

**“We have never had this kind of  
impending risk to society.”**

Dr. George Carlo, Author of *“Cell Phones: Invisible Hazards In The Wireless Age”*



**“Today we know that even a single exposure to low level radiofrequency radiation causes damage to the DNA makeup of brain cells.”** Robert C. Kane, PhD.

Author: *Cellular Telephone Russian Roulette*

# **WI-FI in Schools: What are the Health Risks?**



## **BRIEFING BOOK**

February, 2014

**“It is obviously going to take a health catastrophe of some magnitude before the state will come to terms with the fact that it has a duty to protect the populace and starts passing laws to minimize the risk. Industry’s obsession with profits has been given precedence up to now”**

**Dr. Leberecht von Klitzing, medical physicist at the University of Lübeck**



## INVISIBLE THREAT

February 1, 2014 • by Frank Clegg



### **FRANK CLEGG: LONGTIME PRESIDENT OF MICROSOFT CANADA IS NOW OUR COUNTRY'S LEADING ADVOCATE FOR WIRELESS RADIATION SAFETY.**

Vitality invited high tech leader Frank Clegg, now CEO of the new non-profit organization, Canadians for Safe Technology (C4ST)

It has been three years since the World Health Organization shocked the medical community by warning that exposure to microwave radiation from wireless devices might increase our cancer risk. If the same elite cancer specialists were to meet again today, the warning would be upgraded from a "possible carcinogen" to a "probable carcinogen." That is according to Professor Emeritus Anthony Miller, of the University of Toronto, who was speaking recently to Toronto's Public Works and Infrastructure Committee. (1)

### ***Wi-Fi Linked to ADHD, Learning Disorders***

A recent study demonstrated that pregnant women should be careful about their use of cell phones. Dr. Hugh S. Taylor, chief of reproductive endocrinology and infertility for Yale Medical Group says, "We have shown that behavioral problems in mice that resemble ADHD are caused by cell phone exposure in the womb. The rise in behavioral disorders in human children may be in part due to fetal cellular telephone irradiation exposure." (12)

Children are especially vulnerable since their skulls are thinner and certain tissues of a child's head, including the bone marrow and the eye, absorb significantly more energy than those in an adult head. (13) A highly regarded study from 2011 showed that radiation from a cell phone penetrated 10% of an adult head, whereas it penetrated the skull of a five year old 70%. (14)

Science suggests that exposure to constant wireless radiation impairs learning. However, as with pesticides, when the federal government lags behind, there are local initiatives that can make a difference.

We are C4ST, Canadians for Safe Technology, not No Technology and we are convinced that there is nothing less than the future of our children at stake. The tide is beginning to turn and in numbers, our voices will be heard.



## IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 --- The World Health Organization/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as **possibly carcinogenic to humans (Group 2B)**.

Over the last few years, there has been mounting concern about the possibility of adverse health effects resulting from exposure to radiofrequency electromagnetic fields, such as those emitted by wireless communication devices....

The IARC Monograph Working Group, consisting of 31 scientists from 14 countries, was convened to assess the potential carcinogenic hazards from exposure to radiofrequency electromagnetic fields. They discussed the possibility that these exposures might induce long-term health effects, in particular an increased risk for cancer. This has relevance for public health, particularly for users of mobile phones, as the number of users is large and growing, particularly among young adults and children. International experts shared the complex task of tackling the exposure data, the studies of cancer in humans, the studies of cancer in experimental animals, and the mechanistic and other relevant data.

The data showed a 40% increased risk for gliomas in the highest category of heavy users (reported average: 30 minutes per day over a 10-year period).

Dr Jonathan Samet (University of Southern California, USA), overall Chairman of the Working Group, indicated that "the evidence, while still accumulating, is strong enough to support a conclusion and the **2B classification**. The conclusion means that there could be some risk, and therefore we need to keep a close watch for a link between cell phones and cancer risk."

"Given the potential consequences for public health of this classification and findings," said IARC Director Christopher Wild, "it is important that additional research be conducted into the long-term, heavy use of mobile phones. ***Pending the availability of such information, it is important to take pragmatic measures to reduce exposure such as hands-free devices or texting.***"





## U. S. PRESIDENT'S CANCER PANEL EXPRESSES CONCERN

**The 2009 U.S. President's Cancer Panel** --- The panel pointed to cell phones and other wireless technologies as potential causes of cancer. In its recommendations, the panel stated:

***"Methods for long---term monitoring and quantification of electromagnetic energy exposures related to cell phones and wireless technologies are urgently needed given the escalating use of these devices by larger and younger segments of the population and the higher radiofrequencies newer devices produce."***

"The increasing number of known or suspected environmental carcinogens compels us to action, even though we may currently lack irrefutable proof of harm," Lefall, who is chair of the panel, said in a statement.

Another sensitive issue raised in the report was the risk of brain cancer from cell phones. Scientists are divided on whether there is a link. Until more research is conducted, the panel recommended that people reduce their usage by making fewer and shorter calls, using hands---free devices so that the phone is not against the head and refraining from keeping a phone on a belt or in a pocket.

## **What Have U.S. Government Agencies Said About Chronic Microwave Exposure?**

**1993: Environmental Protection Agency (EPA):** The FCC's exposure standards are "seriously flawed."

Official comments to the FCC on guidelines for the evaluation of electromagnetic effects from radio frequency radiation, FCC Docket ET 93-62, November 9, 1993.

**1993: Food and Drug Administration (FDA):** "FCC rules do not address the issue of long-term, chronic exposure to RF fields." Comments of the FDA to the FCC, November 10, 1993.

**1993: National Institute for Occupational Safety and Health (NIOSH):** The FCC's standard is inadequate because it "is based on only one dominant mechanism—adverse health effects caused by body heating."

Comments of NIOSH to the FCC, January 11, 1994.

**2002: Norbert Hankin, Environmental Protection Agency (EPA) Center for Science and Risk Assessment, Radiation Protection Division:** "The FCC's current exposure guidelines, as well as those of the IEEE and the International Commission on Non-ionizing Radiation Protection (ICNIRP), are thermally based, and do not apply to chronic, "non-thermal" exposure situations. They are believed to protect against injury that may be caused by acute exposures that result in tissue heating or electric shock and burn.

Federal health and safety agencies have not yet developed policies concerning possible risk from long-term, non-thermal exposures. When developing exposure standards for other physical agents such as toxic substances, health risk uncertainties, with emphasis given to sensitive populations, are often considered. Incorporating information on exposure scenarios involving repeated short duration/"non-thermal" exposures that may continue over very long periods of time (years), with an exposed population that includes children, the elderly, and people with various debilitating physical and medical conditions, could be beneficial in delineating appropriate protective exposure guidelines."

# What Do Physicians, Scientists & Health Policy Experts Have To Say?

**Martha R. Herbert, Ph.D., M.D., Pediatric Neurologist, Harvard Medical School:** “There are thousands of papers that have accumulated over decades that document adverse health and neurological impacts of EMF/RFR. Children are more vulnerable than adults. Current technologies were designed and promulgated without taking account of biological impacts that have nothing to do with the heating of tissue. EMF/RFR from wi-fi and cell towers can exert a disorganizing effect on the ability to learn and remember, and can also be destabilizing to immune and metabolic function.”

**Dr. Neil Cherry, Associate Professor of Environmental Health at Lincoln University:** “Electromagnetic fields and radiation damage DNA and enhance cell death rates and therefore they are a Ubiquitous Universal Genotoxic Carcinogen that enhances the rates of Cancer, Cardiac, Reproductive and Neurological disease and mortality in human populations. Therefore there is no safe threshold level. The only safe exposure level is zero, a position confirmed by dose-response trends in epidemiological studies.”

**Dr. Ronald Herberman,** distinguished cancer researcher who served as Founding Director and Professor of Medicine and Pathology at the University of Pittsburgh Cancer Institute, Hillman Professor of Oncology and Vice Chancellor for Cancer Research at the University of Pittsburgh was the **first head of an NIH funded cancer institute in the United States to issue a warning about the potential risks from cell phone technologies:**

*“A disservice has been done in inaccurately depicting the body of science, which actually indicates that there are biological effects from the radiation emitted by wireless devices, including damage to DNA, and evidence for increased risk of cancer and other substantial health consequences”...“The public the world over has been misled by this reporting.”*

**William Rea, M.D. Past President, American Academy of Environmental Medicine** “Sensitivity to electromagnetic radiation is the emerging health problem of the 21st century. It is imperative health practitioners, governments, schools and parents learn more about it.”

**David Carpenter, M.D., Director, Institute for Health and the Environment, School of Public Health, University of Albany.** “Unfortunately, all of our exposure standards are based on the false assumption that there are no hazardous effects at intensities that do not cause tissue heating. Many public health experts believe it is possible we will face an epidemic of cancers in the future resulting from uncontrolled use of cell phones and increased population exposure to WiFi and other wireless devices.”

**Samuel Milham M.D., MPH, Medical Epidemiologist in Occupational Epidemiology.** “New research is suggesting that nearly all the human plagues which emerged in the twentieth century, can be tied to some facet of our use of electricity. There is an urgent need for governments and individuals to take steps to minimize community and personal EMF exposures.”

**Paul J. Rosch, M.D., Clinical Professor of Medicine and Psychiatry, New York Medical College; Fellow, The Royal Society of Medicine; Emeritus Member, The Bioelectromagnetics Society:** “Children are more severely affected because their brains are developing and their skulls are thinner. A two-minute call can alter brain function in a child for an hour. It is not generally appreciated that there is a cumulative effect and that talking on a cell phone for just an hour a day for ten years can add up to 10,000 watts of radiation. That’s ten times more than from putting your head in a microwave oven. As Alvin Toffler emphasized in Future Shock, *“too much change in too short time produces severe stress due to adaptational failure. This gigantic experiment on our children and grandchildren could result in massive damage to mind and body with the potential to produce a disaster of unprecedented proportions.”*



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TO: Los Angeles Unified School District

FROM: Martha R Herbert, PhD, MD

RE: Wireless vs. Wired in Classrooms

DATE: February 8, 2013

I am a pediatric neurologist and neuroscientist on the faculty of Harvard Medical School and on staff at the Massachusetts General Hospital. I am Board Certified in Neurology with Special Competency in Child Neurology, and Subspecialty Certification in Neurodevelopmental Disorders.

I have an extensive history of research and clinical practice in neurodevelopmental disorders, particularly autism spectrum disorders. I have published papers in brain imaging research, in physiological abnormalities in autism spectrum disorders, and in environmental influences on neurodevelopmental disorders such as autism and on brain development and function.

**I recently accepted an invitation to review literature pertinent to a potential link between Autism Spectrum Disorders and Electromagnetic Frequencies (EMF) and Radiofrequency Radiation (RFR). I set out to write a paper of modest length, but found much more literature than I had anticipated to review.** I ended up producing a 60 page single spaced paper with over 550 citations. It is available at [http://www.bioinitiative.org/report/wp-content/uploads/pdfs/sec20\\_2012\\_Findings\\_in\\_Autism.pdf](http://www.bioinitiative.org/report/wp-content/uploads/pdfs/sec20_2012_Findings_in_Autism.pdf).

In fact, there are thousands of papers that have accumulated over decades – and are now accumulating at an accelerating pace, as our ability to measure impacts become more sensitive – that document adverse health and neurological impacts of EMF/RFR. Children are more vulnerable than adults, and children with chronic illnesses and/or neurodevelopmental disabilities are even more vulnerable. Elderly or chronically ill adults are more vulnerable than healthy adults.

Current technologies were designed and promulgated without taking account of biological impacts other than thermal impacts. We now know that there are a large array of impacts that have nothing to do with the heating of tissue. The claim from wifi proponents that the only concern is thermal impacts is now definitively outdated scientifically.

EMF/RFR from wifi and cell towers can exert a disorganizing effect on the ability to learn and remember, and can also be destabilizing to immune and metabolic function. This will make it harder for some children to learn, particularly those who are already having problems in the first place.

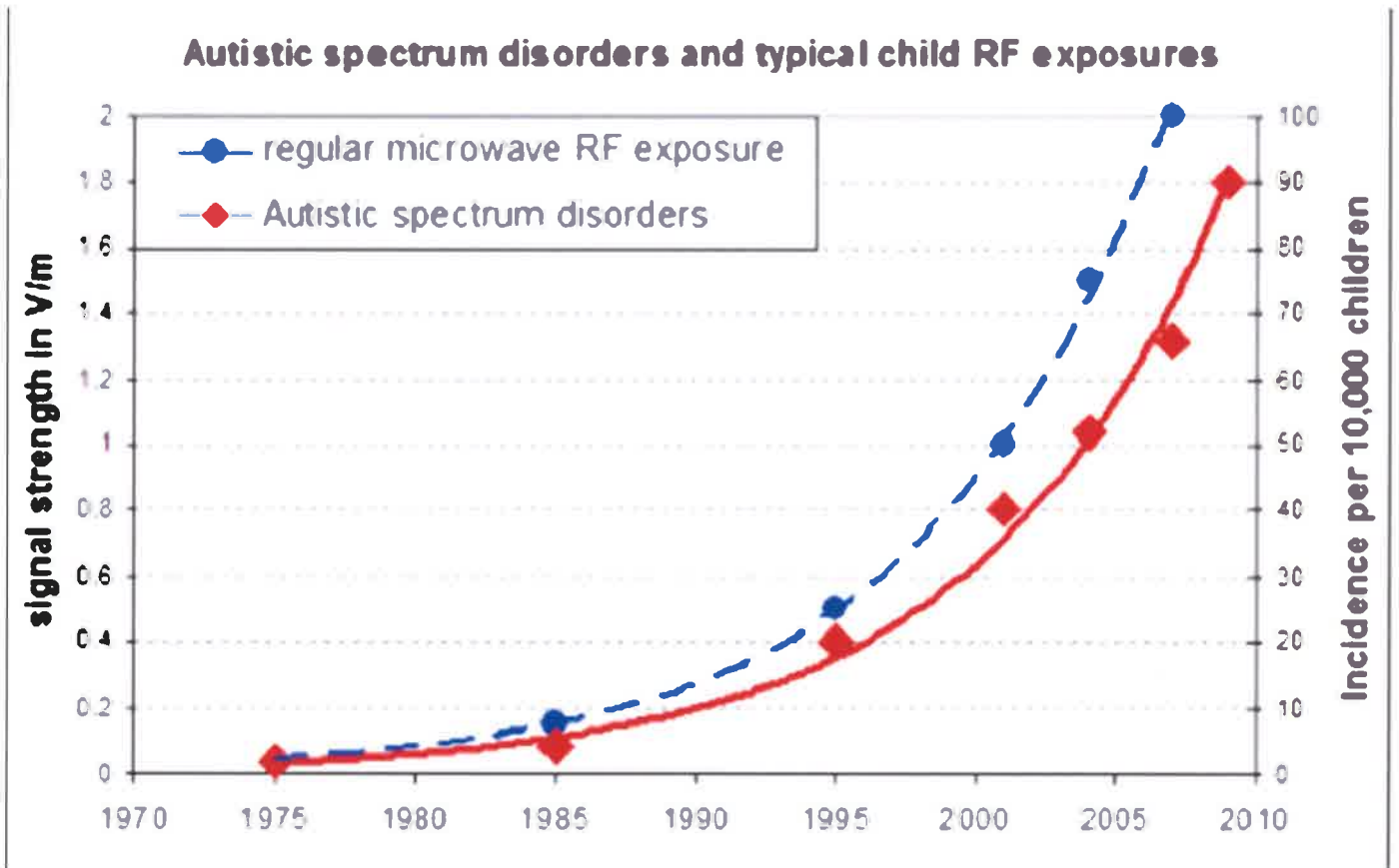
Powerful industrial entities have a vested interest in leading the public to believe that EMF/RF, which we cannot see, taste or touch, is harmless, but this is not true. Please do the right and precautionary thing for our children

I urge you to step back from your intention to go wifi in the LAUSD, and instead opt for wired technologies, particularly for those subpopulations that are most sensitive. It will be easier for you to make a healthier decision now than to undo a misguided decision later.

Thank you.



Martha Herbert, PhD, MD Pediatric  
Neurology  
Harvard Medical School  
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# American Academy of Environmental Medicine

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## American Academy of Environmental Medicine Recommendations Regarding Electromagnetic and Radiofrequency Exposure

*"Physicians of the American Academy of Environmental Medicine recognize that patients are being adversely impacted by electromagnetic frequency (EMF) and radiofrequency (RF) fields and are becoming more electromagnetically sensitive."*

The AAEM recommends that physicians consider patients' total electromagnetic exposure in their diagnosis and treatment, as well as recognition that electromagnetic and radiofrequency field exposure may be an underlying cause of a patient's disease process.

Based on double-blinded, placebo controlled research in humans,<sup>1</sup> medical conditions and disabilities that would more than likely benefit from avoiding electromagnetic and radiofrequency exposure include, but are not limited to:

- Neurological conditions such as paresthesias, somnolence, cephalgia, dizziness, unconsciousness, depression
- Musculoskeletal effects including pain, muscle tightness, spasm, fibrillation
- Heart disease and vascular effects including arrhythmia, tachycardia, flushing, edema
- Pulmonary conditions including chest tightness, dyspnea, decreased pulmonary function
- Gastrointestinal conditions including nausea, belching
- Ocular (burning)
- Oral (pressure in ears, tooth pain)
- Dermal (itching, burning, pain)
- Autonomic nervous system dysfunction (dysautonomia)
- Neurodegenerative diseases (Parkinson's Disease, Alzheimer's Disease, and Amyotrophic Lateral Sclerosis)
- Neurological conditions (Headaches, depression, sleep disruption, fatigue, dizziness, tremors, autonomic nervous system dysfunction, decreased memory, attention deficit disorder, anxiety, visual disruption)
- Fetal abnormalities and pregnancy
- Genetic defects and cancer

## Childrens' and Teens' Brains Are NOT Taken into Consideration by the Telecom Industry's Wireless Exposure Testing

The image below demonstrates the increased absorption of cell phone radiation within the brains of children; studies show that those who begin using their cell phones as children develop brain tumors at a faster rate.



With Permission, Prof. Om P. Gandhi

### Wireless radiation affects children's brains more than adults' brains

*"Children, however, are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. In fact, according to IARC, when used by children, the average RF energy deposition is two times higher in the brain and 10 times higher in the bone marrow of the skull, compared with mobile phone use by adults...it is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes."* Dr. Robert Block, President of the American Academy of Pediatrics, (2012)

The published study "Exposure Limits: The underestimation of absorbed cell phone radiation, especially in children," (Gandhi et al, 2011) notes that the industry---designed process for evaluating microwave radiation from phones results in children absorbing twice the cellphone radiation to their heads, up to triple in their brain's hippocampus and hypothalamus, greater absorption in their eyes, and as much as 10 times more in their bone marrow when compared to adults.

A major study found an 8 fold increase in brain tumors in 20---29 year olds after only 5 years of cell phone use (Hardell et al, 2004). Children and teens will have a lifetime of exposure; a 2011 Pew Research Study found that **8 out of 10 teens sleep with their phones under their pillows.**

## **PROFOUNDLY DISTURBING QUOTES** **FROM SCIENTISTS & DOCTORS**

*“Toxic overload is the most frequent cause of illnesses or of a weakened immune response. Aside from toxins, there is growing damaging potential from physical energy which causes problems, of which the most significant portion is represented by the electromagnetic pollution of our environment, produced by mankind in this century. Whether they be physical or energetic, toxins can damage DNA, weaken the body’s defences and lead to the development of cancer and other illnesses. What is so remarkable is the lack of any sense of urgency shown by doctors and scientists in investigating this subject. This is what threatens to become one of the greatest dangers to the health and welfare of our world today.”*

**Prof. Dr. Andrew Weil, doctor and pharmacologist, Harvard University, 1995**

- *“The earth and all living creatures on the land have evolved in an environment that has a low background level of naturally occurring radio frequency radiation. The power density that radiates close to the head of a user from a portable cellular telephone is two billion times higher than that background level.” Robert C. Kane, PhD, “Cellular Telephone Russian Roulette”*
- *“It has been proven beyond any doubt that the unrestricted use of electromagnetic energy has altered the environment on a global scale to such an extent that life is becoming more and more endangered. Only enlightened honesty stands any chance now.” Prof. Dr. R.O. Becker, New York; April 21, 2004*



- *“We are preparing ourselves for all sorts of claims for compensation for damages. Should the danger from mobile telephone radiation ever be proven, it would turn out to be largest potential claim for damages that the insurance industry has ever had to face.”* Julius von Rotenhahn, Frankona-Versicherung (German insurance company), 1994
- *“One in four has either a damaged immune, nervous, or hormone system. One in three is suffering from an allergy of some sort or another. We have now reached the point where we can no longer tolerate any further damage.”* DGUHT, German Society for the Environment and Human Toxicology, 1994
- *“A significant amount of electromagnetic energy penetrates into the head of any person holding a mobile with integral aerial to the ear, whilst making a call. This is the first generation ever, in the entire history of humankind, which holds a powerful microwave transmitter up to its head, on a regular basis, hour after hour, day after day. Excessive telephoning on mobiles is going to have serious consequences. In the course of the next few years, health problems could arise, especially leukemia and brain tumors. I cannot give the all-clear, no, I definitely can't.”* Prof. Dr. W. Ross Adey, Scientist with Loma Linda University California and one of the most competent world experts on electro-smog, during an ABC news program, in the USA (1997)
- *“Just a two minute call on a mobile telephone already stresses the auditory nerve to extremes. It sets the nerves' electrical action-potential vibrating, and it is not until seven or eight minutes thereafter that it settles down again. Over a period, these effects can add up to long term disorders. One must be on one's guard.”* Prof. Dr. Vittorio Coletti, Senior Consultant at the ENT Clinic in Verona, Italy.

## **French Health Agency Recommends Children and Vulnerable Groups Reduce Wireless Radiation Exposure**

October 15, 2013 - *In a major public announcement, the French Agency for Food, Environmental and Occupational Health warned the public to reduce their exposure to wireless radiation.*

The French Agency for Food, Environmental and Occupational Health, ANSES, announced the results of a two-year review by an expert Working Group of the scientific research on the risks related to exposure to radiofrequency (RF) radiation.

**“...Some publications suggest a possible increased risk of brain tumour, over the long term, for heavy users of mobile phones. Given this information, and against a background of rapid development of technologies and practices, ANSES recommends limiting the population’s exposure to radiofrequencies especially for children....”**

Due to the health concerns raised by the expert Working Group, ANSES made the following recommendations:

- limit exposure to radiofrequencies, especially in the most vulnerable population groups: reducing the exposure of children
- monitor public exposures to RF radiation and to facilitate research on the long-term health effects of RF exposure, especially from cell phones.

***“75% of industry-funded studies find no harm while the reverse is true for independently-funded studies.” Professor Henry Lai, University of Washington***

# How Electromagnetic RF/Microwave Radiation Emissions can contribute to Adverse Health trends from Electronic Devices

## Health Trend I.

I. Public health researchers the world over are implicating screen-time as a risk factor for **metabolic syndrome in adolescents**; ....**metabolic syndrome is a combination of conditions related to blood pressure, lipids, blood sugar regulation and obesity, that leads to increased risk of diabetes and heart disease** when they occur together Evidence suggests that **screen-related activities cause stress, inflammation, and changes in blood sugar regulation, all of which contribute to risk for metabolic syndrome**

***“Teens, Screens, and Metabolic Syndrome”;***

Published on January 12, 2013 by Victoria L. Dunkley, M.D. in Mental Wealth, board-certified child and adolescent psychiatrist ; Psychology Today <http://www.psychologytoday.com/blog/mental-wealth/201301/teens-screens-and-metabolic-syndrome>

### Research showing how RF-EMF emissions effect Metabolic Syndrome

The waves of cell phones caused an increased blood glucose level from .....and an increased serum protein level ..... compared to control.

***“The effects of long-term exposure of magnetic field via 900-MHz GSM radiation on some biochemical parameters and brain histology in rats;”***

<http://www.ncbi.nlm.nih.gov/pubmed/22676902>

***“....single call of cell phone with 900 MHz for 1 minute ... significant increase in peak heart rate ...significant decrease in peak SpO2 (%)(blood oxygen levels. .Serum total cholesterol, ...significantly higher ... suggesting a mild alteration of lipid profile among group II subjects”***

***Effect of cell phone exposure on physiologic and hematologic parameters of male medical students of Bijapur (Karnataka) with reference to serum lipid profile.;***

Parkar MA, Ahmed R, Abdullah BB, Patil BS, Das KK.; J Basic Clin Physiol Pharmacol. 2010;21(2):201-10.

<http://www.ncbi.nlm.nih.gov/pubmed/20853601>

After exposure of an Electromagnetic pulse in Microwave frequency range .....**“the bioactivity of insulin in decreasing fasting blood glucose levels in type I diabetes ...mice was reduced significantly “**

***“The effects of electromagnetic pulses (EMP) on the bioactivity of insulin and a preliminary study of mechanism”;***

Chen YB, Li J, Qi Y, Miao X, Zhou Y, Ren D, Guo GZ.; Department of Radiation Medicine, Fourth Military Medical University, Xi'an, People's Republic of China <http://www.ncbi.nlm.nih.gov/pubmed/20070212>

.... 50-minute cell phone exposure was associated with **increased brain glucose metabolism in the region closest to the antenna**

***“Effects of cell phone radiofrequency signal exposure on brain glucose metabolism.”;***

<http://www.ncbi.nlm.nih.gov/pubmed?term=volkow%20brain%20glucose%20cell%20phone>

## Health Trend II.

II“ Researchers from Stanford, in 2009, gave a battery of cognitive tests to a group of heavy and light media Internet multitaskers. They found that the heavy multitaskers were much more



easily distracted by “irrelevant environmental stimuli” and had less control over their working memory. In addition, they were much less able to focus on a particular task.”

**“Shallow Minds: How the Internet and Wi-Fi in Schools Can Affect Learning”;**

Cindy Lee Russell, M.D.; V.P. Community Health, Santa Clara County Medical Association  
<http://www.sccma-mcms.org/Portals/19/assets/docs/Wi-Fi%20in%20Schools%20rev.pdf>

## **Research showing RF/Microwave radiation effects Behavior and Mental Functions**

“..... fetal exposure to 800–1900 Mhz-rated radiofrequency radiation from cellular telephones leads to behavioral and neurophysiological alterations that persist into adulthood. Mice exposed during pregnancy had impaired memory, were hyperactive, and had decreased anxiety, indicating that in-utero exposure to radiofrequency is a potential cause of neurobehavioral disorders.”

**Fetal radiofrequency radiation exposure from 800-1900 mhz-rated cellular telephones affects neurodevelopment and behavior in mice. 2012.**

Tamir S. Aldad,1,2 Geliang Gan,2 Xiao-Bing Gao,2,3 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3306017/>

“Results showed significant impairment in cognitive function and increase in oxidative stress, as evidenced by the increase in levels of MDA (a marker of lipid peroxidation) and protein carbonyl (a marker of protein oxidation)”

**Effect of low level microwave radiation exposure on cognitive function and oxidative stress in rats.**

Deshmukh PS, Banerjee BD, Abegaonkar MP, Megha K, Ahmed RS, Biophy. <http://www.ncbi.nlm.nih.gov/pubmed/23720885>

“...present study indicated that increased oxidative stress due to microwave exposure may contribute to cognitive impairment and inflammation in brain.”

**Microwave radiation induced oxidative stress, cognitive impairment and inflammation in brain of Fischer rats.;**

Megha K, Deshmukh PS, Banerjee BD, Tripathi AK, <http://www.ncbi.nlm.nih.gov/pubmed/23986973>

“....long-term irradiation from both EMF sources (cell phone & DECT phone) altered significantly .... the expression of 143 proteins... in brain.....might potentially explain human health hazards reported so far, such as headaches, sleep disturbance, fatigue, memory deficits, and brain tumor...”

**“Brain proteome response following whole body exposure of mice to mobile phone or wireless DECT base radiation.”;**

Fragopoulou AF, Samara A, Antonelou MH, Xanthopoulou. <http://www.ncbi.nlm.nih.gov/pubmed/22263702>

## **How WIFI from Laptops Effects Male Fertility**

“...keeping a laptop connected wirelessly to the internet on the lap near the testes may result in decreased male fertility”

**Use of laptop computers connected to internet through Wi-Fi decreases human sperm motility and increases sperm DNA fragmentation.;**

Avendaño C, Mata A, Sanchez Sarmiento CA, Doncel GF.; Fertil Steril. 2012 Jan;97(1):39-45.e2. doi: 10.1016/j.fertnstert.2011.10.012. Epub 2011 Nov 23.  
<http://www.ncbi.nlm.nih.gov/pubmed/22112647>

**Immunohistopathologic demonstration of deleterious effects on growing rat testes of radiofrequency waves emitted from conventional Wi-Fi devices;**

Halil I. Atasoy a,\* , Mehmet Y. Gunal b, Pinar Atasoy c, Serenay Elgun d, Guler Bugdayci ; Departments of Pediatrics, Abant Izzet Baysal University School of Medicine, Bolu 14280, Turkey <http://www.ncbi.nlm.nih.gov/pubmed/22465825>



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**"We have never had this kind of impending risk to society."**Dr.

George Carlo, Author of "*Cell Phones: Invisible Hazards In The Wireless Age*"

**"Cells are permanently damaged by cellular phone frequencies."** Dr. Peter Franch  
Centre for Immunology Research Sydney Australia

**"The results show that children's brains are affected for long periods even after very short-term use. Their brain wave patterns are abnormal and stay like that for a long period."** Dr. Gerald Hyland  
Warwick University

**"Fetuses showed growth retardation from cell phone exposure"** - with female offspring exhibiting the highest risk of **"impaired learning ability."** Dr. Robert Kane , "*Cellular Telephone Russian Roulette*"

**"Cell phones will probably increase many neurological diseases and brain tumors over the next 10 to 20 years."** Dr. Neil Cherry Professor of Environmental Health Lincoln University, New Zealand

**"The industry had come out and said that there were thousands of studies that proved that wireless phones are safe, and the fact was that there were no studies that were directly relevant."** Dr. George Carlo,  
Public health expert, author of "*Cell Phones: Invisible Hazards In The Wireless Age*"

**"The mother's pelvic structure promotes deep RF radiation penetration within the developing embryo or fetus."**Dr. Stan Barnett, Australian Commonwealth Scientific and Industrial Research Organization

**"Unless the industry and governments take immediate and decisive steps, the incidence of malignant brain tumours and associated death rate will be observed to rise globally within a decade from now - by which time it may be much too late to medically intervene."**Dr. Vini Khurana, Mayo Clinic trained neurosurgeon, Australia National University, recipient of 14 medical awards

**"There is no research being done in the United States at the present time. All of that research has been stopped because of industry."** Dr. Om Ghandi, University of Utah, microwave researcher since 1973

**"Mobile telephones are arguably the most radiative appliance we have ever invented apart from the microwave oven and people are putting them by their heads - arguably the most sensitive part of the body. Human brains may absorb up to 40% of a cell phone's RF energy, and as much as 60% of its microwave energy."** Dr. Roger Coghill, Coghill Research Laboratories

**"There really isn't a safe amount of mobile phone use. We don't know what lasting damage is being done by this exposure."** Dr. Gerald Hyland, Warwick University

**"For the first time in history, we are holding a high-powered transmitter against the head. When you talk on your mobile phone, your voice is transmitted from the antenna as radio frequency radiation between 800 MHz and 1,990 MHz... at a range that's right in the middle of microwave territory."** Dr. Ross Adey, U.S. Government Microwave researcher

**"Molecules such as proteins and toxins can pass out of the blood, while the phone is switched on, and enter the brain. We need to bear in mind diseases such as MS and Alzheimer's are linked to proteins being found in the brain. Because stress proteins are involved in the progression of a number of diseases, heavy daily cell-phone usage could lead to great incidence of disorders such as Alzheimer's and cancer."**  
Dr. Leif Salford, Lund University, Sweden

# American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



August 29, 2013

The Honorable Mignon L. Clyburn Acting Commissioner  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20054

The Honorable Dr. Margaret A. Hamburg Commissioner  
Food and Drug Administration  
10903 New Hampshire Avenue  
Silver Spring, MD 20993

Dear Acting Chairwoman Clyburn and Commissioner Hamburg:

The American Academy of Pediatrics (AAP), a non-profit professional organization of 60,000 primary care pediatricians, pediatric medical sub-specialists, and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents, and young adults appreciates this opportunity to comment on the Proposed Rule "Reassessment of Exposure to Radiofrequency Electromagnetic Fields Limits and Policies" published in the Federal Register on June 4, 2013.

In the past few years, a number of American and international health and scientific bodies have contributed to the debate over cell phone radiation and its possible link to cancer. The International Agency for Research on Cancer (IARC), part of the United Nations' World Health Organization, said in June 2011 that a family of frequencies that includes mobile-phone emissions is "possibly carcinogenic to humans."

As radiation standards are reassessed, the AAP urges the FCC to adopt radiation standards that:

- **Protect children's health and well-being.** Children are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children. It is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes.

- **Reflect current use patterns.** The FCC has not assessed the standard for cell phone radiation since 1996. Approximately 44 million people had mobile phones when the standard was set; today, there are more than 300 million mobile phones in use in the United States. While the prevalence of wireless phones and other devices has skyrocketed, the behaviors around cell phone uses have changed as well. The number of mobile phone calls per day, the length of each call, and the amount of time people use mobile phones has increased, while cell phone and wireless technology has undergone substantial changes. Many children, adolescents and young adults, now use cell phones as their only phone line and they begin using wireless phones at much younger ages. Pregnant women may carry their phones for many hours per day in a pocket that keeps the phone close to their uterus. Children born today will experience a longer period of exposure to radio-frequency fields from cellular phone use than will adults, because they start using cellular phones at earlier ages and will have longer lifetime exposures. FCC regulations should reflect how people are using their phones today.
- **Provide meaningful consumer disclosure.** The FCC has noted that it does not provide consumers with sufficient information about the RF exposure profile of individual phones to allow consumers to make informed purchasing decisions. The current metric of RF exposure available to consumers, the Specific Absorption Rate, is not an accurate predictor of actual exposure. AAP is supportive of FCC developing standards that provide consumers with the information they need to make informed choices in selecting mobile phone purchases, and to help parents to better understand any potential risks for their children. To that end, we support the use of metrics that are specific to the exposure children will experience.

**The AAP supports the reassessment of radiation standards for cell phones and other wireless products and the adoption of standards that are protective of children and reflect current use patterns.** If you have questions, please contact Clara Filice in the AAP's Washington Office at 202/347-8600.

Sincerely,



Thomas K.

# Re: Use of Laptop Computers Connected to Internet Through Wi-Fi Decreases Human Sperm Motility and Increases Sperm DNA Fragmentation

By: Jeremy T. Choy and Robert E. Brannigan

Published online: 01 December 2012

Avendaño C, Mata A, Sanchez Sarmiento CA, Doncel GF *Fertil Steril* 2012;97:39–45. **Experts' summary:** In this prospective study by Avendaño et al., the authors attempted to evaluate the effect of radio frequency electromagnetic waves (RF-EMW) generated by laptop computers with wireless network connections (Wi-Fi). They used an in vitro model in which each of 29 donor semen samples was processed and aliquoted into two fractions to form control and experimental groups. The experimental group was then incubated underneath an active Wi-Fi-connected laptop for a duration of 4h at a temperature of 25°C, as maintained by an air conditioning system. The control group was incubated under reportedly identical conditions, excluding the presence of any electronic devices. After incubation, sperm vitality, motility, and DNA fragmentation were assessed in each sample. Although there were no statistically significant differences in sperm viability or nonprogressive motility between the control and experimental groups, the authors did find sperm progressive motility to be significantly decreased, and nonmotility to be concomitantly increased, in the Wi-Fi-exposed samples versus controls. Sperm DNA fragmentation was also found to be significantly increased in the experimental group. Thus the authors speculated that use of a wirelessly connected laptop computer may decrease male fertility potential. **Experts' comments:** The technological advancements that pervade modern society, including cellular telephones, laptop computers, and wireless networks, have increased routine exposure of humans to the electromagnetic fields that are generated by these devices. In recent years, concerns have arisen over the safety of human RF-EMW exposure, with investigations of the biological effects of electromagnetic radiation generating much controversy. Multiple in vitro studies have found significant decreases in sperm motility and viability as well as increased reactive oxygen species levels following exposure to RF-EMW from cellular phones [1] and [2]. Given the widespread adoption of Wi-Fi infrastructures in today's society as well as the comparatively higher frequency ranges of RF-EMW that they use [3], similar investigations involving Wi-Fi-connected laptops are merited.

Despite these apparent methodological shortcomings, the work done by Avendaño et al. represents the first extension of RF-EMW investigations to laptops and Wi-Fi, and its contribution should not be discounted. It is clear that further, more conclusive studies are warranted in the ongoing effort to bring clarity to this controversial public health issue.

**Conflicts of interest** The authors have nothing to disclose.

## **Russian National Committee on** **“Non-Ionizing” Radiation Protection...**

**“...THE HEALTH OF THE FOLLOWING  
GENERATIONS IS IN DANGER.”**

<http://www.wiflinschools.com/uploads/3/0/4/2/3042232/rcnirp.pdf>

For the first time in history, we face a situation when most children and teenagers in the world are continuously exposed to the potentially adverse influence of the electromagnetic fields (EMF) from mobile phones and wi-fi in schools. The electromagnetic field is an important biotropic factor, affecting not just a human health in general, but also the processes of the higher nervous activity, including behavior and thinking.

### **Children’s Health Risks Are Very High:**

- Disruption of memory,
- Decline of attention
- Diminishing learning and cognitive abilities  
increased irritability
- Sleep problems
- Increase in sensitivity to the stress
- Increased epileptic readiness.
- Tumors of the brain, acoustical and vestibular  
nerves
- Alzheimer’s disease, Dementia
- Depressive syndrome. Degeneration of the  
nervous structures of the brain.