 Non-Ionizing Radiations –Sources, Biological Effects, Emissions and Exposures as an example of statements by "major public health organization." Read it here http://www.who.int/peh-emf/meetings/archive/en/keynote3ng.pdf

This is false and should be removed. This is not a statement by a public health body! It is an abstract of a 2003 paper but by one person, Kwan-Hoong Ng of the Department of Radiology University of Malaya Kuala Lumpur Malaysia. *Why is this on a list of statements by public health organizations?* Furthermore, this is clearly outdated from 2003 and should be removed.

FALSE STATEMENT 31

In section 4.2.4 of the RF Summary Report it is stated, "As discussed above, the Bioinitiative Report (2007 and 2012) is a publication released on the internet by a group of 14 "...scientists, public health and public policy experts to document the scientific evidence on electromagnetic fields."

This is false. T**he Bioinitiative 2012 report was written by 29 authors from ten countries including ten MDs and 21 PhDs who are worldwide experts in the field.** Authors include three former presidents and five members of the Bioelectromagnetics Society. One author is Chair of the Russian National Committee on Non-Ionizing Radiation, and another is Senior Advisor to the European Environmental Agency.

Dr. Carl F. Blackman former research scientist in the Environmental Carcinogenesis Division of the US Environmental Protection Agency who served on the World Health Organization committee to evaluate the health implications of radiofrequency radiation exposure (Environmental Health Criteria #137, 1993), on a committee of the International Agency for Research on Cancer (IARC) to evaluate the carcinogenic potential of low frequency electric and magnetic fields in 2001 (Volume 80, 2002) and as chair of the genetic studies group of the ANSI/IEEE committee that issued the US 1992 Radiofrequency Radiation exposure guidelines.

See the 29 authors of the Bioinitiative here.

FALSE STATEMENT 32

MCPS states that, The World Health Organization (WHO) has concluded that, "In the area of biological effects and medical applications of non-ionizing radiation approximately **25,000** articles have been published over the past **30** years. Scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, **the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields**." Please review the information on the following website for further details: http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html."

This is false because **it is not the conclusion of the WHO/IARC.**

The World Health Organizations International Agency for the Research on Cancer classified RF-EMF (radiofrequency electromagnetic fields, otherwise known as "wireless radiation") as a Class 2B Possible Human Carcinogen in 2011 based on credible evidence that linked long term wireless exposure to brain cancer.

- Read The Lancet's published statement by the IARC from 2011 on cancer risk of wireless radiation.
- The 2013 published Monograph shows the current evidence that led to that classification and states, "the average exposure from use of the same mobile phone is higher by a factor of 2 in a child's brain and higher by a factor of 10 in the bone marrow of the skull." Read these details on page 34 of the World Health Organization's International Association for Research on Cancer's published Monograph on Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields.

APPENDIX II

OUTDATED DOCUMENTS

Why is MCPS using reviews dated over a decade ago to show wireless is not a risk?

MCPS uses OUTDATED documents to justify its current position and MCPS' stated opinion that wireless is not a health hazard. However, any report before 2011 is inadequate because it was not until

2011 that most long term researxch on wireless (Interphone studies from several countries) was even published. The World Health Organization made its determination of RF as a Class 2 B Carcinogen in 2011. So looking at pre 2011 reviews is not the current best available science.

Nonetheless, MCPS presents these outdated reviews *which is misleading.*

OUTDATED DOCUMENT 1

MCPS cites the WHO Workgroup Report: Base Stations and Wireless Networks—Radiofrequency (RF) Exposures and Health Consequences

The possibility of RF health effects has been investigated in epidemiology studies of cellular telephone users and workers in RF occupations, in experiments with animals exposed to cell-phone RF, and via biophysical consideration of cell-phone RF electric-field intensity and the effect of RF modulation schemes. As summarized here, these separate avenues of scientific investigation provide little support for adverse health effects arising from RF exposure at levels below current international standards. Moreover, radio and television broadcast waves have exposed populations to RF for > 50 years with little evidence of deleterious health consequences.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1849947/

MCPS forgets to state that this quote is from 2006. There is "little support for adverse health effects " because the major long term research studies were not even published at that time. *Why is MCPS quoting ten year old science?*

OUTDATED DOCUMENT 2 and 3

MCPS invalidates the Bioinitiative Report using two outdated references

1. The Australian Centre for Radiofrequency Bioeffects Research (ACRBR) published a position statement on the BioInitiative Report.http://www.acrbr.org.au/FAQ/ACRBR%20Bioinitiative%20Report%2018%20Dec%202008.pdf (OOPs this organization funded by the wireless industry closed its doors years ago and that might explain why the link does not work anymore.)
2. Health Council of the Netherlands 2008 Statement (not a report but a statement from 2008)

First of all these are 2008 Documents referencing the Bioinitiative Report 2007

Why is MCPS minimizing the Bioinitiative *2012* recommendations by referring to *2008* reviews to a *2007* Report? It makes no sense and all should take a minute to ponder this. These 2008 reports are inaccurate as they are outdated and do not incorporate current peer reviewed publications. The research has substantially increased since 2008 and of course the 2011 World Health organization Monograph was 4 years after that report. We have continuously provided MCPS with best available peer reviewed science. We have sent abstracts from peer reviewed published science where scientists call for precautions from wireless radiation. MCPS should use the current best available science instead of the outdated -non peer reviewed reports put out by known industry scientists as MCPS is currently doing on it's website.

Some facts about the Australian Centre for Radiofrequency Bioeffects Research: It seems the wireless industry itself provides funding for the work that they do. Read what it states on their website

'The ACRBR wishes to acknowledge the Australian Mobile Telecommunications Association for providing funding for this project," [17] It is also notes that Telstra is a funder of the organization. Perhaps most notably, there have been no a position papers issued since 2009. [18]

Notably: I have never sent MCPS the Bioinitiative recommendations asking that MCPS use them as thresholds so I do not understand why MCPS is assuming this? I have simply asked for MCPS to reduce unnecessary exposures by using safe technology whenever possible.
For example Why are kindergarteners being exposed to this radiation all day long? MCPS could easily decrease the radiation exposures to these young children by making simple changes to the wireless radiation installations.

OUTDATED DOCUMENT 4

The MCPS Summary Report states, "In addition, the World Meteorological Organization (WMO) conducted ambient RF EMF measurements in a variety of settings across the United States, including urban, suburban, rural, and airport environments (Leck, 2006). The WMO found no difference between the magnitudes of the RF EMF power density regardless of location."

The scientific citation Lerk 2006 is for a 2006 Report on results from measurements taken in 2004 and 2005. Leck, R. World Meteorological Organization, Results of Ambient RF Environment and Noise Floor Measurements Taken in the U.S. in 2004 and 2005, Commission for Basic Systems Steering Group on Radiofrequency Coordination, Geneva, March 16-18, 2006.

Why are 2005 measurements being used considering that *wireless was barely rolled out a decade ago, in 2005.* A lot has changed since 2005.

Note the following from a 2015 published paper , "**the contribution made to RF exposure from wireless telecommunications technology is continuously increasing and its contribution was above 60% of the total exposure. "**

The decade since 2005 is when Wi-Fi has been rolled out to schools, homes and public spaces, not to mention coffee shops. Furthermore there was not the saturation of Smartphones with the public and that will raise ambient RF levels in highly populated areas. This reference is clearly inapplicable today. It is outdated

OUTDATED DOCUMENT 5
MCPS cites the Center for Disease Control:

[17] http://acrbr.org.au/Research.aspx
[18] http://acrbr.org.au/FAQ.aspx

"In the last 15 years, hundreds of new research studies have investigated whether health problems can be linked to cell phone use. Some of these studies have suggested the possibility that long-term, high cell phone use may be linked to certain types of brain cancer. These studies do not establish this link definitively."
http://www.cdc.gov/nceh/radiation/factsheets/224613_faq_cell-phones-and-your-health.pdf

This Fact sheet is outdated and exists online as an example of the OLD cell phone page. Please see the CDC website explaining this in full at http://www.cdc.gov/nceh/radiation/cell_phones._faq.html
The CDC changed its website in 2014: Read about how the CDC initially called for caution. Read about this here.

OUTDATED DOCUMENT 6

Foster, K. R. Exposure Limits for Radiofrequency Energy: Three Models. World Health Organization, Conference on Criteria for EMF Standards Harmonization. Available at http://www.who.int/peh-emf/meetings/day2Varna_Foster.pdf.
page 3-3 Note: This is outdated at around the year 2000 as that is the most recent year cited. .

OUTDATED DOCUMENT 7
MCPS selectively quotes a 2010 Latin American Review. (It seems MCPS did not really do research to look at the review but instead just selectively took statements from a published article that cites the Latin American review International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields) nonetheless this review is outdated and pre 2011, when the WHO made its classification. Perhaps more importantly the Chairman of this group Prof. Renato M.E. Sabbatini fyi has this on his resume.

- Scientific advisor, National Association of Cell Phone Operators (ACEL)
- Collaborator, Mobile Manufacturers Forum
- Collaborator, GSM Association

This brings us the final concern with MCPS's radiofrequency page- the use of wireless funded data.

APPENDIX III

Wireless Funded Research and Statements

MCPS Utilizes "Scientific" Reviews funded by the Wireless Industry or by Scientists who Are Consultants to the Wireless Industry.

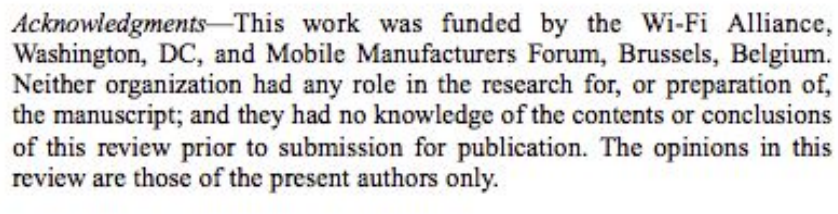
WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 1
MCPS presents the 2010 "Latin American Review". This was organized by President of the Organizing Committe and Chairman, Prof. Renato M.E. Sabbatini who is also Scientific advisor to the

National Association of Cell Phone Operators and works with the Mobile Manufacturers Forum and GSM Association.

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 2

MCPS says "Unequivocally, the RF exposures from Wi-Fi and wireless networks are far below U.S. and international exposure limits for RF energy."
MCPS has this link as the citation:
http://www.researchgate.net/publication/258102960_Wi-Fi_and_Health

MCPS forgets to say:



Acknowledgments—This work was funded by the Wi-Fi Alliance, Washington, DC, and Mobile Manufacturers Forum, Brussels, Belgium. Neither organization had any role in the research for, or preparation of, the manuscript; and they had no knowledge of the contents or conclusions of this review prior to submission for publication. The opinions in this review are those of the present authors only.

The research study that MCPS quotes here was fully funded by the wireless industry and the scientists authoring it are long known to be industry consultants and collaborators. Author John Moulder for example is an industry consultant and decades long expert witness in various court cases for the wireless and energy company industry. Author Kenneth Foster also publishes papers financed, like this one, fully funded by the industry. Oh, he also goes on trips to Greece *funded by the industry*. In fact, scientists are calling for one of his recent works to be retracted because an analysis found systematic errors.

"The first possibility is that many authors of the 22 individual studies misinterpreted and/or misrepresented their review findings in their text summaries. This seems unlikely given the number of authors involved and the fact that the peer review process would need to have failed repeatedly for this to occur. The only other explanation is that a bias in the methods used by Foster and Chou introduced a systematic error in their abstraction of review results," stated the authors."

Read more about that here.

Who is the WiFi Alliance?

They are all the top tech companies from Cisco to Samsumg to Intel. Read the list of companies here. When schools inquire as the the health risks of wireless they also have a handy response that basically says- nothing to worry about, we met all regulations- plus *nothing is proven. This research was fully funded by the wireless industry and then is used to to justify wireless deployment.*

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 3

Section 2.5.1 of the MCPS Radio Frequency Monitoring Report also quotes a study of Foster's "In 2007, Foster measured the RF signal from wireless devices in multiple settings (academic, commercial, health care) and multiple countries (USA and Europe). Foster found a number of interesting results…"

We assume this is a reference to the following 2007 study, RADIOFREQUENCY EXPOSURE FROM WIRELESS LANS UTILIZING WI-FI TECHNOLOGY found here
http://medfordumc.org/celltower/wifirfexposure.pdf

This research study states very clearly:

Acknowledgments— This work was supported by the Wi-Fi Alliance.

Such funding might explain why the almost decade old study has so many problems. It purports to show "low exposures" yet did not even trest near field exposures and did not even get a statistically valid sampling! . As it states, "No attempt was made in this study to assess near-field exposures to a user of the laptop itself." and "The measurement locations were chosen as a matter of convenience, not to provide a statistically valid sample of the environments (however that may be defined). " Despite the lack of looking at exposure to the laptop user and the lack of a statistically valid sample, , the paper is continuously used to show "safety". It seems to me to be an attempt to publish something that allays fears reiterating regulations are not surpassed and stating that, "any health concerns would seem to be moot."

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 4

MCPS cites England's MTHR as concluding that, "No increased cancer risk from wireless technologies. No robust evidence of harmful effects. No definite demonstrable effects in children."

MCPs neglects to clarify that MTHR is the Mobile Telecommunications and Health Research Programme and its **Report 2012** gives the findings of 31 individual research projects, *funded by the telecommunications industry.*

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 5

MCPs pulled most of its statements about international organizations from a 2014 paper entitled "International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields" which states, "We thank Chung-Kwang Chou (chairman, SC-95 of the international committee on electromagnetic safety, Institute of Electrical and Electronic Engineers) for critical reading of the manuscript and helpful suggestions."
Left out is that CK Chou is just retired Chief EME Scientist for Motorola and published papers funded by the Wireless Alliance. Read about the scientific calls for his recent industry funded work on children and cell phones *to be retracted* here.

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 6

MCPs says the Committee on Man and Radiation (COMAR "concluded that the weight of scientific evidence in the RF bioeffects literature does not support the safety limits recommended by the BioInitiative Group."

> *"One of the many organizations that have refuted the science behind the report is the Institute of Electrical Engineers, Inc., Engineering in Medicine and Biology Society, Committee on Man and Radiation (COMAR). The committee concluded that the weight of scientific evidence in the RF bioeffects literature does not support the safety limits recommended by the BioInitiative Group. For this reason, COMAR recommends that public health officials continue to base their policies on RF safety limits recommended by established and sanctioned international organizations such as the Institute of Electrical and Electronic Engineers International Committee on Electromagnetic Safety and the International Commission on Non-Ionizing Radiation Protection, which is formally related to WHO."* **See the COMAR outdated 2009 Report here http://www.ncbi.nlm.nih.gov/pubmed/19741364**

This report is from 2009 (so an example of outdated material) ***Since when was COMAR an expert group worth listening too above the Bioinitiative authors?*** COMARs website is here http://ewh.ieee.org/soc/embs/comar/ and it shows that the IEEE Engineering in Medicine and Biology Society, Committee on Man and Radiation (COMAR) *is basically mostly industry funded engineers who made a group.*

COMAR has a total of 3 officers, and 24 members and includes

- **Ken Foster**: Multiple industry funded research studies plus the trip to Greece.
- **Jerrold T. Bushberg:** He runs a health and medical physics consulting firm and has long served as an expert witness for the cell phone and broadcast industries on the health effects of RF energy, servicing, among others, Cingular Wireless, Crown Castle, Newpath Networks, and Verizon. Bushberg has also helped town officials evaluate proposals for siting cellular antennas and has testified for broadcasters who wanted to site high-power antennas on Lookout Mountain outside of Denver.
- **C-K Chou -** former Chief Scientist for Motorola
- **Antonio Faraone** of Motorola Labs – Corporate EME Research Laboratory
- **Ralf Bodemann** PhD Radiation Physicist for Siemens AG
- **Linda Erdreich,** is Exponent's Sr. Managing Scientist Exponent is the energy's Industry GO TO consulting firm to testify as "expert witness' when defending claims of harm.
- **Rob Kavet, ScD *** EMF Business Area Manager EPRI

(EPRI is an "independent" nonprofit scientific organization funded by the electric power industry in the United States.)

- **The Chair is Richard Tell** of Richard Tell Associates, Inc. which is "a scientific consulting business focused on electromagnetic field exposure assessment'

In fact, it is stated plain as day that their "technical information statement" reports are theirs alone and that their statements represent 'The statement of the committee". Their statements do not even represent IEEE as a whole.

N*o one is even reviewing these propaganda like statements and the MCPS tech group is putting it forward as some sort of truth? None of the COMAR members have medical degrees.* They are a self selected group of people writing their own statements with a very big fancy name. As they state "*COMAR does not establish safety standards, but it has an interest in the standards activity within its scope."* and their papers '*represent the consensus of the Committee*'.

I recommend that you take a look at the people who make up COMAR and compare their background and funding *to the people who wrote the Bioinitiative report.*

Why is MCPS using industry funded work to invalidate research showing wireless could be harmful?

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 7
Another one of Ken Foster's articles is cited in the AECOM RF Report (total of 3)

Foster, K. R. Exposure Limits for Radiofrequency Energy: Three Models. World Health Organization, Conference on Criteria for EMF Standards Harmonization. Available at http://www.who.int/peh-emf/meetings/day2Varna_Foster.pdf.
page 3-3 Note: This is also outdated at around the year 2000.

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 8

Yet another Foster article is cited in the AECOM RF Report

Foster, K. R. Response to Lora Lee Martin Regarding Smart Meters and EMFs, September 23, 2010, available at http://www.ccst.us/projects/smart/documents/foster_response.pdf.

APPENDIX IV

Misleading Statements

MISLEADING STATEMENT 1
The MCPS webpage selectively cites Group 2 B agents by naming others in the category which seem silly. "Here is a sampling of Group 2B agents classified by the IARC: magnetic fields (extremely low-frequency), aloe vera (whole leaf extract), coconut oil, coffee, dry cleaning, engine exhaust (gasoline and diesel), ginkgo Biloba extract, nickel (metallic and alloys), pickled vegetables, talc-based body powder, titanium dioxide (found in personal care products and in sunscreen), and amaranth."

- MCPS forgets to mention the dozens of *other* Group 2 B carcinogens such as lead, Chloroform, Welding fumes, Hexachlorobenzene, *many of which were pulled off the market before further testing was done.* Would we want these substances in our classrooms?

- MCPS also neglects to mention that many now 100% proven carcinogens that *used to be on the Group 2 B list* for a decade have since **moved** to a higher risk category such as styrene, DDT . These used to be on the Class 2 B list but have since moved up in risk.

It is misleading to put amaranth and aloe vera next to RF radiation. The WHO is clear that being in the same category does not mean that the risk is the same. Furthermore, the body of research is incomparable.

MISLEADING STATEMENT 2

MCPS quote the WHO as below

Non-Ionizing Radiations–Sources, Biological Effects, Emissions and Exposures

NRPB has made many measurements of exposure levels at publicly accessible locations around base stations. One study [12] reported measurements taken at 118 locations from 17 different base station sites. Average exposures were found to be 0.00002% of the ICNIRP public exposure guidelines and at no location were exposure found to exceed 0.02% of the guidelines.

The maximum exposure at any location was 0.00083 mWcm-2 (on a playing field 60 meters from a school building with an antenna on its roof). Typical power densities were less than 0.0001 mWcm-2 (less than 0.01% of the ICNIRP public exposure guidelines). (See Fig. 2) Power densities indoors were substantially less than power densities outdoors. When RF radiation from all sources (mobile phone, FM radio, TV, etc.) was taken into account the maximum power density at any site was less than 0.2% of the ICNIRP public exposure guidelines. [12, 13]

http://www.who.int/peh-emf/meetings/archive/en/keynote3ng.pdf

MCPS left out that this statement was from cell tower radiation readings in 2003.

Cell Tower radiation has substantially increased since 2003 as far more people are using cellphones and the radiation densities have increased because of this. The quotes information is from the Proceedings of the International Conference on Non-Ionizing Radiation at UNITEN (ICNIR2003) Electromagnetic Fields and Our Health 20 th–22 nd **from October 2003 .**

Why is MCPS quoting a paper on cell towers radiation that is entirely inapplicable to today's radiation exposures and using it to show RF is not a problem? This is misleading.

Concerning the World Health Organization WHO IARC scientists continue to publish research and commentary in medical journals detailing that there are *no safety assurances with wireless*. Please note the following:

Dr. Samet, Senior Scientist, Chair of the World Health Organization's International Agency for the Research on Cancer 2011 RF-EMF Working Group stated, "*The IARC 2B classification implies an assurance of safety that cannot be offered—a particular concern, given the prospect that most of the world's population will have lifelong exposure to radiofrequency electromagnetic fields."* in his 2014 Commentary calling for more directed research published in the journal *Epidemiology*.

It is misleading that MCPS has left out the following:

Many WHO scientists who served as IARC advisors on RF Radiation for the 2011 working group now state *that additional scientific evidence* indicates that wireless radiation should be re-classified as a "probable human carcinogen."

- "Radiofrequency fields should be classified as a Group 2A probable human carcinogen under the criteria used by the International Agency for Research on Cancer (Lyon, France)." Read the 2015 published review *by a group of scientists that includes World Health Organization EMF Working Group Experts* in the *International Journal of Oncology* entitled Mobile phone radiation causes brain tumors and should be classified as a probable human carcinogen (2A) (review) which also advises that the *as low as reasonably achievable* (ALARA) principle be adopted for uses of this technology.

The following experts were part of the WHO IARC's RF-EMF Review in 2011. Read their statements:

- **Dr. Chris Portier** "*A careful review of the scientific literature demonstrates there are potentially dangerous effects from RF*," stated Portier, a recently retired *CDC Director, Center for Environmental Health and the Agency for Toxic Substances and Disease* in his official call for invoking the precautionary principle with wireless. See also a poster presentation he penned for the conference here.
- **Dariusz Leszczynski,** WHO IARC expert, former Finnish government researcher, lectures widely on the urgent need for the precautionary principle. See slides from a recent lecture in Belgrade, Serbia attended by governmental officials. Read his laypersons article on the need for the Precautionary Principle here.
- **Dr. Anthony Miller** publishes research, lectures, testifies to government officials *on the increased evidence of risk from wireless technology*, and has four decades of expertise with the WHO IARC. See his testimony to the City of Toronto against cell towers here. Watch his 2014 lecture at Women's College Hospital here. Read his published research here.
- **Dr. Igor Belyaev** "There are many publications showing health effects of radiofrequency radiations. Approximately half of all published papers show such effects. This apparent discrepancy can be accounted for various conditions of exposure, because non-thermal RF effects are critically dependent on various parameters and also biological variables." Dr. Igor Belyaev is the Head Research Scientist at the Cancer Research Institute at the Slovak Academy of Science in Bratislava, Slovakia. Dr. Belyaev was one of the 30 members of the IARC Working Group tasked with classifying the carcinogenicity of cell phone radiation—the Group that produced the 2013 IARC Monograph. Please watch him speak at the National Press Club at this video link.
- **Dr. Lennart Hardell** published research in the *International Journal of Oncology* entitled Case-control study of the association between malignant brain tumours diagnosed between 2007 and 2009 and mobile and cordless phone use concluding, "This study confirmed previous results of an association between mobile and cordless phone use and malignant brain tumours. These findings provide support for the hypothesis that RF-EMFs play a role both in the initiation and promotion stages of carcinogenesis". Read his scientific blog with a letter to the WHO here.

Dr. Hardell is an International Agency for the Research on Cancer expert and now states that wireless *"should be regarded as human carcinogen requiring urgent revision of current exposure guidelines."*

- Read his 2014 research published in the *Journal of Environmental Research and Public Health* entitled Decreased Survival of Glioma Patients with Astrocytoma Grade IV (Glioblastoma Multiforme) Associated with Long-Term Use of Mobile and Cordless Phones which determined the use of wireless phones in the >20 years latency group (time since first use) was correlated to decreased survival for those diagnosed with astrocytoma grade IV. The conclusion reads, "Due to the relationship with survival the classification of IARC is strengthened and RF-EMF should be regarded as human carcinogen requiring urgent revision of current exposure guidelines."

In 2015 over 200 scientists appealed to the WHO and the United Nations to take immediate action to reduce health risks of wireless radiation and "the emerging public health crisis related to cell phones, wireless devices, wireless utility meters and wireless infrastructure in neighborhoods."

- Read the Medical Doctor and Scientists' Appeal here.
- Read the names of the Doctors and Scientists and their qualifications here.

MISLEADING STATEMENT 3

Spain: MCPS cites The Scientific Advisory Committee on Radio Frequencies and Health as stating that "To date, no scientific evidence that exposure to the low emissions levels of these systems produces adverse health effects in school children."

Interestingly, this organization does not exists anymore and as far as we know it is not the official position of the Spanish government's position on RF.(Often these "scientific" committees are created to invalidate the research and are funded by the industry.) MCPS misleads by putting it forward as a public health organization when it is NOT and forgot to mention this information about Spain:

- The Parliament of Navarra voted to urge removal of WIFI in schools and to apply the precautionary principle in relation to exposure limits to electromagnetic fields whose boundaries have become "obsolete".
    - The Parliament voted to adopt a resolution which calls to implement the Parliamentary Assembly of the Council of Europe resolution 1815 of 2011, which recommends to "review the scientific basis for the standards of exposure to electromagnetic fields" and " set thresholds for levels of preventive long-term exposure in all indoor areas not exceeding 0.6 volts per meter ".

- The Vitoria City Council unanimously approved a precautionary approach with wireless: Citizens will be informed of the location of wireless transmitters are in civic centers and municipal buildings. It is recommended that children's spaces such as playgrounds and family libraries, will be free of WiFi or have decreased wifi and wifi free zones will be established in playgrounds and building entrances.

- **The Basque Parliament** joined the resolution of the Parliamentary Assembly of Council of Europe in 2011, which warns of the "potential risk" of electromagnetic fields and their effects on the environment and urged the promotion of campaigns against "excessive use "mobile phones

among children.In a statement, the parliamentary Aralar, Dani Maeztustated, "To protect children's health, recommends the implementation of information campaigns and portable devices that emit microwaves, and prioritizes the use of cable connections in schools."

- **City of Tarragona Municipal Government (Tarragona is a major city 100 kilometres south of Barcelona) approved the "Institutional Declaration of support for people with Central Sensitivity Syndromes" including electromagnetic fields.** This means spaces are being set aside that are "white zones" meaning no RF radiation.

MISLEADING STATEMENT 4

MCPS states this about the BioInitiative Report" "This report was compiled, self-edited, and published by Cindy Sage and David Carpenter in 2007 and claims to be based in science." MCPS then goes on to negate the 2012 Report validity (addressed more in industry funded science section of this document as they reference a group made up of industry consultants)

This is a misleading and seems to be an attempt to delegitimize and discredit and neglects to inform readers that the Bioinitiative 2012 report was written by 29 authors from ten countries including ten MDs and 21 PhDs who are worldwide experts in the field. Authors include three former presidents and five members of the Bioelectromagnetics Society. One author is Chair of the Russian National Committee on Non-Ionizing Radiation, and another is Senior Advisor to the European Environmental Agency.

Dr. Carl F. Blackman former research scientist in the Environmental Carcinogenesis Division of the US Environmental Protection Agency who served on the World Health Organization committee to evaluate the health implications of radiofrequency radiation exposure (Environmental Health Criteria #137, 1993), on a committee of the International Agency for Research on Cancer (IARC) to evaluate the carcinogenic potential of low frequency electric and magnetic fields in 2001 (Volume 80, 2002) and as chair of the genetic studies group of the ANSI/IEEE committee that issued the US 1992 Radiofrequency Radiation exposure guidelines.

See the authors here.

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MISLEADING STATEMENT 5

MCPS quotes England's IET which is The Institution of Engineering and Technology as concluding that "No new robust evidence for adverse effects. Policy makers should consider all evidence including cost and benefits of mobile phone use."

Why is this misleading ? Because first, IET is not a public health institution. It is an engineering group whose website is filled with logos for various companies. They have an interest in promoting this technology and you can read their countless documents *all about using radiofrequency in the world.* This is not a scientific organization who understands biology and I am at a loss as to why MCPS would cite this as a public health group. That is tantamount to putting forth information on the toxicity of lead by an organization funded by paint companies.

MISLEADING STATEMENT 6

In the MCPS RF FAQS section on "Additional Information". MCPS shows " statements from major health organizations that have been involved in studying Radiofrequency for years but have not concluded

that Radiofrequency poses any adverse health effects" The entire section is misleading as it is cherry picking specific statements and leaving out others. For example:

MCPS quotes the World Health Organization:

> *"To date, no adverse health effects have been established as being caused by mobile phone use."*
> *"Studies to date provide no indication that environmental exposure to RF fields, such as from base stations, increases the risk of cancer or any other disease."*
> http://www.who.int/features/qa/30/en/

As mentioned and documented earlier in this document, the WHO has far more to say about RF than that quote. For example, later on this very same page it states that *"While an increased risk of brain tumours from the use of mobile phones is not established, the increasing use of mobile phones and the lack of data for mobile phone use over time periods longer than 15 years warrant further research of mobile phone use and brain cancer risk. In particular, with the recent popularity of mobile phone use among younger people, and therefore a potentially longer lifetime of exposure, WHO has promoted further research on this group and is currently assessing the health impact of RF fields on all studied endpoints."*

MCPS should be providing the whole story and not selectively quoting statements on the WHO's position.

MISLEADING STATEMENT 7

Previously MCPS stated and then removed the following:
"The 2B classification was based on studies of extremely heavy cell phone use: 1,640 hours or more per year, which is equal to holding a cell phone to the side of one's head for four hours a day, every day for an entire year."

The facts:

1. The 1640 hours linked to increased brain tumors in the Interphone Study pertained to ***lifetime*** *cumulative cell phone use (**not** annually as MCPS falsely states).*
2. Heavy use in the long term cell phone research informing the Class 2 B classification **was often defined** as 30 minutes a day over ten years (***not*** 4 hours a day as MCPS falsely states). Watch WHO IARC expert Dr. Bann state this clearly in this video here.

Then MCPS wrote "Using the Group 2B classification of the entire spectrum of radiofrequencies as an indication that Wi-Fi is harmful when the classification came about due to extremely heavy cell phone use and not Wi-Fi does not accurately represent the intention of the classification."
*and "The International Agency for Research on Cancer (IARC) classification of exposure to radiofrequency as possibly carcinogenic was based on **heavy mobile phone use**. "*

MISLEADING STATEMENT 7

What is misleading? MCPS removed it's clearly incorrect fact about what "heavy cell phone use" was but then *did not replace that text with easy to understand information.* "heavy cell phone use" is equivalent to 30 minutes a day and long term research shows an association between this amount of use and brain cancer. *Why won't MCPS post this information?*

MCPS states that "MCPS has made sure to review the exposure limits set by the FCC and the Occupational Safety and Health Administration and have ensured that the wireless networks in MCPS remain well below these established guidelines."

However the Occupational Safety and Health Administration states:

- "There are no specific standards for radiofrequency and microwave radiation issues." Read it on OSHA's website here.
- **OSHA has stated that RF could act as a cancer promoter:** OSHA also states that, "in 1987, the Hazard Evaluation and Technical Assistance Branch of the National Institute for Occupation Safety and Health (NIOSH) conducted a field investigation into possible health hazards at an acceleration laboratory9. NIOSH's report addressed both radio frequency (rf) and static magnetic fields. The report at its conclusion indicates that evidence that rf radiation alone can produce cancer was weak but it might act as a cancer promoter in animals." Read it here https://www.osha.gov/dts/hib/hib_data/hib19900207.html
- **NIOSH lists reproductive damage as concern.** "There have been reports which suggest an association between RF exposure and reproductive damage in animals and humans. These reports, primarily from Eastern Europe and the Soviet Union, list a variety of reproductive and developmental effects resulting from occupational exposures of workers and experimental exposures of laboratory animals to electromagnetic energy at frequencies in the RF and microwave ranges. Reported effects from exposure of women to fields of relatively high intensity RF and microwave energy have included changes in menstrual pattern, increased incidence of miscarriage, and decreased lactation in nursing mothers.13 Retarded fetal development and increased congenital anomalies have been noted among exposed offspring.13 Laboratory studies have shown that exposure of pregnant rats to RF energy (at levels believed to have been relatively high) resulted in numerous fetal malformations including abnormalities of the central nervous system, eye deformities, cleft palate, and deformation of the tail.14 There is a report of changes in spermatogenesis (production of male germ cells in the testicles) among workmen exposed to nonionizing electromagnetic energy.15 Reproductive effects in male experimental animals, including testicular damage, debilitated or stillborn offspring and changes in spermatogenesis, have been reported to be related to exposure to electromagnetic energy at microwave frequencies.16,17**"**
- **NIOSH validated that nonthermal effects can occur at levels that do not produce heating.** **"**Absorption of RF energy may also result in "nonthermal" effects on cells or tissue, which may occur without a measureable increase in tissue or body temperature. "Nonthermal" effects have been reported to occur at exposure levels lower than those that cause thermal effects. While scientists are not in complete agreement regarding the significance of reports of "nonthermal" effects observed in laboratory animals, NIOSH believes there is sufficient evidence of such effects to cause concern about human exposures. NIOSH and OSHA recommend that precautionary measures be instituted to minimize the risk to workers from unwarranted exposure

to RF energy." While this is from a very outdated report it is interesting that his is the information presented on the webpage. Read it here http://www.cdc.gov/niosh/docs/80-107/

- "While scientists are not in complete agreement on the interpretation of available data on biological effects, NIOSH believes there is sufficient evidence of such effects to cause concern about human exposures. **NIOSH and OSHA recommend that precautionary measures, as listed in Section V of the attached Appendix , be instituted to protect workers from unwarranted exposure to RF energy."**
- **Read it here. http://www.cdc.gov/niosh/docs/80-107/default.html**

It is notable that a December 2013 Report by the U.S. Department of Health and Human Services Centers for Disease Control and Prevention National Institute for Occupational Safety and Health finds that ediucation on RF and EMF exposures safet is lacking at a site and speaks to health concerns about low level exposures stating that:

"Much of what is known about RF biological effects pertains to acute (short-term) exposure; relatively little is known about the effects of long-term low-level RF exposure. Human and animal studies show that exposure to RF fields above OELs may cause harmful biological effects as a result of heating of internal tissues. The extent of heating depends primarily on the RF frequency, intensity of the RF field, and duration of exposure.
However, some researchers have reported that absorption of RF radiation may result in nonthermal effects that occur without a measurable increase in tissue temperature, and at RF field strengths lower than those that cause thermal effects [NIOSH/OSHA 1979; FCC 1999]. Read it here http://www.cdc.gov/niosh/hhe/reports/pdfs/2011-0097-3200.pdf

NIOSH pointed to weakness in US standards in 1994 "While the maximum permissible exposure levels defined by ANSIJIEEE C95.1-1992 are similar to those defined by other related publications [NCRP 1986; WHO 19931, NIOSH is concerned about the lack of participation by experts with a public health perspective in the IEEE RF standards setting process. For example, epidemiology studies were categorically rejected as not useful in the process of setting the ANSIJIEEE C95.1-1992 limits. This lack of public health perspective creates a weakness in the ANSIIIEEE C95.1-1992 standard that should be acknowledged by the FCC in adopting these guidelines for regulating occupational and environmental exposures to RF radiation."
"The exposure levels that would be set by the standard are based on only one dominant mechanism -- adverse health effects caused by body heating. Nonthermal biological health effects have been reported in some studies and research continues in this area [NCRP 1986; WHO 19931. The standard should note that other health effects may be associated with RF exposure and that exposure should be minimized to the extent possible." page 54 http://www.cdc.gov/niosh/hhe/reports/pdfs/1993-0424-2486.pdf

On OSHA's Hazards locations and Solutions webpage it states:
"Non-thermal effects, such as alteration of the human body's circadian rhythms, immune system and the nature of the electrical and chemical signals communicated through the cell membrane have been demonstrated. However, none of the research has conclusively proven that low-level RF/MW radiation causes adverse health effects." Read it here.

A 2002 Slide Presentation Implement an RF program where exposures exceed FCC "General Population" or Public limits

"Because of the scientific uncertainty, no Federal limits for worker exposures to EMFs have been recommended or established in the United States." states NIOSH on a webpage last reviewed in 2014. Read it here http://www.cdc.gov/niosh/docs/96-129/

It is misleading for MCPS to present this agency as validating that MCPS is compliant when OSHA posts contradictory information on their website. They link to copious information (although *very* outdated) recommending precautionary measures on their website and talk about "insufficient information" and concerns with the FCC guidelines.

"Research continues on possible biological effects of exposure to RF/MW radiation." In the first parargraph of their Safety and Health section.Read it here.

Teachers and staff at MCPS *do* have a possible work safety issue which OSHA and NIOSH has clearly not adequately dealt with. All the information from these agencies websites points to outdated reviews and "insufficient evidence". In my opinion, this speaks to a dropping of the ball and a lack of accountability to workers. OSHA should responsibly be looking at exposures in schools, hospitals and government buildings now that such buildings have multiple transmitting antennas in addition to cell towers placed on the grounds.This issue has not received the attention needed considering the recent increase in exposure for workers throughout the country. MCPS should not be citing this agency and if so *MCPS should cite which specific regulation* they are even referring to (as no where on OSHA's website did I find details pertaining to safety in work environments such as schools with dozens of access points, hundreds of cell phones and laptops transmitting continuously.)

PERHAPS THE MOST EGREGIOUS MISLEADING STATEMENT

Under the heading "**What were the findings of the RF Monitoring conducted in MCPS schools?"** MCPS seems to put forth the radiofrequency reading from AECOM as proof that the radiation is not a health risk stating that, *"All of the average power density results were several orders of magnitude below FCC regulatory limits. Note that measurements and regulatory limits were for six-minute time-averaged, whole body exposure. Average power density results were also below recommended levels from non-regulatory agencies, including the IEEE, the ICNIRP, and the Bioinitiative Report 2007."* MCPS does not actually state that such levels are safe in any sentence but continuously states that the levels meet FCC guidelines. Most parents will view this as a statement that the level is too low to cause harm. Furthermore parents will not understand that such statement is meaningless when it comes to understanding the risk to students and staff.

Such a statement is inaccurate and misleading. Why?

1. 6 minutes is not in accordance with FCC limits for public exposures: In the US, regulations look at averages *over 30 minutes* , not 6 minutes as was done at MCPS. This is pointed out by Arthur Firstenberg in his letter to MCPS here. Therefore testing was not done in accordance to FCC regulations.

2. Average power density is not a way to understand the effect on biological systems. This report displays average power readings and does not report *peak pulses*. Best available science speaks to the importance of the pulsed nature of the signal. The measurements did not take into account peak pulses and therefore they are not helpful in understanding risk to students.

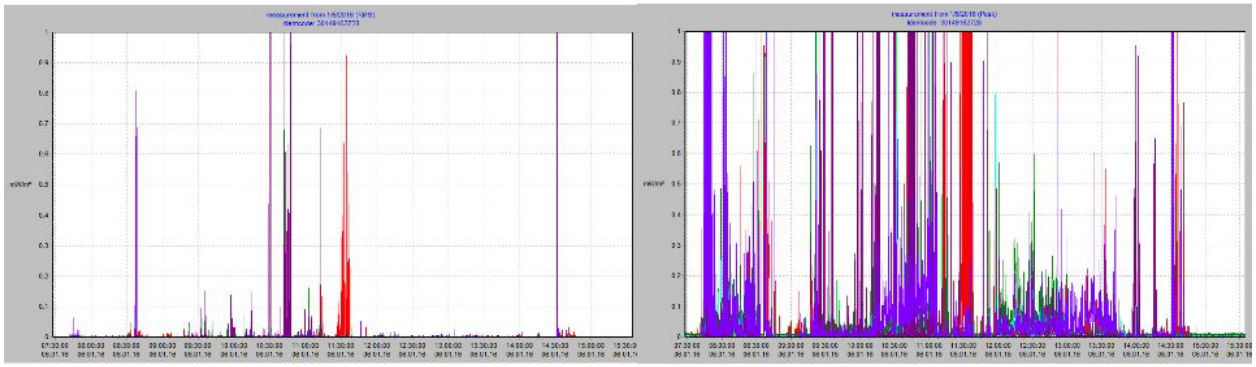
- **Department of the Navy, Aerospace Med Research Laboratory:** In *Some considerations concerning the use of magnetron generators in microwave biological research*, written by Vernon R. Reno for the Department of the Navy. at the shows that the waveform, as well as the type of instrumentation used to both create and measure the waveform are important when considering the biological effects of microwave radiation. Reno clearly states that "average" power density is an inadequate metric for assessing the effects on animals in experimental studies. By extension, it should be inadequate for monitoring exposure of human populations as well.

"Pulsed radiation is underestimated when "averaging" is used. That is a simple math fact. This fact is one reason that FCC regulations are outdated. Do the math. See below an example of how averaging is a method that skews understanding exposures. The first Figure shows all frequencies. The second shows just WLAN 2.45 frequencies.

Measurements From An MCPS High School 7:45 am to 3:00pm

All Frequencies Shown Graphed up to 1mW/m2

Average Exposures	Peak Exposures
This is how MCPS measures radiation.	**This is the actual exposure to the student.**



Averaging minimizes the peak levels.

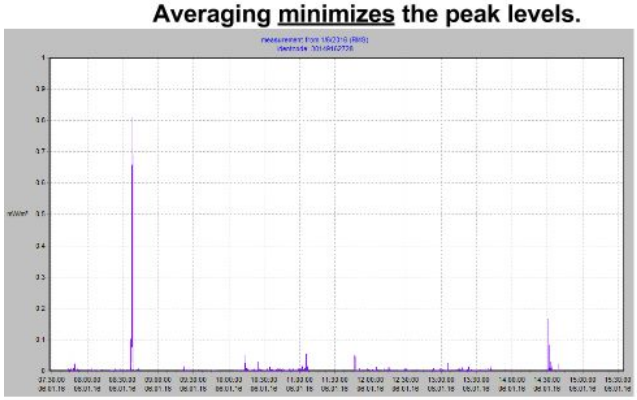
These graphs show the results of measurements done with an ESM 140 Dosimeter worn on the arm for a 2015 school day at an MCPS School.

Measurements From an MCPS High School 7:45 am to 3:00pm

WLAN Wi-Fi 2.45 only, Graph until 1 mW/m2

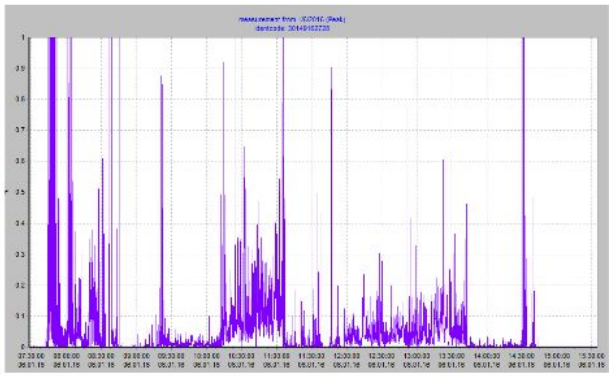
Average WLAN Exposures

This is how MCPS measures radiation.
Averaging minimizes the peak levels.



Peak WLAN Exposures

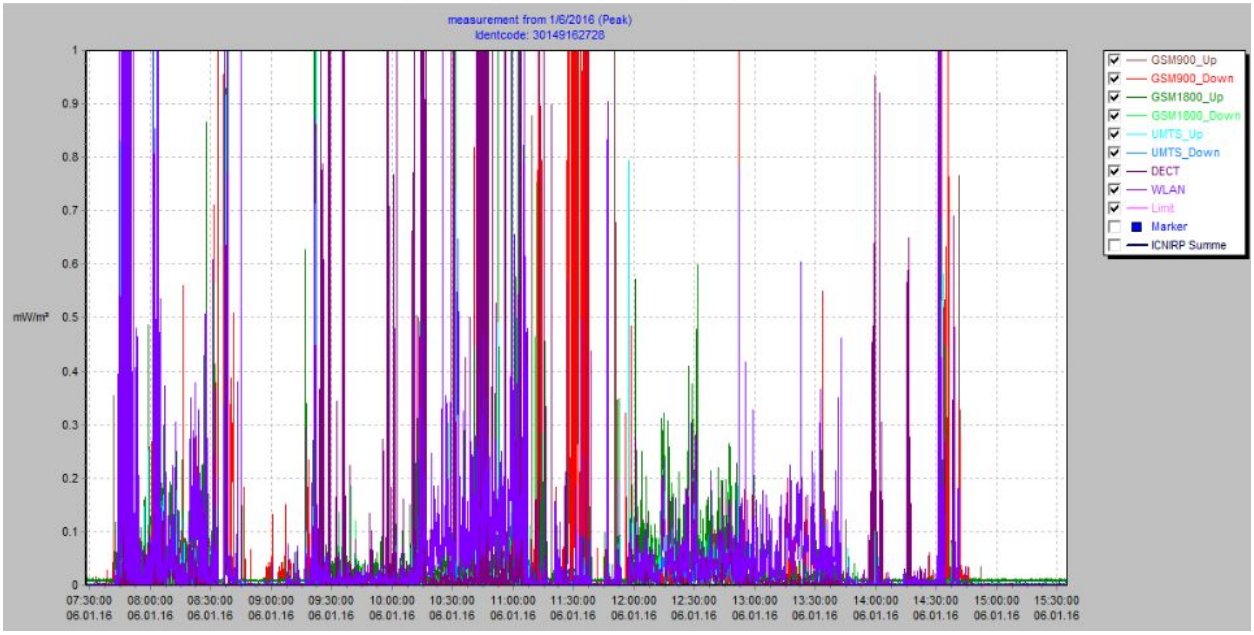
This is the actual exposure to a student.



These graphs show the results of measurements done with an ESM 140 Dosimeter worn on the arm for a 2015 school day at an MCPS School.

A child in a classroom is exposed to the sum of frequencies from transmitters in the room. MCPS only looked at WLAN. Therefore, MCPS did not fully detail exposures in classrooms because they did not account for cell phone use in class as a source of exposure. See below the same graph as in Figure 1 with the Key showing all frequencies.

Measurements at MCPS High School
All Frequencies, Peak Exposures, Graph until 1 mW/m2



The above graphs are from a specialized instrument that took measurements at a local MCPS High School a few weeks ago. A report will soon be prepared showing the results for the community. The Dosimeter used is a ESM-140 and it is able to identify and measure all of the frequencies in the classroom from GSM 900 to WLAN at 2.45 GHz. It does not measure 5 GHz so it in fact is an underrepresentation of exposure in the school.

3. Exposures could be 100 fold more than average power densities. Please read what Mikko Ahonen PhD, Lena Hedendahl MD and Tarmo Koppel MSc wrote MCPS in December 2015

> "In the Comparison-table 2.2. the MCPS provides only average values, no peak values. In cell phone technologies (like GSM) the difference between average and peak value is 2-fold. In Wireless local area technologies like Wi-Fi, the difference between average value and peak value is up to 100-fold (Ferro & Potorti, 2005). Note that in the table 2.2. by the MCPS only average values are presented. Later you provide in the chapter 7.2.2 Maximum, Instantaneous Power Density, which needs attention since these levels occasionally exceeded in your school measurements allowable EMC-levels (EN60601-1 3 V/m) for medical instruments (Robinson *et al.*, 2003)." Read it here.

4. The RF Summary did not document the transmitting sources in the room measurements were taken. None of the following was noted: Distance from the AP for the Chromebooks tested, Number of end devices in use at the time nor the type or amount of data transferred, Number of cell phones transmitting in room nor their location (some classes have policies stating no phones in the class and others encourage cell phones so that should have been noted) , Location of antennae on Laptop and angle from antennae,

Why is this important? The AP can only service one end user at a time. Multiple end users generates additional EMFs because of the need to reconnect. The closer the end device is to the

AP, the lower the signal strength necessary to transmit the information between the two devices. Similarly, the farther away the end device is from the AP, the stronger the signal that must be employed for the AP to accurately receive and transmit. Yet at the same time, a very close access point results in continuous exposures to those seated nearby. Sitting near an access point when no laptops are in use will present a different exposure than if all laptops are in use. The exposures might be far higher depending on these variables.

Without any of this exposure information, the numbers are simply not useful and do not thoroughly document actual exposure to children in MCPS schools.

Common scenarios are not accounted for in the MCPS Report:

> What about the child using the laptop to download a video at a location far from the AP?
>
> What about the child sitting directly under the AP while the room of 30 are downloading a video at the same time?
>
> What about the teacher standing directly under the AP with their head a few feet from the AP while all 30 kids are downloading?
>
> What about the children sitting with laptops on their laps huddled together on the floor close together so in circles of 4 or more children? (that would mean each child is receiving exposures for the other laptops.)
>
> What about the use of cell phones as classroom tools? What about how students transport these cell phones around the school building?

The MCPS Report did not detail these critical scenarios and thus cannot present its "findings' as applicable to the students exposure. It is important to note the I have addressed issues of radiofrequency exposures from laptops as well as cell phones and other wireless devices in my communications with MCPS and yet MCPS did not account for any exposures from cell phones in this measurement report.

MCPs has the students using the MCPS network ON STUDENTS phones. Therefore MCPS is accountable and should be responsible for cell phone exposures as well as any exposures from devices brought in as part of the Bring Your Own Device Policy.

4. Multiple experts have written to MCPS detailing technical concerns about the Radiofrequency report. They state the instrumentation was inadequate, the scenarios were not documented and the measuring set up inadequate to properly represent children's exposures. Equally important, the reference standards employed are **out of date.** There is a sufficient number of concerns that it seems this Measurement Report *cannot* be used to verify whether the radiation levels are safe or harmful.

> "The instrument cited as being used for the peak measurements in section 7, a Narda SRM-3006, is not suitable to measure the very short (1 millisecond) spikes typically found in WiFi 802.11n communication."
>
> " The conclusions of this report cannot be said to give a positive assertion of safety because of the degree of uncertainty over whether the testing equipment was adequate (we believe it was not); the lack of comparison data; and the failure to measure RF exposures at realistic distances from the student(s)."
>
> **-Cindy Sage And Professor Trevor Marshall in their letter to MCPS found here.**

"In the Comparison-table 2.2. the MCPS provides only average values, no peak values. In cell phone technologies (like GSM) the difference between average and peak value is 2-fold. In Wireless local area technologies like Wi-Fi, the difference between average value and peak value is up to 100-fold (Ferro & Potorti, 2005). Note that in the table 2.2. by the MCPS only average values are presented. Later you provide in the chapter 7.2.2 Maximum, Instantaneous Power Density, which needs attention since these levels occasionally exceeded in your school measurements allowable EMC-levels (EN60601-1 3 V/m) for medical instruments (Robinson et al., 2003)."

"In order to assess power density exposure in near field one needs to measure both electric and magnetic field components."

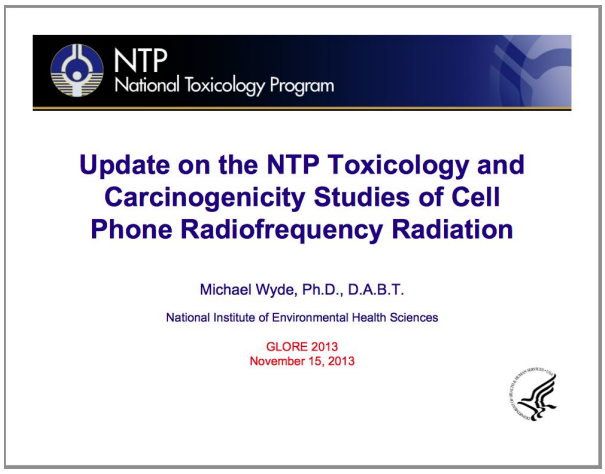
"The MCPS has not provided information about Wi-Fi technology, namely it's beacon signal."

-Technical Experts Mikko Ahonen PhD, Lena Hedendahl MD and Tarmo Koppel MSc
Read it here.

Overall, MCPS' Website Statement on Radiofrequency is filled with false facts and not therefore a reliable source of information. The MCPS Measurement Report does nothing to progress an understanding of safety at Montgomery County Schools.Therefore there is no proof of safety.

APPENDIX V

The National Toxicology (NTP) Study on Rodents and Radio-Frequency



Objective: To identify potential toxic and carcinogenic effects associated with chronic exposure to modulated cell phone radiofrequency radiation (RFR) and to characterize dose-response relationships in animals.

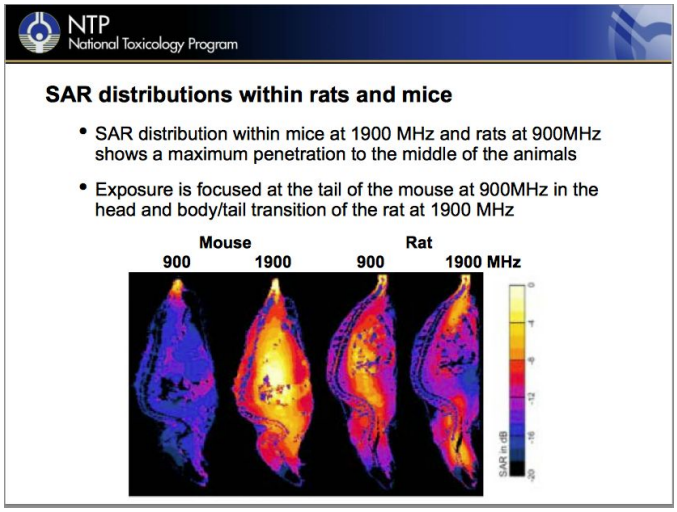
First proposed in *2001*, the laboratory studies on mice and rats examine exposure to frequencies centering around 900 megahertz and 1900 megahertz, as well as the two 2G (second generation) modulations used for voice transmission—CDMA and GSM. The study is seriously behind schedule.

2009 NTP Update: At a Senate hearing in 2009, Dr. John Bucher, Associate Director of the National

Toxicology Program of the National Institutes of Health, made the following apologetic statement regarding the aforementioned $25+ million NTP research project:

> "The pilot studies are nearly complete. Subchronic studies will begin early next year and the chronic toxicology and carcinogenicity studies will start in late 2010, finish in 2012, with peer review and reporting in the 2013-2014 time frame."

See slides from NTP in 2009 about the set up including this image of the mice below. http://mommath.cy1000.com.tw/register/download/PPT5.pdf



"These studies will be conducted at multiple power levels and will include special emphasis on potential adverse effects in the brain. In addition to histopathological evaluations for toxic or neoplastic lesions, special studies will examine effects on the blood brain barrier, neonatal cell migration patterns in the brain, and DNA strand breaks in brain cells."

Read a fact sheet on the way the study will be set up here.

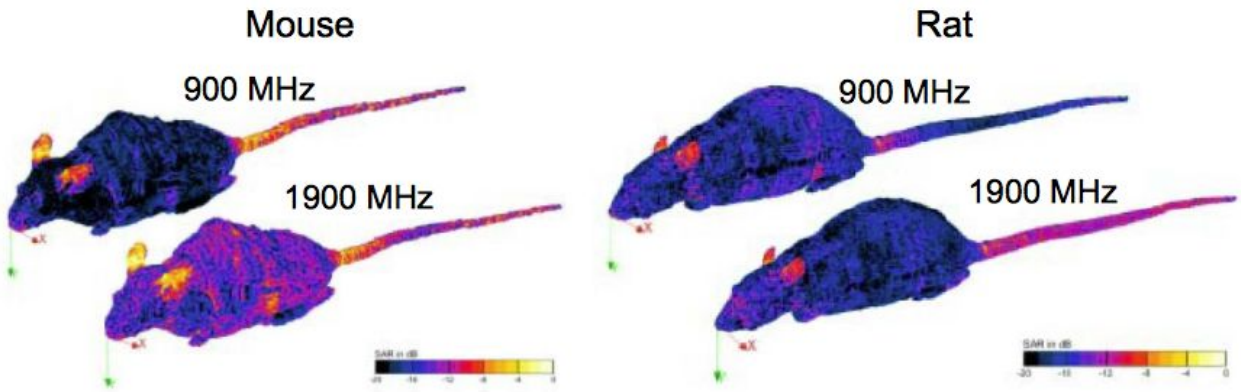
2013 NTP Report: "Pilot NTP experiments found that rats did respond to both GSM and CDMA cell phone radiation. Those exposed before and after birth gained weight more slowly. The exposure levels were lower than government regulations and low enough to challenge the widely-held view that wireless radiation is harmless. Importantly, the observed effects were dose-dependent." In english this means that these low levels did cause biological changes.

Read more at Microwave News and see the Powerpoint Slides from NTP in 2013

NTP
National Toxicology Program

Dosimetric modeling study results

- Surface distributions clearly indicated overexposure of the tail in mice at 900MHz and rats at 1900 MHz



- Considerable difference in the whole-body averaged absorption efficiency of the mouse at 900 and 1900 MHz
  - Poor uniformity of absorption at 900 MHz in mice

Precautionary Principle; Diane Hickey Comments, Oct. 30, 2013

Background

This letter has been sent to the Federal Communications Commission (FCC), National Institute of Health (NIH), Federal Department of Education, Fullerton School District Board of Education, the California State and regional PTA. The Fullerton School District school board has remained silent on the health issues that have been brought before them for the last 6 to 7 months. They continue to proceed with their 1 to 1 wireless technology plan and ignore the evidence.

Harms to Our Children's Health from Classroom Wireless Radiation: Enough Is Enough

To: The FCC
Mignon Clyburn, Acting Chairwoman, FCC
Jessica Josenworcel, Commissioner, FCC
Ajit Pai, Commissioner, FCC

I am a mom in Southern California and have a child in a school that is implementing one to one technology in the classroom. It was not until I stumbled upon information regarding wireless radiation that I became aware of the extremely critical health implications of such an environment in which 30+ wireless devices, operating 6 hours/day, 180 days/year for a child's school career, are emitting an unprecedented amount of radiation on our children. In the process, I discovered a bottomless pit of studies and information that attest to the harms of wireless radiation.

The *parents do not know* that they are sending their children into an environment, surrounded by a Class 2b Carcinogen, classified as such by the World Health Organization. That is the same classification as lead, DDT, and engine exhaust. In what context would a classroom filled with engine exhaust ever be okay? The *parents do not know* that medical doctors, scientists, and researchers are identifying the following wireless radiation health effects: ADHD, autism, infertility, DNA damage to human sperm, childhood leukemia, neurological and cardiovascular problems, cognitive dysfunction, pain, fatigue, mood disorders, dizziness, nausea, weakness, and skin problems. The question is: what is this wireless radiation doing to the human eggs in our daughters? Additionally, many of these health problems are not immediately evident and manifest themselves years after exposure, which makes everyone think that there are no harms from these emissions. The *parents do not know* that research into wireless radiation has been going on for decades and has yielded thousands of studies indicating harm: http://www.justproveit.net/content/prove-it-initiative-main
The *parents do not know* that something that they cannot see, hear, touch, smell or taste is a danger to their children. The *parents do not know* the numerous websites that have cropped up addressing just the subject of wireless

classrooms:

WiFi In Schools, United States
WiFi In Schools, United Kingdom
WiFi In Schools, Australia
Citizens 4 Safe Technology
Center For Safer Wireless
Safe In School
Safe School
School Radiation Dot Com

The time is past due for the FCC to acknowledge the dangers of wireless radiation. Wireless technology has an implied safety that is dangerous and not justified. People, if they were aware of this information, would feel that there is immediate need for the FCC to step in and re-establish guidelines to ensure the public health.

The general population will begin finding out the following facts about the FCC's role in allowing the unfettered proliferation of wireless radiation on our children and loved ones:

Facts

1) The FCC guidelines were last updated in 1996; that was 17 years ago. *Why is that?*
2) The FCC guidelines are based on thermal exposure and completely ignore non-thermal biological effects. *Why is that?* Non-thermal effects are the concern with wireless radiation.
3) No long-term studies have been funded on the non-thermal effects of wireless radiation. *Why is that?*
4) FCC current exposure guidelines allow for millions of times more exposure than our parents were exposed to as children. *Why is that?*

Parents are unknowingly sending their children back to school this Fall into classrooms filled with wireless radiation and there is no choice in the matter. These decisions are being made for the parents. School districts, when confronted with the harms of wireless classrooms, ignore or discount it because it conflicts with their one to one technology plans. They stand on the FCC's guidelines and tech industry funded studies as reason for safety and are dismissive of parents raising concerns. Wired technology is known to be safe and a healthy choice for our children. Why take the risk with our children's health with wireless?

Parents and the general public are trusting in the FCC to be taking care of this and, clearly, with 1996 guidelines, that is not the case. In the schools,

knowledgeable parents are caught between administrators who falsely proclaim wireless radiation as "totally safe," that there is no "absolute proof" of the harms of wireless radiation, resting on outdated FCC guidelines, and, what is now, decades of research that says it is not.

Please consider the application of the Precautionary Principle, as stated by Joel Moskowitz, Ph.D., Director, Center for Family and Community Health, University of California, Berkeley, in a letter dated February 8, 2013, to the Los Angeles Unified School District writes: "The precautionary principle should be applied to this critical policy decision. This principle, developed at a U.N. environmental conference in 1992 states that in the absence of scientific consensus if an action has a suspected risk of causing harm, the burden of proof it is not harmful falls on those taking the action, and all reasonable measures to reduce the risk must be taken." Our school children should not be in classrooms with wireless radiation until it can be proved that it is safe.

The urgency of this matter cannot be overstated. The health issues of wireless radiation are not going away. Many of these issues, such as dramatic growth rates of autism diagnosis and ADHD, are unaccounted for. The causes have not been identified. Our autism rate in Orange County CA is now 1 in 63. The FCC has a tremendous responsibility and a great opportunity to step forward and do the right thing. Please, incorporate the Precautionary Principle in the FCC guidelines, now, and call a halt to wireless radiation in our classrooms until it can be proven safe.

Finally, what does it say about us if we, as human beings, do not ensure the safety of our most vulnerable, our children?

Thank you.

Diane Hickey

Fullerton, CA

Precautionary Principle; Monnie Ramsell, Comments, Sep. 4, 2013

FCC 13-84

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

In the Matter of	)	
	)	
Reassessment of Federal Communications	)	
Commission Radiofrequency Exposure Limit Policies	)	FCC Docket No. 13-84
	)	
	)	
And	)	
	)	
Proposed Changes in the Commission's Rules	)	EF Docket No. 03-137
Regarding Human Exposure to Radiofrequency	)	
Electromagnetic Fields	)	
	)	

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

Comments for FCC ET Docket No. 013-84 and EF Docket No. 03-137

Comment Filed by: Monnie Ramsell
50 Bronco Drive
Sedona AZ 86336

September 3 , 2013

Comment round for ET Docket No. 013-84 and ET Docket No. 03-137

AFFIDAVIT OF __Monnie Ramsell

State of Arizona]

Yavapai_____ County]

I, _Monnie Ramsell___, attest that my statements are true to the best of my knowledge.

Comment round for ET Docket No. 013-84 and ET Docket No. 03-137

My name is Monnie Ramsell . My address is 50 Bronco Drive, Sedona, AZ 86336.

I am a business owner for over fifteen years and I have a Masters Degree in Business Administration.

I have been doing researches on this topic for the past few years. I am enclosing studies that showed EMF and RF are harmful to human health even with the level of the present guidelines.

Federal health and safety agencies have not yet developed policies concerning possible risk from long-term, nonthermal exposures. When developing exposing standards for other physical agents such as toxic substances, health risk uncertainties, with emphasis given to sensitive populations, are often considered. Young children in school with WiFi, the elderly, the sick are among this group of sensitive populations. And the latest assault is smart meters installed in every single home, schools and even hospitals. Incorporating information on exposure scenarios involving repeated short duration/nonthermal exposures that may continue over very long periods of time (years), with an exposed population that includes children, the elderly, pregnant women and people with various debilitating physical and medical conditions, is necessary in delineating appropriate protective exposure guidelines.

The FCC guidelines are outdated and not adequate to protect any public health and safety and needed to be revised as soon as possible.

Respectfully submitted by

Monnie Ramsell
50 Bronco Drive
Sedona, AZ 86336
September 3, 2013

PrecationaryPrinciple; Kevin Kunze Comments, Aug. 29, 2013